



# Open Source Used In ANX Netconf Explorer 1.0

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# 1.1 jsch 0.1.54

## 1.1.1 Available under license:

JSch 0.0.\* was released under the GNU LGPL license. Later, we have switched over to a BSD-style license.

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"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

```
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
  <meta http-equiv="content-type" content="text/html; charset=iso-8859-1" />
  <title>SLF4J License</title>
  link rel="stylesheet" type="text/css" media="screen" href="css/site.css" />
  </head>
  <body>
```

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<script type="text/javascript">prefix=";</script>
  <script src="templates/header.js" type="text/javascript"></script>
  <div id="left">
    <script src="templates/left.js" type="text/javascript"></script>
  </div>
  <div id="right">
    <script src="templates/right.js" type="text/javascript"></script>
   </div>
  <div id="content">
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<div class="source">
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<script src="templates/footer.js" type="text/javascript"></script></div></div></div></body>
```

# 1.3 Vaadin 8.3.1

</html>

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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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- b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Vaadin Licensing</title>
k rel="stylesheet" type="text/css" href="css/styles.css" />
<!--[if IE]>
 <link rel="stylesheet" type="text/css" href="css/ie.css" />
 <![endif]-->
</head>
<body>
<div id="header">
 <h1>Vaadin &ndash; thinking of U and I</h1>
 <div id="version"></div>
</div>
<!-- /header -->
<div id="content">
  <h1>Licensing</h1>
  >
    <strong><i>Vaadin Framework</i> is intended to be freely used and extended by
    anyone without any fees</strong>. In order to guarantee these freedoms, <i>Vaadin
    Framework</i> is licensed under the <a href="licenses/apache-license-version-2-0.txt">Apache License,
```

```
Version 2.0</a>.
  >
   Third-party software included in this distribution is provided under the same
   license or compatible licenses, as listed in the section below.
  >
   The license of the Vaadin Framework is for this product only and may not apply to
   all Vaadin add-ons, such as those available from Vaadin Directory, or other Vaadin
   products, which may have different licenses.
  >
   If you have any questions on licensing terms, please contact us through <a
   href="http://vaadin.com/contact">the vaadin.com web-site</a>.
  <h3>Included Third-Party Software and Licenses</h3>
  <h4>Vaadin Production Dependencies</h4>
  The following dependencies are used by the Vaadin runtime
    libraries when running the application in the production
mode, and some also by the development libraries:
  <thead style="background: #ccc;">
    PackageLicense
   </thead>
   Apache Commons<br/>
       CLI<br/><!-- Used by theme-compiler -->
       Discovery<br/>
       IO<br/>
       Jexl<br/>
       Lang<br/>
       Logging<br/><!-- Used by theme-compiler -->
       Math<br/>
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- Used by GWT and vaadin-server -->
     Bean Validation (JSR-303) API
```

```
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    Google AppEngine API*
     <a href="licenses/google-cloud-platform-terms-of-service.txt">Google Cloud Platform Terms of
Service</a>
    Google Collections
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-shared, vaadin-client-compiler, etc. -->
    Google GWT
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    Closure Stylesheets
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <td>ASM
     <a href="licenses/ow2-asm-license.txt">ASM Project License</a>
    <!-- In vaadin-shared-deps -->
    Guava
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-shared-deps -->
    <td>JSON
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- Used by vaadin-server -->
    JSoup
     <a href="licenses/the-mit-license.txt">The MIT License</a>
```

```
streamhtmlparser
    <a href="licenses/new-bsd-license.txt">New BSD License</a>
    <!-- If vaadin-push used. Atmosphere has some internal dependencies, but they are all Apache 2. -->
    Atmosphere Framework^
    <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>,<br/>br/>
      <a href="licenses/common-development-and-distribution-license-v1-0.txt">Common Development and
Distribution License, Version 1.0</a>
    <!-- Used by vaadin-push -->
    SLF4J^
    <a href="licenses/the-mit-license.txt">The MIT License</a>
    <!-- Used by vaadin-push -->
    iQuery^
    <a href="licenses/the-mit-license.txt">The MIT License</a>
    <!-- Used by font icons -->
    FontAwesome
    <a href="licenses/OFL.txt">SIL OFL 1.1</a>
    <!-- Included in the Valo theme -->
    Open Sans
    <a href="licenses/apache-license-version-2-0.txt">Apache License, version 2.0</a>
    Roboto
    <a href="licenses/apache-license-version-2-0.txt">Apache License, version 2.0</a>
    Roboto Condensed
    <a href="licenses/apache-license-version-2-0.txt">Apache License, version 2.0</a>
    Source Sans Pro
    <a href="licenses/OFL.txt">SIL OFL 1.1</a>
    Lato
    <a href="licenses/OFL.txt">SIL OFL 1.1</a>
```

```
Lora
     <a href="licenses/OFL.txt">SIL OFL 1.1</a>
    <a href="https://github.com/heygrady/scss-blend-modes">SCSS Blend Modes</a>
     <a href="licenses/the-mit-license.txt">The MIT License</a>
    <a href="https://github.com/Team-Sass/Sass-list-functions">Sass list functions</a>
     <a href="licenses/the-mit-license.txt">The MIT License</a>
    <!-- The extracted vaadin-sass-compiler -->
    Vaadin Sass Compiler
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- Bourbon sass library -->
    Bourbon
     <a href="licenses/the-mit-license.txt">The MIT License</a>
    <a href="https://github.com/timruffles/ios-html5-drag-drop-shim">drag-drop-polyfill</a>**
     <a href="licenses/bsd-2-clause-drag-drop-polyfill.txt">BSD-2-clause</a>
    * Not required by Vaadin, only used if provided by the user.<br/>
^ Only if <tt>vaadin-push</tt> is used.<br/>
** Used only when mobile drag and drop is enabled.
<h4>Vaadin Development Dependencies</h4>
  The following dependencies are only used by the Vaadin
   development libraries. Some are also used when running a
 Vaadin application in the development mode:
  <thead style="background: #ccc;">
    PackageLicense
   </thead>
   <!-- Required by Smartsprites -->
```

```
Apache Ant<br/>
  Ant Launcher
 <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
Apache Commons<br/>
  BCEL<br/>
  <!-- Beanutils<br/>--> <!-- Does not appear to be used anywhere -->
  Codec<br/>
  Collections<br/>
  Digester 3<br/>
  EL<br/>
  Modeler
 <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
<!-- Is this used anywhere? -->
Apache HttpComponents Core
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
<!-- In vaadin-client-compiler -->
Apache Jakarta Regexp
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
Apache Mime4j
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
<!-- The Mime4j does not appear to be used anywhere. Remove if necessary.
Apache James Server<br/>
  Apache James Mime4j
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
-->
<!-- In vaadin-client-compiler -->
Apache Tapestry
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
```

```
Apache Tomcat<br/>
       Catalina<br/><!-- Is this used anywhere? -->
       Coyote<br/><!-- Is this used anywhere? -->
       Jasper<br/><!-- In vaadin-client-compiler -->
       JK<br/><!-- Is this used anywhere? -->
       Naming <!-- In vaadin-client-compiler -->
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-client-compiler -->
    Apache Xalan
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-client-compiler -->
     Apache Xerces
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- Used by GWT and smartsprites -->
     Args4j
     <a href="licenses/the-mit-license.txt">The MIT License</a>
    <!-- Used by theme-compiler -->
     CSS Parser
     <a href="licenses/gnu-lesser-general-public-license-version-2-0.txt">GNU Lesser General Public
License, version 2.0</a>
    <!-- In vaadin-client-compiler -->
    CUP
     <a href="licenses/cup-open-source-license.txt">CUP Open Source License</a>
    <!-- In vaadin-client-compiler -->
    CyberNeko HTML Parser
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-client-compiler -->
```

```
Eclipse JDT
     <a href="licenses/eclipse-public-license-v1-0.txt">Eclipse Public License - v 1.0</a>
    <!-- In vaadin-shared-deps but only invoked in development mode -->
    Flute
     <a href="licenses/w3c-software-copyright-notice-and-license.txt">W3C Software Copyright Notice and
License</a>
    <!-- Is this used anywhere? -->
     Google Closure Compiler
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-client-compiler -->
     Google Protocol Buffers
     <a href="licenses/google-bsd-license.txt">BSD License</a>
    <!-- In vaadin-client-compiler -->
    HtmlUnit
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-client-compiler -->
    ICU
     <a href="licenses/icu-license-icu-1-8-1-and-later.txt">ICU License</a>
    <!-- In vaadin-client-compiler -->
    Jetty
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a><br/>br/><a
href="licenses/eclipse-public-license-v1-0.txt">Eclipse Public License - v 1.0</a><br/>
br/><a href="licenses/jetty-web-
container-license.txt">Jetty Web Container License</a>
    <!-- Is this used anywhere? -->
    Jsilver
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
```

```
<!-- Includes portal-service -->
    Liferay Service Interfaces*
     <a href="licenses/gnu-lesser-general-public-license-version-2-1.txt">GNU Lesser General Public
License 2.1 or newer</a>
    <!-- In vaadin-client-compiler -->
    Mozilla Rhino
     <a href="licenses/mozilla-public-license-v1-1.txt">Mozilla Public License v. 1.1</a>
    <!-- Is this used anywhere? -->
    MX4J
     <a href="licenses/the-mx4j-license.txt">The MX4J License</a>
    <!-- Used by theme-compiler -->
     SAC: The Simple API for CSS
     <a href="licenses/w3c-software-copyright-notice-and-license.txt">W3C Software Copyright Notice and
License</a>
    <!-- Used by theme-compiler -->
    SmartSprites
     <a href="licenses/smartsprites-bsd-license.txt">BSD License</a>
    <!-- Explicitly excluded from vaadin-client-compiler
     Swingworker
     <a href="http://www.gnu.org/licenses/lgpl-2.1.html">GNU Lesser General Public License 2.1</a>
    -->
   * Not required by Vaadin, only used if provided by the user.
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 >
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```

```
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  href="http://vaadin.com/company">Vaadin Ltd</a>.
 >
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 href="http://vaadin.com/company">Vaadin Ltd</a>.
 </div>
<!-- /content-->
<div id="footer">
 <span class="slogan">Vaadin &ndash; thinking of U and I/span>
</div>
<!-- /footer -->
</body>
</html>
```

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Last modified: May 20, 2015

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1.2 Console. Google will provide the Services to Customer. As part of receiving the Services, Customer will have access to the Admin Console, through which Customer may administer the Services.

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- 1.8 Service Specific Terms and Data Processing and Security Terms. The Service Specific Terms and Data Processing and Security Terms are incorporated by this reference into the Agreement.

# 2. Payment Terms.

- 2.1 Free Quota. Certain Services are provided to Customer without charge up to the Fee Threshold, as applicable.
  - 2.2 Online Billing. Google will issue an electronic bill to Customer for all charges accrued above the Fee

Threshold based on (i) Customers use of the Services during the previous month (including, if any, the relevant Fee for TSS set forth in the Fees definition below); (ii) any Reserved Units selected; (iii) any Committed Purchases selected; and/or (iv) any Package Purchases selected. For use above the Fee Threshold, Customer will be responsible for all Fees up to the amount set in the Account and will pay all Fees in the currency set forth in the invoice. Customer will pay all Fees in accordance with the payment terms applicable to the Fees. Google's measurement of Customers use of the Services is final. Google has no obligation to provide multiple bills.

- 2.3 Taxes. Customer is responsible for any Taxes, and Customer will pay Google for the Services without any reduction for Taxes. If Google is obligated to collect or pay Taxes, the Taxes will be invoiced to Customer, unless Customer provides Google with a timely and valid tax exemption certificate authorized by the appropriate taxing authority. In some states the sales tax is due on the total purchase price at the time of sale and must be invoiced and collected at the time of the sale. If Customer is required by law to withhold any Taxes from its payments to Google, Customer must provide Google with an official tax receipt or other appropriate documentation to support such withholding.
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# 4. Suspension and Removals.

- 4.1 Suspension/Removals. If Customer becomes aware that any Application, Project (including an End Users use of a Project), or Customer Data violates the AUP, Customer will immediately suspend the Application or Project (if applicable), remove the applicable Customer Data or suspend access to an End User (as may be applicable). If Customer fails to suspend or remove as noted in the prior sentence, Google may specifically request that Customer do so. If Customer fails to comply with Googles request to do so within twenty-four hours, then Google may suspend Google accounts of the applicable End Users, disable the Project or Application, and/or disable the Account (as may be applicable) until such violation is corrected.
- 4.2 Emergency Security Issues. Despite the foregoing, if there is an Emergency Security Issue, then Google may automatically suspend the offending, Application, Project, or End User Account. Suspension will be to the minimum extent required, and of the minimum duration, to prevent or resolve the Emergency Security Issue. If Google suspends an End User account, Application, Project, or the Customer Account, for any reason, without prior notice to Customer, at Customers request, Google will provide Customer the reason for the suspension as soon as is reasonably possible.
  - 5. Intellectual Property Rights; Use of Customer Data; Feedback.
- 5.1 Intellectual Property Rights. Except as expressly set forth in this Agreement, this Agreement does not grant either party any rights, implied or otherwise, to the others content or any of the others intellectual property. As between the parties, Customer owns all Intellectual Property Rights in Customer Data and the Application or Project (if applicable), and Google owns all Intellectual Property Rights in the Services and Software.
- 5.2 Use of Customer Data. Google may use Customer Data and Applications only to provide the Services to Customer and its End Users and to help secure and improve the Services. For instance, this may include identifying and fixing problems in the Services, enhancing the Services to better protect against attacks and abuse, and making

suggestions aimed at improving performance or reducing cost.

5.3 Customer Feedback. If Customer provides Google Feedback about the Services, then Google may use that information without obligation to Customer, and Customer hereby irrevocably assigns to Google all right, title, and interest in that Feedback.

# 6. Technical Support Services

- 6.1 By Customer. Customer is responsible for technical support of its Applications and Projects.
- 6.2 By Google. Subject to payment of applicable support Fees, Google will provide TSS to Customer during the Term in accordance with the TSS Guidelines. Certain TSS levels include a minimum recurring Fee as described in the "Fees" definition below. If Customer downgrades its TSS level during any calendar month, Google may continue to provide TSS at the same level and TSS Fees before the downgrade for the remainder of that month.

# 7. Deprecation of Services

- 7.1 Discontinuance of Services. Subject to Section 7.2, Google may discontinue any Services or any portion or feature for any reason at any time without liability to Customer.
- 7.2 Deprecation Policy. Google will announce if it intends to discontinue or make backwards incompatible changes to the Services specified at the URL in the next sentence. Google will use commercially reasonable efforts to continue to operate those Services versions and features identified at https://cloud.google.com/terms/deprecation without these changes for at least one year after that announcement, unless (as Google determines in its reasonable good faith judgment):
- (i) required by law or third party relationship (including if there is a change in applicable law or relationship), or
  - (ii) doing so could create a security risk or substantial economic or material technical burden.

The above policy is the "Deprecation Policy."

# 8. Confidential Information.

- 8.1 Obligations. The recipient will not disclose the Confidential Information, except to Affiliates, employees, agents or professional advisors who need to know it and who have agreed in writing (or in the case of professional advisors are otherwise bound) to keep it confidential. The recipient will ensure that those people and entities use the received Confidential Information only to exercise rights and fulfill obligations under this Agreement, while using reasonable care to keep it confidential.
- 8.2 Required Disclosure. Notwithstanding any provision to the contrary in this Agreement, the recipient may also disclose Confidential Information to the extent required by applicable Legal Process; provided that the recipient uses commercially reasonable efforts to: (i) promptly notify the other party of such disclosure before disclosing; and (ii) comply with the other partys reasonable requests regarding its efforts to oppose the disclosure. Notwithstanding the foregoing, subsections (i) and (ii) above will not apply if the recipient determines that complying with (i) and (ii) could: (a) result in a violation of Legal Process; (b) obstruct a governmental investigation; and/or (c) lead to death or serious physical harm to an individual. As between the parties, Customer is responsible for responding to all third

party requests concerning its use and its End Users use of the Services.

- 9. Term and Termination.
- 9.1 Agreement Term. The Term of this Agreement will begin on the Effective Date and continue until the Agreement is terminated as set forth in Section 9 of this Agreement.
- 9.2 Termination for Breach. Either party may terminate this Agreement for breach if: (i) the other party is in material breach of the Agreement and fails to cure that breach within thirty days after receipt of written notice; (ii) the other party ceases its business operations or becomes subject to insolvency proceedings and the proceedings are not dismissed within ninety days; or (iii) the other party is in material breach of this Agreement more than two times notwithstanding any cure of such breaches. In addition, Google may terminate any, all, or any portion of the Services or Projects, if Customer meets any of the conditions in Section 9.2(i), (ii), and/or (iii).
- 9.3 Termination for Inactivity. Google reserves the right to terminate the Services for inactivity, if, for a period exceeding 180 days, Customer: (a) has failed to access the Admin Console; (b) a Project has no active virtual machine or storage resources or an Application has not served any requests; and (c) no electronic bills are being generated.
- 9.4 Termination for Convenience. Customer may stop using the Services at any time. Customer may terminate this Agreement for its convenience at any time on prior written notice and upon termination, must cease use of the applicable Services. Google may terminate this Agreement for its convenience at any time without liability to Customer.
- 9.5 Effect of Termination. If the Agreement is terminated, then: (i) the rights granted by one party to the other will immediately cease; (ii) all Fees owed by Customer to Google are immediately due upon receipt of the final electronic bill; (iii) Customer will delete the Software, any Application, Instance, Project, and any Customer Data; and (iv) upon request, each party will use commercially reasonable efforts to return or destroy all Confidential Information of the other party.
- 10. Publicity. Customer is permitted to state publicly that it is a customer of the Services, consistent with the Trademark Guidelines. If Customer wants to display Google Brand Features in connection with its use of the Services, Customer must obtain written permission from Google through the process specified in the Trademark Guidelines. Google may include Customers name or Brand Features in a list of Google customers, online or in promotional materials. Google may also verbally reference Customer as a customer of the Services. Neither party needs approval if it is repeating a public statement that is substantially similar to a previously-approved public statement. Any use of a partys Brand Features will inure to the benefit of the party holding Intellectual Property Rights to those Brand Features. A party may revoke the other partys right to use its Brand Features under this Section with written notice to the other party and a reasonable period to stop the use.
- 11. Representations and Warranties. Each party represents and warrants that: (a) it has full power and authority to enter into the Agreement; and (b) it will comply with all laws and regulations applicable to its provision, or use, of the Services, as applicable. Google warrants that it will provide the Services in accordance with the applicable SLA (if any).
- 12. Disclaimer. EXCEPT AS EXPRESSLY PROVIDED FOR IN THIS AGREEMENT, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, GOOGLE AND ITS SUPPLIERS DO NOT MAKE ANY OTHER WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE,

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# 13. Limitation of Liability.

- 13.1 Limitation on Indirect Liability. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, NEITHER PARTY, NOR GOOGLES SUPPLIERS, WILL BE LIABLE UNDER THIS AGREEMENT FOR LOST REVENUES OR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY, OR PUNITIVE DAMAGES, EVEN IF THE PARTY KNEW OR SHOULD HAVE KNOWN THAT SUCH DAMAGES WERE POSSIBLE AND EVEN IF DIRECT DAMAGES DO NOT SATISFY A REMEDY.
- 13.2 Limitation on Amount of Liability. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, NEITHER PARTY, NOR GOOGLES SUPPLIERS, MAY BE HELD LIABLE UNDER THIS AGREEMENT FOR MORE THAN THE AMOUNT PAID BY CUSTOMER TO GOOGLE UNDER THIS AGREEMENT DURING THE TWELVE MONTHS PRIOR TO THE EVENT GIVING RISE TO LIABILITY.
- 13.3 Exceptions to Limitations. These limitations of liability do not apply to breaches of confidentiality obligations, violations of a partys Intellectual Property Rights by the other party, or indemnification obligations.

### 14. Indemnification.

- 14.1 By Customer. Unless prohibited by applicable law, Customer will defend and indemnify Google and its Affiliates against Indemnified Liabilities in any Third-Party Legal Proceeding to the extent arising from: (i) any Application, Project, Instance, Customer Data or Customer Brand Features; or (ii) Customers, or its End Users, use of the Services in violation of the AUP.
- 14.2 By Google. Google will defend and indemnify Customer and its Affiliates against Indemnified Liabilities in any Third-Party Legal Proceeding to the extent arising solely from an Allegation that use of (a) Googles technology used to provide the Services (excluding any open source software) or (b) any Google Brand Feature infringes or misappropriates the third partys patent, copyright, trade secret, or trademark.
  - 14.3 Exclusions. This Section 14 will not apply to the extent the underlying Allegation arises from:
    - a. the indemnified partys breach of this Agreement;
- b. modifications to the indemnifying partys technology or Brand Features by anyone other than the indemnifying party;
- c. combination of the indemnifying partys technology or Brand Features with materials not provided by the indemnifying party; or

- d. use of non-current or unsupported versions of the Services or Brand Features;
- 14.4 Conditions. Sections 14.1 and 14.2 will apply only to the extent:
- a. The indemnified party has promptly notified the indemnifying party in writing of any Allegation(s) that preceded the Third-Party Legal Proceeding and cooperates reasonably with the indemnifying party to resolve the Allegation(s) and Third-Party Legal Proceeding. If breach of this Section 14.4(a) prejudices the defense of the Third-Party Legal Proceeding, the indemnifying partys obligations under Section 14.1 or 14.2 (as applicable) will be reduced in proportion to the prejudice.
- b. The indemnified party tenders sole control of the indemnified portion of the Third-Party Legal Proceeding to the indemnifying party, subject to the following: (i) the indemnified party may appoint its own non-controlling counsel, at its own expense; and (ii) any settlement requiring the indemnified party to admit liability, pay money, or take (or refrain from taking) any action, will require the indemnified partys prior written consent, not to be unreasonably withheld, conditioned, or delayed.

#### 14.5 Remedies.

- a. If Google reasonably believes the Services might infringe a third partys Intellectual Property Rights, then Google may, at its sole option and expense: (a) procure the right for Customer to continue using the Services; (b) modify the Services to make them non-infringing without materially reducing their functionality; or (c) replace the Services with a non-infringing, functionally equivalent alternative.
- b. If Google does not believe the remedies in Section 14.5(a) are commercially reasonable, then Google may suspend or terminate Customers use of the impacted Services.
- 14.6 Sole Rights and Obligations. Without affecting either partys termination rights, this Section 14 states the parties only rights and obligations under this Agreement for any third party's Intellectual Property Rights Allegations and Third-Party Legal Proceedings.
- 15. U.S. Federal Agency Users. The Services were developed solely at private expense and are commercial computer software and related documentation within the meaning of the applicable Federal Acquisition Regulations and their agency supplements.

### 16. Miscellaneous.

- 16.1 Notices. All notices must be in writing and addressed to the other partys legal department and primary point of contact. The email address for notices being sent to Googles Legal Department is legal-notices@google.com. Notice will be treated as given on receipt as verified by written or automated receipt or by electronic log (as applicable).
- 16.2 Assignment. Neither party may assign any part of this Agreement without the written consent of the other, except to an Affiliate where: (a) the assignee has agreed in writing to be bound by the terms of this Agreement; (b) the assigning party remains liable for obligations under the Agreement if the assignee defaults on them; and (c) the assigning party has notified the other party of the assignment. Any other attempt to assign is void.
- 16.3 Change of Control. If a party experiences a change of Control (for example, through a stock purchase or sale, merger, or other form of corporate transaction): (a) that party will give written notice to the other party within

thirty days after the change of Control; and (b) the other party may immediately terminate this Agreement any time between the change of Control and thirty days after it receives that written notice.

- 16.4 Force Majeure. Neither party will be liable for failure or delay in performance to the extent caused by circumstances beyond its reasonable control.
- 16.5 No Agency. This Agreement does not create any agency, partnership or joint venture between the parties.
- 16.6 No Waiver. Neither party will be treated as having waived any rights by not exercising (or delaying the exercise of) any rights under this Agreement.
- 16.7 Severability. If any term (or part of a term) of this Agreement is invalid, illegal, or unenforceable, the rest of the Agreement will remain in effect.
- 16.8 No Third-Party Beneficiaries. This Agreement does not confer any benefits on any third party unless it expressly states that it does.
  - 16.9 Equitable Relief. Nothing in this Agreement will limit either partys ability to seek equitable relief.
  - 16.10 U.S. Governing Law.
- a. For U.S. City, County, and State Government Entities. If Customer is a U.S. city, county or state government entity, then the Agreement will be silent regarding governing law and venue.
- b. For U.S. Federal Government Entities. If Customer is a U.S. federal government entity then the following applies: ALL CLAIMS ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE SERVICES WILL BE GOVERNED BY THE LAWS OF THE UNITED STATES OF AMERICA, EXCLUDING ITS CONFLICT OF LAWS RULES. SOLELY TO THE EXTENT PERMITTED BY FEDERAL LAW: (I) THE LAWS OF THE STATE OF CALIFORNIA (EXCLUDING CALIFORNIAS CONFLICT OF LAWS RULES) WILL APPLY IN THE ABSENCE OF APPLICABLE FEDERAL LAW; AND (II) FOR ALL CLAIMS ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE SERVICES, THE PARTIES CONSENT TO PERSONAL JURISDICTION IN, AND THE EXCLUSIVE VENUE OF, THE COURTS IN SANTA CLARA COUNTY, CALIFORNIA.
- c. For All Other Entities. If Customer is any entity not set forth in Section 16.10(a) or (b) then the following applies: ALL CLAIMS ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE SERVICES WILL BE GOVERNED BY CALIFORNIA LAW, EXCLUDING THAT STATES CONFLICT OF LAWS RULES, AND WILL BE LITIGATED EXCLUSIVELY IN THE FEDERAL OR STATE COURTS OF SANTA CLARA COUNTY, CALIFORNIA, USA; THE PARTIES CONSENT TO PERSONAL JURISDICTION IN THOSE COURTS.
- 16.11 Amendments. Except as set forth in Section 1.7(b), any amendment must be in writing, signed by both parties, and expressly state that it is amending this Agreement.
- 16.12 Survival. The following Sections will survive expiration or termination of this Agreement: 5, 8, 9.5, 13, 14, and 16.

16.13 Entire Agreement. This Agreement sets out all terms agreed between the parties and supersedes all other agreements between the parties relating to its subject matter. In entering into this Agreement, neither party has relied on, and neither party will have any right or remedy based on, any statement, representation or warranty (whether made negligently or innocently), except those expressly set out in this Agreement. The terms located at a URL referenced in this Agreement and the Documentation are incorporated by reference into the Agreement. After the Effective Date, Google may provide an updated URL in place of any URL in this Agreement.

16.14 Conflicting Terms. If there is a conflict between the documents that make up this Agreement, the documents will control in the following order: the Agreement, and the terms at any URL.

16.15 Definitions.

"Account" means Customers Google Cloud Platform account.

"Admin Console" means the online console(s) and/or tool(s) provided by Google to Customer for administering the Services.

"Affiliate" means any entity that directly or indirectly Controls, is Controlled by, or is under common Control with a party.

"Allegation" means an unaffiliated third partys allegation.

"Application(s)" means any web or other application Customer creates using the Services, including any source code written by Customer to be used with the Services, or hosted in an Instance.

"AUP" means the acceptable use policy set forth here for the Services: http://cloud.google.com/terms/aup

"Brand Features" means the trade names, trademarks, service marks, logos, domain names, and other distinctive brand features of each party, respectively, as secured by such party from time to time.

"Committed Purchase(s)" have the meaning set forth in the Service Specific Terms.

"Confidential Information" means information that one party (or an Affiliate) discloses to the other party under this Agreement, and which is marked as confidential or would normally under the circumstances be considered confidential information. It does not include information that is independently developed by the recipient, is rightfully given to the recipient by a third party without confidentiality obligations, or becomes public through no fault of the recipient. Customer Data is considered Customers Confidential Information.

"Control" means control of greater than fifty percent of the voting rights or equity interests of a party.

"Customer Data" means content provided, transmitted, or displayed via the Services by Customer or its End Users; but excluding any data provided when Customer creates its general Google account (either under a gmail.com address or an email address provided under the "Google Apps" product line).

"Data Processing and Security Terms" means the terms set forth at: https://cloud.google.com/terms/data-processing-terms.

"Documentation" means the Google documentation (as may be updated from time to time) in the form generally made available by Google to its customers for use with the Services including the following: (a) Google App Engine, set forth here: https://cloud.google.com/appengine/; (b) Google Cloud SQL, set forth here: https://cloud.google.com/storage; (d) Google Prediction API, set forth here: https://cloud.google.com/prediction; (e) Google BigQuery Service, set forth here: https://cloud.google.com/bigquery/; (f) Google Compute Engine, set forth here: https://cloud.google.com/compute/; and (g) Google Cloud Datastore, set forth here: https://cloud.google.com/datastore/.

"Emergency Security Issue" means either: (a) Customers or its End Users use of the Services in violation of the AUP, which could disrupt: (i) the Services; (ii) other Customers or its End Users use of the Services; or (iii) the Google network or servers used to provide the Services; or (b) unauthorized third party access to the Services.

"End Users" means the individuals Customer permits to use the Services, Application, or Project.

"Fee Threshold" means the threshold (as may be updated from time to time), as applicable for certain Services, as set forth here: https://cloud.google.com/pricing/.

Feedback means feedback or suggestions about the Services provided to Google by Customer.

"Fees" means the applicable fees for each Service and any applicable Taxes. The Fees for each Service are set forth here: https://cloud.google.com/pricing/.

"High Risk Activities" means uses such as the operation of nuclear facilities, air traffic control, or life support systems, where the use or failure of the Services could lead to death, personal injury, or environmental damage.

"HIPAA" means the Health Insurance Portability and Accountability Act of 1996 as it may be amended from time to time, and any regulations issued under it.

"Indemnified Liabilities" means any (i) settlement amounts approved by the indemnifying party; and (ii) damages and costs finally awarded against the indemnified party and its Affiliates by a court of competent jurisdiction.

"Instance" means a virtual machine instance, configured and managed by Customer, which runs on the Services. Instances are more fully described in the Documentation.

"Intellectual Property Rights" means current and future worldwide rights under patent, copyright, trade secret, trademark, and moral rights laws, and other similar rights.

"Legal Process" means a data disclosure request made under law, governmental regulation, court order, subpoena, warrant, governmental regulatory or agency request, or other valid legal authority, legal procedure, or similar process.

"Package Purchase" has the meaning set forth in the Service Specific Terms.

"Project" means a grouping of computing, storage, and API resources for Customer, and via which Customer may use the Services. Projects are more fully described in the Documentation.

"Reserved Capacity Units" have the meaning set forth in the Service Specific Terms.

"Reserved Unit Term" has the meaning set forth in the Service Specific Terms.

"Reserved Units" have the meaning set forth in the Service Specific Terms.

"Services" means the, services as set forth here: https://cloud.google.com/services (including any associated application programming interfaces); and TSS, but the Services do not include Google Translate API.

"Service Specific Terms" means the terms specific to one or more Services set forth here:

https://cloud.google.com/terms/service-terms, except the terms relating to (a) Google Translate API; and (b) Fees for Google Cloud Datastore set forth at that Service Specific Terms URL do not apply.

"SLA" means the Service Level Agreement as applicable to: (a) Google App Engine set forth here:

https://cloud.google.com/appengine/sla; (b) Google Cloud Storage set forth here:

https://cloud.google.com/storage/sla; (c) Google Prediction API set forth here:

https://cloud.google.com/prediction/sla; (d) Google BigQuery Service set forth here

https://cloud.google.com/bigquery/sla; (e) Google Cloud SQL set forth here: https://cloud.google.com/sql/sla; (f)

Google Compute Engine set forth here: https://cloud.google.com/compute/sla; (g) VPN set forth here:

https://cloud.google.com/vpn/sla; (h) Google Cloud DNS set forth here: https://cloud.google.com/dns/sla; and (i) Google Cloud Datastore set forth here: https://cloud.google.com/datastore/sla.

"Software" means any downloadable tools, software development kits or other such proprietary computer software provided by Google in connection with the Services, which may be downloaded by Customer, and any updates Google may make to such Software from time to time.

"Taxes" means any duties, customs fees, or taxes (other than Googles income tax) associated with the purchase of the Services, including any related penalties or interest.

"Term" has the meaning set forth in Section 9 of this Agreement.

"Terms URL" means the following URL set forth here: https://cloud.google.com/terms/.

"Third-Party Legal Proceeding" means any formal legal proceeding filed by an unaffiliated third party before a court or government tribunal (including any appellate proceeding).

"Token" means an alphanumeric key that is uniquely associated with Customers Account.

"Trademark Guidelines" means Googles Guidelines for Third Party Use of Google Brand Features, located at: http://www.google.com/permissions/guidelines.html.

"TSS" means the technical support service provided by Google to the administrators under the TSS

Guidelines.

"TSS Guidelines" means Googles technical support services guidelines then in effect for the Services. TSS Guidelines are at the following URL: http://support.google.com/enterprise/terms (under Google Cloud Platform Services).

"Updates" means the periodic software updates provided by Google to Customer from time to time. Updates are designed to improve, enhance and further develop the Services and may take the form of bug fixes, enhanced functions, new software modules and completely new versions.

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### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

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AaVg \\ [g2Pc]@!Bcc7!LrWlprJ, [3T:p5B!ltc1Zn7l;u&A*A\#2tqu\_4+34puD[^J1):A?] \\ FfB!l:< v \\ [g2Pc]@!Bcc7!LrWlprJ, [3T:p5B!ltc1Zn7l;u&A*A\#2tqu\_4+34puD[^J1]:A?] \\ FfB!l:< v \\ [g2Pc]@!Bcc7!LrWlprJ, [3T:p5B!ltc1Zn7l;u&A*A\#2tqu\_4+34puD[^J1]:A?] \\ FfB!l:< v \\ [g2Pc]@!Bcc7!LrWlprJ, [3T:p5B!ltc1Zn7l;u&A*A\#2tqu\_4+34puD[^J1]:A?] \\ FfB!ltc1Zn7l;u&A*A\#2tqu\_4+34puD[^J1]:A?] \\ FfB!ltc1Zn7l;u&A*A\#2tquAd[^J1]:A?] \\ FfB!ltc1Zn7l;u&A*A\#2tquAd[^J1]:A?] \\ FfB!ltc1Zn7l;u&A*A\#2tquAd[^J1]:A?] \\ FfB!ltc1Zn7l;u&A*A\#2tquAd[^J1]:A?] \\ FfB!ltc1Zn7l;u&A
{q:s}rE2r'!q7mDu}O>aC\sim vT]\ wB'[neVcr]
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3D9wwcbmn;go$*5
rGv~NHVX|[S3
ETPJX
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jTYSg/O}gGb;^ ryri4k,uRYe6~}n1(m+)}JXf
;fn2]x?Kq,]hkW5^]~kw!BgxHEQV2Xv2:sBMJ2g9#z\_\X1pr_c7a2bv__XQ)T40tE{FM1lO?.aty8t A6k\&
g]65\sQ\KJ~JKlS\&h-*ozYj'S^'
R)m&oF:mK1Yvr:T,:
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#M{g.qg.giC
Z9r]14?w9VQ>*crqa):Au=t!(g.w/OVI
z.y6ICn!BeSmRA?6S.pP=gj[7EGeR'YAK8/!.\_>j!]I:p@|Z(Ss)6AnO\sim JtiikU}\}6'MEv\KvY61v+8u-J;y
>P/1^zc:\^?IYg:A.|qq1C:vm*oi4n8%'_U1K19w
=,)'7O*3g|osPO2{3#/1_*;G:ykNyqy2]Xh9
r>O\sim RDB!Wk=\{-=|F]
s:N[2CTn>ow^*.*Z6)cI.7+,;ch^*!LuXs?~-8[(SoU403s-LvqU=/R)r{ToknV]
OSA3q k/qPM<oh
azzoN8Q < T;sg!Qte_\&z\sim Y/E'hmUZ\sim?^s1*T?x8\&r\{qK-(:MC\{Hi\#\sim)\}
Sm>wvt;Pu%wz~w!BaT5[p>t8G'^TQfg96c!0_a.zb8FrX%J
r4yv.Okg]T[K dyspR'f'3/RNzf\I{P4
(sN\&\_=-\&^zi'W.ORt\backslash m9K^hy]2\_Vg7rUqStj)'egh?r\}\{\{2PF:FE<EW~(ei:qkOLP66|B!c[-\{NtM8'VCk=n0t]8A+[<r-Red]AB-(ei:qkOLP66|B!c]\}\}\}\}\}
A[o:=z,s=^D*Q6y< XN]^wn^
A'UB=z\sim >v> &> 1.7=w:|n}B^{\ }doCgVq
Ld*ce sEg~/^ 8$=[w2r\g6oW\{.}]B!2lpi[c\{iRW^ny:BYn:v\}.qkh!X2hf2CI
B\'Wurvig!um%>;9Jp4#c[U/8!:xuzOhO^z~Hi3^00} 7Ar8{0t\}[yTj?(m+)}JX/-_> r;ZAczJ?:;j$|~<[
?y512SD\sim o>te_{@!Bxuc(JJ3^Tm?DC4k-vTI7ZJc-o`D/0;v}ktMb=gr
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j^yl1'BQ^:k"B#}k}rs->wujz(%\-'CP [@!B1ciCta<m\Li5m8jycpc}A2 aO]b6.{]wV^M_}z~mws+3 s?&Ze:T4`<
fu{d&AfF.5/^SV_J N'.j0j 0- B!upg.\VlO[hub~C
ar~J#FH&B\5L+e?P+yA.5Uh*m:,\E[yJ1/E'gAe&:a[@!B1XKouiMy=Hc7a6mm?C/~A/G?nqFU&lev$"Npl&A.:cA
%a\jKyueB!BkW
A<~x2^N?;O!rc,w!Ba6b]5`![rA
8\CaJ8|B!f#UnB 6fc,w!Ba6b]5\![rA
B-iB!BcC!K9D:pdtr%[0Wa^9Ei4m4Bfl7='O^&]{\{E.6=F.48\}}
=qN:JGOqq8NIJRAi6Lc
>sYJiz7o0rP=DMT&c
rOI+Zi|fN#waZA5:RMWS>C}=OSqK ?S!1u]7-sRM'-\}cwDk~"%]Qv
0Kmj>sh~!kQ]7:x(\%OI
DX[\]?CrO;S]m\% \} = K'\% |.WO"P\8l->P9"Wacmx@!z9Dh/nE+;ZyRfN^v
_n-rHjA.D;j&5 wBa|d>SG(,Hle?Jyv/[3mj4 +=7~#shB+Ux;x^|S 7a$AA.@ 6co!U/? IQ c0M+8p
5h***56Hx18f5o=hr4q!t'i4n*T
jQZEz-MET)]XeecuxAPu wBa|d Eg\S/stL?}5#w4{
^#.]Ram
sus /(6\sim=Mu9hyr/?N@2Y_j.$Xm2 s
\Lambda.\#ILO>cgkl\{R'?Q2!d\
\Delta v = \frac{9w}{W}; q= \frac{8gZw83w Ae@}
.+ U\rGXnE < jnr - v9} iwiOh2Wo7wA^\s< vpKCv = t'fRam \urA)//.]
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rsmXk.N?rY6:zFLJ[
Ii6L3r3aOT-h>x/lTdN3
/UQ+ou\3]SZ*+2m4,-ban_~zLzAu[5=PLje#*vVxgF6A;tyX0nL ac MLRGWHS/eo{a=C&tYpH
!5Ujr o7ry`m[y|{y[4@ @6`
r]#Bs9Nq'huW\aP?s>=^> ??,' Ad23rX@5Ck
r?sjgm.?w~i3p8%mcPNPn+w.\un&3p"qYT@_LIgok.Cc ga&gger>!5Y&(57xm/,SGngreYn2vYGc^m4vTsO
^{\prime}CRASs\T^{\prime}D;Bg}Qr\{Wj7='\&+9BBUI\%-?/A3yr]o)'\%K.u"UUKUsgM0|"P.!-
d"rnz4GF\L\qWW|e_[ZZW^eAu60].deQTacmW;w"3Qq}/GlAF5MO6v><m&,Kanj[&s5J+jaK?KAT?`F].h%)%OO
p=_"R}?Va> sixq
wJ^ vSXG\2~lj?}Y6<7Qujiv/A."6D%nPNP@<:h'>K8'3S2ON$ck2LnNH'C){v:P
e}4
rygt?A.[n9]v9Ck$~:C-;/<6-O]Wm#sp9M(6A)t=LC5m;\I:AN/}o7n,m_^uN-;vYo[;ZBA.C~
rIF1N < FV] - /[\hqRh7 7jHzTx < \}!anPdJax9M0UA {/|F\2&hw\#o0jh'>nnH 7M7]JD r
3?ne/D\sim W>rM''mGXA. B WXr!@d\sim
r = \{R > ISsVg[IL,q3 < A]6V > WNj\} + lgV907(e r%Q2w Ro#^;O 6!.W#\.?#\}.yMA|mYEz#W7ION|o>ky@_so4hS#w Pound of the control of t
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D\b?lidNl2\sim hNm\}]Xhg-\_^/!SdW(!.2rNor.<oeL\}GPv\sim)rdpz11LJi;I55M6dLHH2B
#aK/z6h |4i"%rV6P]r
q <Psc.pS'6u KAn"~>S.U\Wd]Ognk-~C8 ac NzM
U6_ZVeFXj-zO/OG=pfx_c?q@OtvbZ}3X
K@ q W0+v;_~3\^y5A5kh9g;mSMx{Oq2=b!o'u* s^A.S9}
5V&1Brh_V{CW}y
ry&.#FIQ7k
qwZEe'Vo-Z,^la, Zu/a3]/IN{K#skdk??;;O4CG\TA." 73[F%AG}L>rhA.3s3 qY
puV\%)t@U!L\_|_\%Wi;33r9UVVR\&k'?B>l,[385\$gZ88z/l\sim!e<\\P[Q\sim EOp\Nlo\&|.\ 2\ r+5\ HA\{geQE6=Q\sim -|CkZ|, CkZ|, CkZ|,
]7rsD:q"O/go^G%%%O&~J_*tz/Pz8BFW-1?'$th1[7\T[s^| O{p \m{}
!LxkKu[DE{P\&^c2/^c0wuh4PLFs2u5GOl@}O*gVg +BO!$u=^&H'r6u W|.90H]
\label{eq:condition} $$A.\#l]\sim6h'\|''.a[IiQq[m&MD6mYf.7o.E-[tU+[NM6.m]vo:tcG]Y<v)a]K..]v5_|bnGy^zwO>\sim]M]_Dx+Qly?v\}.$$ $$V_0^*(a.\#l)^2 + (b.\#l)^2 + (b.\#l)^
]jkkq/Yp;md'][IY39CH G KMwc!mMFy=g]j~?A\v*tK{~H
.r*ifp]!p7E A.WU#:EOL{S*zXzz4y"j%g
z/9@CsSoPKw=6;L|a)Q;KVZEm S,6gBZovZP`je]']x*%qA.@
6[?n::r"0^2Jic{sEc|8V>G5rJV!n>hI<9=zTjRRz/go)xPy}
.WV\MO35[quo\%!p-\r!v3~\#GgTwS>Oz\}F5k2
qq5
GlB?
o9eoD\sim M8\ =R\ ;cu-))qz-UVrv)+/_4-KtK,Ix-Jp,Hqy)g5f+OOqi [uWU#L]?v5T.t'
\TP!B!(:B\\?.0U)x\]\W:5\])5(A7fk\/7VrXSNM2JjcgerBRB!B!0U7[
BX5bPkfk4\#/5\ 7L\ \ok\sim Aqsq^jcT.E80B!Baact\)l\ \&Igzg[o\\n/qukfxk\o7]
rux+ZqRV#r)
.)B!BSukR!t+0>!W
rMfzC\/AknJn\3
s51*V w r'z u@> \S!B!6N7JBau/Asu{[SJa9\#F sM7(eox]Qr[Z</QkOY0@^\S!B!6N7eB 7p]]} 
7hFrpk=7(M'5\mAq)!.'qE
mfkzmmi/OF95ln*80B!BaacAn1|j9^+!AA7M7aq07(s:5C\3MgFaoqW[3pn@CaEE?GzmZ6}ag Vm*,us_j9E=aKq`
!B!Tfd+$s2aej5E35
q\sF75\+:Vqf\sim qWk'q\%]51*VvPz}@
m=|mJB[up"5/*Z]
jaKq`
!B!TyVqYVWW>.)
\label{eq:condition} $$C\3Ja2=F:FRW\q[otguJ+C-[B]fUxyv<K<J$lp)L!B!BCX<A!.o3\simcbk*jQw.67vYBzV/6$
:+=q!M/K84h@^Qm&\#[I?,T\sim vMUwZT^Y]
k\{.jkZ\%R\}/g[Ei!'f\&u5]
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^SZyutG,?<V};5\#N{3{Ua_CY1F$\3gei%U,tB#66C\VqdRH
b9Ual"xUoy<C7!7(5C\35\3.\}\ W WfC\S)
q sY\>N0Jj/Zyy r/]nWzKvU &fP;mlvUk6T
 M.kM5 U')*ND!'{r=WF?r62i?6:@~PJn_gGqdu/V<\#]z+x]DUk6^oy\#{rUG~}
.R0F51K+qxlCPeos9}V%^YyIVBa5!lmlj a}U(uqieGPOoFi
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r \cdot OoB \cdot OSe \cdot XQ:-/D; ].e < @Z!.sa5Y:c"] < wJ'XND&; NEtl6 g&*JIAp]TUX+}/
.S<QX<\3,$$?i!>tY}v,wN^:u9ic{?Io P/-2h^/? kK'^So;O$lw}m~!/cEB 8 w!}Nl'YO~| 2P7ai17zu-
GgZ_]}R*KMI}co[FzOiXo[i1g/^tstCX<9Z 7o=f.pdV6`L
rYWP|+UQUGcP
rT
rYo0W
q WAaq\3V+:2c>?!F`u`;e| ^N9j^N=3>:n<]<w
F; ttM.: c31*2eOZ\&_n"HuejsAV40T\}bQ; 1]4m|b"DN>K.dMmAmxI) \end{subarray} vzmM<>xMN/zu"=>
>v1M<sj({"Uc9>3e9uQN=yXi[~?7R<}
Sw[j2lV.Ij m,Ku6}rQn/}>63q7`)tC>QD;f!:lj%eUK m)e['5/j(WmV{9g^JaUuTzlQ 7 We\os
ro.hiTy.O=|+oMGSQ;NrjUPT_
R@;mrSme{e;NERta\8s"}mT0c>^2(}H_{;}/^ow.Bv>9OIg)I%<>Nk<N-
}}%Y:}L9c9>s~NM}{zs&4u_rcMYqD}.21Eyo:f[zQ_6\uc~m1sI>?Qg(Ilq_>bm\PO2{Bacm3e7U)L^6K)<1,5(!n:U
qap\ qAA.\SF??!s<\!SWlE\ RgMig1Te;TZ\&mq\6v\4taGJ5|X>Au=AGA=>o\}Mv\sim OgOY)>no;jU/[utt][k9]
[y~+^sem^C HxfYcJiT'>b}c3BTZa7p>DyL
#?vLm/I}=7O>~Bau!II+Ve!*NQ1A7R0W!5g;#7 WR+<WgQ:qH=FqftkV,^x~99VY
r7zNB6n*/7)n;.Z<:{|%Py
.x8i:Ag8T3'S#+HFgifY]dj=aOoq~H~}X\sim p
ppXI_St?mysomc'4siOnG=?H\p%/3zpLsCs}
g6yf=io9\&eX5 JE \{1qK\sim\{|kPw\#\sim i\}K>RIA\}\%?t1fy?w>vBXtkgRHT nYM[\\sim a9+s sAqq\)5C\o
rZ#4clr!;ng weW,Owt=C
vjUORJ' E}<O:/wI::y/nSOs }seckMMw_/;YO'^"Q|qX9Qzyl)2n~,#zn'2cvzo=o'oFcAI8; <gbL6
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r!nAUzV/:Frh+iV )oig',.m80$@g &/!6F+pf 7An3ua\5K2L
r86PfHVg)BX}ukgJRXa.oQ1yC\ok:07J
sB\ro0qAs95] okqro: V^.Z@\%6W\%/VS) \\ 8|\&BXukroa4CcqJA.kp\[o;+W] \\
qM W7 C\eO:qH=FJmr6B!B!L!1"03Ka3qB\)rok^Zkp/5]W\EC1J
^]\V80B!Baacmo!QF:FOLlyY9=@&lp)L!B!BCXA.tqH#X3!T"58wVxyUY2c?whG;[U2ETYB]6:Qd[
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.)B!BSukTGM8j"Q<HqD*&Ry5JF
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[v^{[]}\CgF5\%#l\ 7?HqD*\&Ry5TGM8j"WFUH\Z\4vX[Y3igQ\{tq+`9r8E=ip=3<Svz]
Zvken^}*JP\=rTGM8j"Q<HqD*&RyUHmTutpxI:Cjhwtb*5r8F5=hzN$CMoxpie>2,W=VMamY]@@
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QT^{-}=\{Qt=o_5\}t=\{.-lMf>5e\}...v8\#^x=^x\#^x=^xQ^6h"Q<HqD*&Ry5T^U2R@U\#9E\#+m1A+W2
lKtvCS?Qctd*e{*-lDZAYQm*ol
.=p?M[RZx-dGHtr+6\%_+hi\{-d,[Lkz^ehc^*oZC6eKV;Wx=tn\ LK[e`YJq]\}]
\protect{$\cap GFz_{@6XM78=>oFL}^6h"Q<HqD*&Ry5T^U2R@U\#;Bz5\#w5iAOORtrY}}{2e\&}
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GZE~Bgw0/e\QTYq3) |O s^K[x%|nOpTRz^G8R^gG^HhI llx=zlu-n1K[WQ yC;>vz-
/x=PbhWm>bzG<HqD*&Ry5TGM6N_D? \P'mq3see[tyG=40iUM[,2.Q\^YLgw[;AUch<`O[8dh]q 8/-
)'~7U;x=8z*rlv\yA2y)yAizw>|8V.+iy_W\lczG<HqD*&Ry5TGM6N'Kyk\y%UO^[L8n]
-[Z oc[85h
.J\{TF|f3nuK\sim A.pV-h\_jG^3h4o> +z8MWWH"qx5-V\Fp@bz[JvUkU"yy\sim =.Ki4w|\#j\}1n4BkWeJd\{Uc\}TGM8j"Qd6\}
F:FP!n9KzZ@
\cFn|0O4N`B^Him08X(y KKhs3rc BG^P?6.NZ|G0nO7^l]E^O+x/ivZ{6>WYzW&Ry5TGM6~=;:Wb~uZ@
5pV'\sim h-D+=VQ\]q7Npj:+[_KiU5(].[F,}-Z?R'g
TUG^D*G^?m)<;7FGX;An}mYP6l{ffWca}( D*SG:Jmi"gc6
D*|2Qj3Ld6
F:FFg.))9[TjA.Cq-+
%djDReherZ*^,*@%Kjp9_s[wK
t^G 5jZx=z=lUs:/[XL[s\#?Nh]
fbZg@^]ZL+:\#V*^\backslash Lk7UW8=^|^i=wz\Gamma_Z+\#aa-f\_6\}6m/Yz?g.\&RyAr2W\&Ry\_*T(za6)
F:FC.6.^{T@ \bG/zG/zz"j.lyIF5>K1ED*:9HS
D*S+S64]2R@U#CV\y|i:wY3h[:]E=z4s\Hx=^x\#^x=^x\#^k\#9`W(5$m TfusLTf&}ya6
F:F'.P&^4FlAer;aF?:M})*ZiSZHkRg9
NG/zG/zz*D;`d1 w5ym^Y70kE5Dm?kO
5uhC{}vg;YFQVCcz6}Is43ym/Yz?g.&RyAr2W&RyI?LTf6-#Qm01o8?vl0FfN^/JNmIx~5#cv|tr
:sT[hnT*:muW>TX;5{P}\\^v@{eh/;^v@{q*?6}~<(t)}
:PV_$VGe-[
Y4%lEj }f}Yn* D*So6h"Gu)ORh"s~Ys[F
cYr((TkeYs3mYF
e5u\9[J[v]
us+-9i>xm/Y
YE < gY > \&5d-k'' \sim Ys[F]
h`cy1Tv[C?F=S-eg/;eR;5"8p 5h***56<EmOK~vMgk Zj"*U
j[
%z6Vma_9YmkSg
m\&/9iK5<W]qbRJ/P
.sE16 k.]x
15m=m\{\#uY(qbaW3uL^x\#z'ufAQK;9\}9sXu<n;|\[-\#i\}nZhmZkn+gY3aF5>Wzg.\&Ry:e\}L\]<L>HM\&\&Ry5e6
F:Fz\sim m9[\{XJkrlVi\{mr/]nWzAhk*?XbGoWS.U\sim K+-A7@:dmk.E;Ml^4yjO1e\{ymb]^J/P\}]
.sEM?acr;q[\sim YJ3su=@5CTAdZ;m^*-].*N<L;laDm!+vXlvJ-smM4lw:L\_M\sim CQ/\},i:F5>Wzg.\&Ryri"\sim Ys[F]
h`cT.3r/^
m;ZTwL;C)mnRNn}-"yi3C:zGUG
_-t (dRL=VbY'|948yC|dvZ!B!Zg&1]A<K+K!iUmwq98u =[]uUX][V"[{sV<1kz7wdYEi}k
e6jIsN(,\.Ho{QR(HaV>:u~3
qY < L+M&&Ry5e6
F:Fx TsXIZ_Oh9Lvf4fuiAZjn2A'c,52
j/nzBL21B!BGcL+;5BXS;ryieKW7\}\ Ta2OZAnE:w<\{U\_=Y9\}+ulZtCC\}Rs\ DJ63U; \\ |H*gVe3QTlED*r~e&Ry<W|U\_=Y9\}+ulZtCC\}Rs\ DJ63U; \\ |H*gVe3QTlED*r~e&Ry<W|U\_=Y9\}+ulZtCC
z|=5e6
F:F2)G
```

```
qq]O[{64ttu*5r0*=qkzw+
-\.dJx22\V!gn\vu?n#Hus(S3|\
!B!8.X{=u+k5ac8M?I[vY,yM/'N|yFGZQP^T}?,K+.}Twn/,_~M5pUA2%m/Yz?g.&RyAr2W&RyIo96KkTpx;x`ut#
e-ew*-oMGSQ;KL2vrcJmx6kPA3rBUM_>2N
H2]Jc!B!0zZo_uzmP k-nXVW)Y_ *,v2w
L23<V+kb~>jXn5Pm3My*Qfg(HaV>}_AHaf'MlGs[F
h`cT.qAnZF:omvC[v|c:MjufEy!M21B!BGccqAa&1}5^p16E&C|TZk}TfusLTf&}%c"i?u;FUH\
a4h1Cc?nxshRhOVe6Hc!B!0z/jrSt3 7ms6h"Y$)~i"I6q|6K9$lp
B!B!~j=ve~rPmX'(f;Raf|mq:JG4RaHM44LD**)nQA.C
!B!8jW
s2MX;AnR
!\5fg}\HqD*\&Ry5JF
h`cT.UA} rA21B!BGq 5\s&l 7?Uc}TGM8j"Qd6
F:F
alB!Ba5A!V:MXAn~Dl,+[<HqD*&RyUHmTutr6i`!B!Qs\j4acm}>lM8j"Q<HU%#Qm01*"rH21B!BGcL2,M8j"Q<
HqD*&Ry5T^U2R@U#r)
.AC!B!q;6DMXAn\sim4TGM8j"Q<HqD**)nQAn%qh--
:5e\&+gK,B!B3VkF;6DMXAn\sim4TGM8j"Q<HgD**)nQAn\%]R|N)J2g
B!B!4wl6h"Q< HqD*\&Ry5T^U2R@U\#r) \setminus +W8rF\_NiM'\_g8[
.A)
!B!Jc(z k#&Ry5TGM8j"Q<HU%#Qm01*"0p@jUTT8klxGyuK'S;nC'JG#:[QDjSaQ!UjYVVR*m%(*ZUA2q
{gJLmK*3&tj]Zzm_xgFnbZm2wB]P
.A)
!B!Jc(z
k#&Ry5TGM8j"Q<HU%#Qm01*"0g>i?J]|&YNf4fuiK:A}eoTalaJp!B!0X3q&jrTGM8j"Q<HqD*&RyUHmTutr}^
N9jz*9P!C|0#l$]wX% Jv*mP
.A)
!B!Jc(z kF5K,nD3JGnU[e/*6w+%r-qP5
!B!Jc(z k#.R@cT.E[ ZF:oe
ohk=o@~J[m
q3\P
.A)
!B!Jc(z k\#.R@cT.E[
}:/iLOnDV9D]ZpUez+
| !B!WPRkF;6DMX;(nWM8
(r)E)E < YPu
.A)
%A=B!46Q3Q6F:#Q5?cT.Ev)-+igi`4B!BkPRkF;6DMXAn~FQA.C'Ji9r}40SKJz!Bka/{>9s93sLN&qcgL{8Q=-
i]a\{\_ZU]]zyUn[UUeC)X*hSU-cMA!cTJ5SqM;fU5J)r*\\ \$.Zf\{=eZ)cTJ5SqM;fU5J)r*\\ \$.VeC)X*hSU\#.z:D*+UGDD
DDDRel\FG,kSNGYF@uR`Ou'r2k;^5sfqri{p)nufJ>;Da
\U6Tbem06UQUJ;xk;='6|.xE.L,\
am>aY`_.\oA;P_\\_/]K,\
1UWPUeC)X*hSUcbYYwu%o5$Qlq=nkvyy37
`\fqL*#""""bsUPfa6.#)r#,
```

```
TsFU)E K;wLw*<mfSt3>dn>~?-
'7}Blnd\5mwPmoY(`SpelTY30U~HmQx5fQeTAT*3Ke8s)5?vIK;nm}uG+B?Yxc3iY
A)rQP8
JlTY30(rVU*hSU |rjkKev=ryugv=~v'~]Og^xw[[d%Yh}]6/[
G+-E.4XcTJ5SqMK\ge.,
TsFU)EIE~sdvtbIYS2=h4k<|A;kJ^W{",brT0B2lU6TbemW",
TsFU)En9n8[5VCfv=pxm0<<wCyX$.GA*+UGDDDDDRel\FG,kS"U5J)rkk~0mfW~\\k q;=|-p9
*T!\B=""""6W
*kf2:bY{E(mQ8q
`Qm9P]"BbrT0BRzDDDDDDl**UL1et8\5?:`Qm9P]"BbVGcTJ5SqM|mY6c2M?kTRTH,\
 1UWPUeC)X(*hSUqL*#""""bsUPfa6.#)r#,
TsFU)E.@(`Sp
\U6TbeqG(5LYF@uR)
QP8
[FYF@uR=ymy3>(`Sp
\U6Tbemen%`Qm9P]"wxWsVsa0zyi[gl8yYk^|-(B,\
 1UWPUeC)XG;j1}(
06UQUJ;#uYf3oF>S~o~uM-
K\sim l\sim ; ZY0grfan, ]4RqL*\#""""bsUPfa6.\#.r*hSU3]zWOJ \cite{Continuous} 7.7k=IeY'k\_EM.6e`2ZLcTJ5SqM; fU5J)rg+sgtxfv=[1KW\sim localized for the continuous function of the continuous functi
;C#r{soAvawvn60(`SpelTY30`Qm9P]"w} \]}/
[OyyvfK^qem/o\{Evgm;]iL]2\;6fXcTJ5SqM;fU5J)rgq\%/ac6/\{?0askv=yyaImvl]o!;)|>p9
*T!\B=""""6W
 *kf2:bY"w:2M?kTR ?o`9u4N=)+xw=rJUffa{M=Vy~,w.,w|1'.GA*+@VeC)X*hSU{|<fj{hofGn\~7=:FdacO,\
 1UWPUeC)X*hSU\{w_tg_\}\{Nsa\}\}j< K@\{.p9
*T!\B=""""6W
 *kf2:bY"w:2M?kTR=XcTJ5SqM;fU5J)r*$.GA*+UGDDDDDRel\FG,kSNGYF@uR\
QP8
JITY30`Qm9P]"yk-@"ZU0BRzDDDDDD1**UL1et6EteTAT*dTqX'@,\
 1UWPUeC)X*hSU*. oCU K:qL*#""""bsUPfa6.#
UFU)E.$3[M~2'*@QP8
\label{eq:control_stress} JITY30PUFU)E.$C}_{937r}X^*++=*lPbrT0BRzDDDDDDl**UL1et6E.EQUJs12;w!}2w-1+>Nv\a?;=g9[fZ,F:@,\label{eq:control_stress}]
 1UWPUeC)X65J)r!0swaAyy3|[1Nw$G)p}=Ma(Sg]@QP8
JITY30PUFU)E.$fo1\Zkt?qnww./lq;vo.clc}:v^xFq<mym|>:g_u
. GA*+UGDDDDDRel\FG,kS@QTAjU\_9<'Uo7\_udbd?v9\sim W[>GRwktoan\{/\%\{K\}.IG6W\_6\sim vcp)T\{o\tj@QP8\}
JITY30PUFU)E.$fU|y]BSNUX^1};In#VEn>oq>;;S:56vwp9
*T!\B=""""6W
*kf2:bY;,r\sim UN}k8o|CzxAxK9oo}C=;?+zG\#<RzQGxGy1t=c\sim_[;{<p}
 xN:O>9m=Sz\iUzjNw5gtkDkQmkTRB2~a<?3z;ri_['\b>a._6xpo@/WqMx~vv=\BeZV
 1UWPUeC)XV /niWT%+pO\\\ziQmkTRB2~a<3Ox==)sn'IYh)6tg;wi~N1LNS'u@,\
 1 UWPUeC)XV /niWT\% +pO \xrule QmkTRB2~a \xrule 20 < u5s; O \{1]NgVlz \}Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 1]NgVlz \xrule Y.]Nwlly6 < "V[~N1,[~v~eg>Orij@, \xrule 20 < u5s; O \xrule 
 6xv'''t\}e]w[w\sim]ozk[no9nO]
7`zu]g'?I*v+5J)r!U#^z? 2{;s%@QP8aPUeC)XV2,w_Ut
/a;u+rBW~RenXE_aikKZN7}WvZkTRB28;K2|A>}<.~n/S:qL?|SzDDDDDD1**UL1etvX64,gSVE_#wP;q
\T7/u]kQUJNXc{*#""""bsUPfa6.#Af&Xuww?
qn\W_7,rmq''-jU*@QP8WLlTY30E\*zWUb}K\U_e+r}"wP\w7o"~
\OP8B=""""6W
```

```
*kf2:bYhk*qT"T[_ZuR2#7,qS\_VZkTRTH,\
SzDDDDDD1**UL1etv"
DgX*p;rUk[/qr"\%_6,r];Ue+qu>Tc*aC"^+
\U6TbeE=_*Qb!"aEnXU:JAE2#~E\K\_W:a?"QUJ#qG[OQG,\V]
1x
RzDDDDDDl**UL1et Zuy;O'x
wC2!71=Km~+qa*q]k[w\[+rN:a ?"QUJ#K%uu_7'k[XO8oR>#*VvE3?8zfXc
\U6Tbem?[e)VT,/Uu\%*rB^{\}
;rru%_U%Oc*ww}7cw.okS./yS=[/sf-i(mXc|*#""""bsUPfa6.#@o%nn];wRti\vy,a&~Cmkc)sW20,
rxg}v$3+Ny1OwM8_zGVtCL0,
''/qK:+p
We+qUUUE_ZwFUE_b^FO]?oOv3`prQ^}Q;sW1g-&{Rcsvt|nrnc}xoY>h~Sm&fXc
nSl/eajdm~}vnyM(fXc
\U6Tbem]#N$c+r;4]op{tgK]a+smk9)Enx7nXu?aZZ-
S5J)ra+q\sim zw?<=c^a=jJAWY.;i]vSB+6zmTEoOqf6K!Em[<math>\sim td5.GA?B="""""6W
*kf2:bY\#m-n-R < Vt|N\}[[u3WUzozoXakPUZ/sUVwXuEWOQc*Ns/\#\_\%a4m8D]
JAwwv)mg7N,H;cc Eiu3K9y2vulB{p9
*tB=""""6W
*kf2:bYVYfXQnlPAa;_>zk}rnWUzozoX)r5E.Q|_twu]7vwDPf/Q:=%,km,,?Yg(wRV-
w^S;c6\{d\%m\%?PbrT0SzDDDDDDl**UL1et\_Zey+TU5*lC/s[\ \%n*EnX\%nX/r7VZ]kqMc*Xy;:w\sim g?S/O:|A]\sim g>0
=&wlcasKTu1t#/cYM{)91{Cmwo|~Nc'.qL^TJ5Sq]UUuR
={
GT2,R%2E+pU[\{'\{m?"QUJ\#q\|\sim lq(:lyw+\< Et, 3H, \
1=LlTY30e\*I" bTUenX7wX\
M)s3*bU0G1\\n\\vWcN9?_"l-r;ZPcEbrT0k*#""""bsUPfa6.#MQpUCJ~K2/q"7,q~;;ra.4x9\\)\\ \\-^y|QQUJ\\>N0(^3)
UGDDDDDRel\FG,kSqTUy""
q\TJ5Sq]UNWUV!V6),q2/]aReu?2/q"_.E.q]TJ5Sq]e/fYfQ%n*r~~nu"\+p}rU+p?-S5J)r*$.GA?B="""""6W
*kf2:bY;VRP!SX/wX
AE{;sBkTYFU)E.@(`0UGDDDDDRel\FG,kE.@UFU)E.@(`Sp
\U6Tbem(*hS]"
0XcTJ5SqMEQmkTR\&/w<v1T>7Z07oI(l\&M,\)S*+UGDDDDDRel\)FG,k+r>j:>j:'EmX5JW[blze/n1;Mw|ac(r`(`Sp.))]
\U6Tbem>j:>j|RZTAE]QE
7\|N:G+sg/z?]
"`O$.GA*+UGDDDDDRel\FG,kSNG5^G}xQuGQ5^G}xQ
T6,U)r=sK=a\sim w=19sWY:*iqsf|w|{B}=gLc=jN{Y_VwS02p9}
*T!\B="""6W
*kf2:bY"w::>j:UaQ*m-[>%5~ea<_<qO
j IiQmnu5kdeMqS>aq7o?4\_5\_S!\sim LWM\}3VXc="""""6[
*kf2:bY"w::>j:UaQ*b?4Nya;;/Vo_{wn`3d[rg.@u(`Sp
\U6Tbem>j:>j|RZTAE|o7[fM<qq0]
y3X9KnlrG%~hG4cqL*#""""bsUPfa6.#)r>j:>jIiQmnuoVr{{@:e~Ky_3?_<%E."""""**UL1et6EtQuGQ5^G}xQu
GQ5>)-MmQU;r7nX_5?veXYm5?YfXbV+S*+UGDDDDDRel\FG,kSNG5^G}xQuGQ5^G}xQ
T6,U\setminus\{gn\sim\$-/?zyp9
*T!\B=""""6W
```

```
*kf2:bY"w::>j:UaQ*m\0MbrT0BRzDDDDDDl**UL1et6EtQuGQ5^G}xQuGQ5>)-MmQUJP!p9
  *T!\B=""""6W
  *kf2:bY{EO<3}Oo4=P>fsO<~Qg:EQuGQ5^O?9G?7 KG='C?"sk.0\>j"TMY&~eu6U
FU)E.@(`Sp
\U6TbeI2\{qhog\sim\}x=\Vn\}q\sim l\sim zMY!g9[bcmO1,y];\g^x>j
y3u+sx/}j<|>jsyj>j<wYv,MmQUJP!p9
 *T!\B=""""6W
 *kf2:bY{RE}m2G}lOpu7o6_r{/Oqpw9
g-mkQuGS\setminus \{Ou\sim |9GWm1SrO6< b=\sr:cen< lK/3K< EmX5J)r*\$.GA*+UGDDDDDRel\setminus FG,kO].Scu\_/U5+/\_
 \sim |-wGQ5|+q\#GuGZ'O;9wg];}We>\sim vRQuGtc>wQU''2}W&.GA*+UGDDDDDRel\FG,k'W>ewYsEn[?E5~hxg}E
 W\Q1O8EaF>j<Ekrqmm? |wuc.JXjX~r5}w.#cuv]>j<:"mQ1q~}Ax+_FUii5sfq)fnn.w,-/RQP8
JITY30U]min3?^{\xi}19}x.];CSKn>j<=g}v#:Fn3O^{\xi}19vp
 m[\cec8GT< tVukT]WswXmO/DvXV,, J,\
  1 UWPUeC)XVy9 eifSV'|tc;+mi6w<lw>Ynl>j<[Q)\}8ln\\k\_^{ewv}f~g?/KGC=w&c^>j< wcUQ1:ccn;eP*zqFs
77|3'2{}B;_f\sim[?1[o'YVNM+wE-MM(r>
  [ViU0BRzDDDDD1**UL1et\w_,]7;2a^=vj\sim Lwj,O\}ve)=^/+qNk.yy/np[ncYj>j<(4YK/-cB-vj\sim Lwj,O)ve)=^/+qNk.yy/np[ncYj>j<(4YK/-cB-vj\sim Lwj,O)ve)=^/+qNk.yy/np[ncYj>j<
SvuN\[\{\_Oyhxv\{q,\%8<+jmyv9<\{L.:vo\}\}\}\}
 ;]n}w:6; ,]Lw^{/}K\#XcTJ5Sq="4-rUn=+2n;{O?m/ggkQE}
 K\N, :: Gt\#7SW$+yw(c?Ntj>j<0cVSuceP*WDuWEnakmy_,Y."/x|[n ei2=~:-
G~3H=SU.mukz1KW-i
  {Vq?"PCbRsWE.""""ND
 *kf2:bY"7?2Wfwrmfs\sim>j<E_h_o%+r;n
SQ1mtb~*K\kTc%n6wZwCYi}ucec~4>qqG}l2n;eP*EkxXfMVn)1-
\label{eq:continuous} $$ Tx;HTt?,tcH!Zm3wnp_{x,5}.AReC)Xwk]rw>32!T}x^xSXizMwcXTPSWYfO*q>j6{xF>j<^1jGVS,Gt>N>eQU:} $$
wO\{\_<^Q\_gcPD/Nqkrp\{ko3\backslash 6ognTnz,\#.AReC)XDko^nnlc\backslash Gx?8'
 SO:=p\{uT\}x^tqvEbaYS\< sqV5^D?If\}ON5^G\}xL)c[\{U3bT-oC\}V:hN9;
 KOzasg:qd<&+{f: 8eyn;a9<XE.""""NJ
 *kf2:bY{REuis =z,[.Z}x=9xYzcKxomlYN8>j<EJ:N5V%-
s]Z}x/kG)w^vr":cNO>j<{it)_FUTztkY?tzxm,"w6P(XE."""""NJ
  *kf2:bY{E't,O.9?go~Q|;[fOQC)mc"zIkN.W>j<z*TyZTqEQuGbu}xL_FukTN7*q-u3|9PXE.""""""NJ
 *kf2:bY{E8QE{{O<\sim}QW;qC}xQuGRe-8Q>$q9>S}\sim3{Z>jaYT>j<:"C]kT(rL,\)}
  1UWPUeC)X>j:>j:'ewkTh
pYVqL*\#""""bsUPfa6.\#)r>j:>jIYU\}wen\{y\%qL*\#""""bsUPfa6.\#)r>j:>jIYU7iOu^`Sparantial of the context of the contex
\label{local-control} $$ \U6Tbem>_j:>_j|RVFU)E.@bseM5cTJ5SqM;\\ \xQuGQ5^G\\ \xQuGO^*P^*mD\{`ZVl_L<_qL^*\#""""bsUPfa6.\#)r>_j:>_j|YU| $$ \xQuGQ5^G\} \times (U6Tbem>_j:>_j|RVFU)E.@bseM5cTJ5SqM;\\ \xQuGQ5^G\} \times (U6Tbem>_j:=_j|RVFU)E.@bseM5cTJ5SqM;\\ \xQuGQ5^G\} \times (U6Tbem>_j:=_
3_^_-LXTpG.""""NZ
 *kf2:bY"w::>i:UQU:E\sim7sS
fvS/>rs
DhG*>kVNxLbrT0BRzDDDDDDl**UL1et6EtQuGQ5^G}xQuGQ5>)C]tE{n2#2w=9btW3P%YG1[<H`=;g#m>xZ
;{v:vKY(`Sp
\label{localization} $$ \U6Tbem>_j:>_j|RVFUm^2C5\leq^v9KK>lv'\sim rd/E;?ElkVYZE>_n;8C=Ntgby.O;@}K}vm}_rQ^*+UGDDDDDRel\FG,kSN=0.
G5^G xQuGQ5^G xQ; \\ SJkeVIDATl=O \\ O < ampf/6 \\ N\gN8 \\ !a!ic> \\ \#u\_Omzscn \\ ovg \\ \{p6^*Ll'XTe6H:D^*+UGDDDDDDC^* \\ SJkeVIDATl=O \\ O < ampf/6 \\ N\gN8 \\ O < ampf/6 \\ O < ampf
Rel\FG,kSNG5^G\xQuGQ5^G\xQ;5JkQZ?Y6mgc6lv+Oo0\)r[WqDQowP;<g>S/ZIv]
= pt06@KVl_LkC?j*T!\zDDDDDDl**UL1et"@^WP*;r/wo?{\%h|tYsAf1\7?c;||!tRff1|n[_<^f\_u8\}hc/px2)j-O`Sp
\U6Tbem(Jx])C]t#b\mhw7o0i|ax?2|
  }=_;S&.?WY-ras[jEfwv!&+L;B|m{`_:>@MKw"""""UPfa6.#)r(uuoH% R-ksO2YUrZ#.;7}G]Du
  1 UWPUeC) XVU5^G \\ xQuGQ5^G \\ xQuGO^*P^*7nu \\ k\{`>rY/?w; vr\%"0kd6sZu+c|*\#"""""bsUPfa6.\#)r>j:>jIYU\\ \\ g88/max \\ g88
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 \label{limited} JITY30GQ5^G\\ xQuGQ5^G\\ buZM!.GA*+UGDDDDDRel\\ FG,kSNG5^G\\ xQuGQ5^G\\ xQ;5J)r*\\ S.GA*+UGDDDDRel\\ FG,kSNG5^G\\ xQuGQ5^G\\ xQ;5J)r*\\ S.GA*+UGDDDDRel\\ FG,kSNG5^G\\ xQuGQ5^G\\ xQu
 DDRel\FG,kSNG5^G\FxQuGQ5^G\FxQ;5J)r^*\$.j2U0BRzDDDDDDl^**UL1et6EtQuGQ5^G\FxQuGQ5>)C]"BbrT0B
  RzDDDDDD!**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDD!**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDD!**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDDDDDI**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDDD1**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDDD1**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDD1**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDDD1**UL1et6EtQuGQ5^G\\ xQuGQ5>)C]"BbrT0BRzDDDDD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6DD1**UL1et6D01**UL1et6D01**UL1et6D01**UL1et6D01**UL1et6D01**UL1et6D01**UL1et6D01**UL1et6D01**UL1et6D01**UL
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 \label{localization} $$ \U6Tbem.gi(mQce?O?^xkq'dcw{//.\t%5^n>j<bS]C}xL3+fL5SGvQU::r7nX<4?o}|Ps?gb6w3Ws0-`|(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)(`Sp.)
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 [F*q>j<EQm'U5b1zN5GT1H[%m}U3[XcTJ5Sq="wt>j<-kCs5^d>l'b6nT}xLGh?;u<'rjwk,-
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  .GA*+UGDDDDDRel\FG,kOj?4>jg5":c;BUZ\\xSTJGQGQ5>)C]E[o*G\\c?\{nsIG,|rLr\_0\}brT0BRzD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BRZD\\QFDSPT0BR
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  *T!\zDla a
 /qanxWzDTU6Tbem>j:>j|R6,m<C]tKev=ryugv=~v'~]Og^xw[[ U{7+hBv@M{fE.@QP8}
 Jy?VW^?9""V`x~
 A.WzDTU6Tbem>j:>j|RtC]t\#_M5Gf'eGNizT=lo5kp0\y/hpYV
   1UWP\W*g?YWK/!"bsn
 EqRes^{Y}M; \\ xQuGQ5^{G} \\ xQuGOAa^{Q}U:"^{*}]Z+zy \\ \\ ye^{\#4n} \\ \\ tx[M'.GA^{*}+UGf+q^{W}@'"";_2\\ uGDLQeC)X>;:>j:'V \\ \\ xQuGDLQeC)X>;:>j:'V \\ xQuGD
 FUqcrE|7_~Y7kk4Ws0-_kdw|g.)(`Sp
 *k:bY"w::>j:UQUZ")(`Sp
```

```
a[[<1<3|<j]W;t99,s)rJU6Tem>j:>j|RVFU)E.@(`Sp
a+nmO'x< u+""?S\_Ws\{2E."VJ5SsqYM;\}xQuGQ5^G\}xQuGO*P*XcTc\%\}-
a?qB\c< m\uGDRel\FG,kSNG5^G\xQuGQ5^G\xQ;5J)r*\$.GA*+UGf
K\He[sfiKlw2kewWDalTY3E?\Ex])C]EGLXcT"}'-
(r=o[)rjU6TbguF6/wK7]) \\ *T!\\ B="6AEnn\\] \\ \sim k\\ xe\\ D,J5SsqYQU"OGnffan,.0u.[V] \\ \sim (r=o[)rjU6TbguF6/wK7]) \\ *T!\\ V=(r=o[)rjU6TbguF6/wK7]) \\ *T!\\ V=(r=o[)rjU6/wK7]) \\ *T!\\ V=(r=o[)rjU6/wK7] *T!\\ V=(r=o[)rjU6/wK7] *T!\\ V=(r=o[)rjU6/wK7] *T!\\ V=(r=o[)rjU6/w
 1UWPpX\sim7NF\{E.,--\setminus DJ\}
 *kf2:@]1Ek"vfAP7.U0BRzDlakq*,r/5f~0Qfc36onWco0G}v]H7l`z!uVOgh8**UL1et3kFUi#vkod-
sO;fkucR*+UGf+rm1`g}6+{"o||kgts}
n09\sim-]>qsW;n,Q_^ct9x]>h{\{EUPfa6.cY`5JS7u</fgEn^]4ssf.-}
 .|wd,vo37[d[ucR*+UGf;"6\sim j?1{v7g[6'>k7sR{]Hj+kt}DE}]
\sim,bguF?%s3O7NcPm(u[1]\simM/
 -,E.@gT8
J\[t3\_7g=sIgws\{r\%Yp2g>o\%dfd\{qY\$I\}N;<:;fI[[)rqlsfa6.cY`5JS/=3NvN+r\{yyelwoG^vB]\}]
T!\B="6CWGp*rw/n-+ac<"?ns?{Gf?~pZB'a8C7fO;VWVDalTY301}
U)r{7ywL?%)r qKcT"^J*rI}3{%\b~W3?6m1=~||+!Ta[swSs4E."VJ5SqQU"E-
p?pkv.7[z1)o;coLj\_met8fR*+UGfXe\#<W\sim\_5td]\#Wm>+gbssgOtX^mHRbv^4Ww^`vme"i\_\sim\\pL'eK\backslash+r7l@c5TY30
U)rxnufaa>KN6Yy?\ZTK}f[f[qKcTaE=gd}O2_c?E?
+!+l+\%,hO3u-[{) XG:}mogv`eK\E."NJ
*kf2:FA]EfEn1w<eO;m_qp(F^4.U0BRzDlU?Y\{Me[^kL/2h/m\#>wygG,wb]]hsu>uzJAW7K=\D%U6Tbgu[vWW\7
UK[`Sp
(r?'\_4odeh>)a_\sim f>/?6g]sM73gRz=vU\{wm\simS\_"'J5SqUfm*Q*mD/agT8\}
~}]h2
2e.E."NJ
*kf2:FA]"B.U0BRzDlUU\sim |\label{eq:continuous} B.U0BRzDlUU\sim |\label{eq:continuous} |\label{eq:continuous} P.EIRel\label{eq:continuous} |\label{eq:continuous} P.EIRel\label{eq:continuous} |\label{eq:continuous} P.EIRel\label{eq:continuous} |\label{eq:continuous} |\label{eq:continuous} P.EIRel\label{eq:continuous} |\label{eq:continuous} |\label
 1UWP"tOcofCgw?n:;?j>}~#:4.4ERel\FXkT6|
\Width `RwUXcTaEW.7}wj>_3'k]u?:|}=V \D**UL1et?#""rtAu"&E."NJ
*kf2:(rqOEy7nfany.to 6aB{~8S7Y:,-7U0vn_P\DE."NJ
 *kf2:(rqOEce^F;>vqYNPd]0sssi/pp6,#02>@EI0[P"TPfa6."TQw+;{=59ku?7("ya!Fgh>(r[V
 1UWP"EIRel\F"!""NCu|Fg'W0{?\yk;H 4a%Ytwfwu,j={,?}kqv|,^~r8+0k
 1UWP"`EIRel\FX>MI/Qy?yO>wRL6}97d?<pl )53{6K+u3T;or]edE/SRxWuU8
J-rs""N;""J5ST:A>sDDwFg|=yik}Aw.74y/T{FV>v|}-)a3\^Sp
9.31U.qL*#b3ED-)rqRlTY3Eu+#%k|gZm/j_KA*3GD~lDrug]n8aYQ)=nmj?Vxp(
iKAtt^w,EI eQ8
JR""8)U6T:mo>a>~ \}-En~g3rKN>$1vj](rj'), *T!\B="6C\D""J5ST:R-r/4hz:Eiac>3Gk3-p2]we~i|UauvE[$|D{0}{-1}|UauvE[$] + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5
Q>), *T! B="6C\D"'J5ST:R-r \\ \i OH, E3?'#\%Ek; po \\ \i > hnVsue?FYWZgs6vq/QlK^nki'), *T! B="6C\D"'J5ST:R-r 
r?^h\sim WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#V*T!\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#V*T!\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#V*T!\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T!\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T!\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T!\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T!\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T]\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T]\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T]\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T]\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T]\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N7SVuntjvE=e\#VV*T]\B="6C\D"'J5ST:bYb|v//UNi6tdw.pv?+r-WdEw(YkRW[@R'Q9"_{7}W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMiK[[N]W^oMi
C}XofsM7ewsxn-.39H!:)SE{K\
IeO8
JR""8)U6T:QExY_s0+d6_V^\sim qm"c=OfYv|G"2_|3]6k4< X 27`en{Q8
JR""8)U6T:Q&k^`.biW>zT>**N]*k-
kWI[6F\{w''gW^{\ }y\%nK/4\sim gk>zkh\{06!*T!\backslash B="6C\backslash D'''J5ST:R[oJw\_\_\#7|m46dqsVT3G6S:o\backslash UwV\ E.LJu\}]
 1UWP"qEIRe9m#j5*BwAcCX&',)7#lhuNSO=en=ZW9%E.@mfw>qL*#b3ED-)rqR1TY3Eu+#%k"||jEn[lmPf'_[;sK
```

```
#lh3"Y=U|IP!)R{YzmPF*+UGfH8[R"TPfWTGJEf9SFG/,k|R"MxG+ED1#luY}jyq/)r*$%\~qL*#b3ED-
)rqRlTY3Eu+#%k"eMNF}8wUvZGsK\
I !hny`Sp
)rgK\D^{**}ULQH\W{} {}/{Y}
#hK['%"Bk
1UWP"qEIRe9/w?K; #"b>_RTHJ,JT8
JN]/Vo6+2+u[JzE=WtJW:'o]+V+{*uv}I-
lWrQKReC)s\\Q0\#"b>\_RTHp\\N[wo1CT0BRzDl\#WUUoqj5Vi\\Qrw\\\\0[\{XL\\D^{**}ULQ(a\$g|IP!eZfS:CT0BRzDlO\}f]
w=*QXXhUIR"TPfWTG
>sDDwK\
).7Zf[dZ]
1UWPEj[?"-uV0Y}g]oVQj:uA}./{8-=6W=?,K^f?zz7_cswogby.NSb1)rqRITY3Eu+L/""^"B;v}2)j-O`Sp
Y-(En+ \{qGw[\%^AcL-*ekNA~:cn
U1} = [>z,di)rqRlTY3Eu+LUR&\rG."_uNw^;VPW[TM_hiz]
JTcK!d^e\em-rlchanAa]9~;wCq'8)U6T:Q\&kh<+~kTRTHp{ozs}-s|v|
1>HTk)rC^K[aVta]{2=7uT6hj;
z:f}OW|v?AAK=f 9mp[|uJ\D**ULQ(`$(rC03\`Sp
g1=u=wX.kv1g>^>p<3<)/zDL{Yirc-e~7)*SLu(r8)U6T:1
\label{eq:conditional} $$ P(*T!B="6rke!+!)sHReC)s\QE.R*G+j-G+ZU0BRzDlpX{c`EIRe9RYF"`03Jpz\#-IREC, C'EIRe9RYF"`03Jpz\#-IREC, C'EIRe9RYF"`03Jpz\#-IREC, C'EIReC, C'EIReC
cT!E{Y=9N;`EIRe92YF"`03Jp2f&V}T0BRzDl%E."NJ
*kqEu0Q[-=2]
1UWP"qEIRe92YZ`6vfq)>k,;_*CQKEqJ8[R"TPfWTGS." F]=\L^;r2':CT0BRzD1%E."NJ
*kqEui_4]@\P(mu6W!* UGfH8[R"TPfWTG\2G.?|yL1]~rssfEY~_``Q8*T!\B="6C\D"'J5ST:gmd\f./BoM)^{
YI3}3E.R>\Q8
JR""8)U6T:Q>k*a=w0{*rip}<="`F).`Sp
)rgK\D**ULQ(=Hxnp!=h\a>.=?0P(\ZV
1UWP"qEIRe9YdF|7qC;?fEnh~,tKw3JpG*+UGfH8[R"TPfWTG-
J6NG(wS>Fq.t>6@gwwg?0cP(ecT!E."IIReC)s\QI+r5 Y"`FgT8
JR""8)U6T:1
VgfL^v9bq|8e^-:~~"'J5ST:@C0\eR*+UGf8"wYWe"hERq7"\gZi9&'E."NJ
*kqEu3k"`038
1UWPp*Env7nlqmW[gar}>o/b^y7 Lul;dLpN)-?9
^{\text{ngyAco}}+W^{\text{v}}{?+=,l}Nj|\{C?Ov_{1}e6g92.a>EIRe9qfmP"`FgT8
JNr,qNP^SA_$;?V-+LKhO4/n|wfq<RGmu+:VN?9[wN8s
\mathbf{O}
;|}~"'J5ST:@C0\pjzT8
J\''kVEM^{t};xvbXu||XI,J@?/xI=o+tLW\sim+E."NJ
*kqEuT8gy9#t*[{;lO6}]ry=uR
JN70.Y3;x|\#k?h;w1r+\}i-7\sim u>;/rS\sim w+sc4?NW\D**ULQg8\sim na< y7yWw[h.U2pqL*#b3N]
CT:;o@{+F-+gWMv}=Xu|u(M?pzwYwv,S
}
!?NK1;X.wb8`z"'J5ST:
o|/l\&QUJP!*T!\B="6i=_
dYswvllfE;r;pg
cTvm-Gw;[sW{<^Og=re3s/=U26&|axwqPXU~+E."NJ
```

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*kqEu3k@:aQ>y)[kTRT8
1UWPpE.
Iu^0)rqRlTY3Eu+cYKfqOCmsffq
hX>*\w]]2?<|6{|dV]}
5J)r*dR*+UGfHeEnvcR"TPfWT8v2Y8gE:[lNn Z7|K28ly{4|QUJP!*T!\B="6C\i|3-E."NJ
*kqEu3kqO/rdB{f#:}e^i[_KX=0{kTRT8
1UWP"qEIRe9qf$M>ya'5w./q;8]1=q]#r}H:.~vv^-oEo, nqxgVv eqk/5Vl7f{+x;1w
|._qU2pqL*#b3ED-)rqRITY3Eu+cY; [>.GR/$n=-%Xg6z\?m9]
#,y\c(FU)E.@#\ZLcT!E."IIReC)s\QG4thUN6r:Z0QNmxS2>|!J:ww)raJkTRT8
1UWP"qEIRe9qfdGKfD-$;w[tg;wZbpt8,?tq/?t
a~AkF%a+Yk%T7N)ra<kTRT8
1UWP"qEIRe9qfBd n\XX.
]N22cfU3m_{\:n_\9x,\sim}AkUBl-
Lp] \sim t(T(< Z9^{12nQUJP!*T!} = "6CD" J5ST: AdeG4hK) \% \{eL\#B\} "B.U0BRzD1\% E." NJEST: AdeG4hK \} \% \{eL\#B\} "AdeG4hK \} \% \{eL\#B\} "B.U0BRZD1\% E." NJEST: AdeG4hK \} \% \{eL\#B\} "B.U0BRZD1\% E." NJEST: AdeG4hK \} \% (eL\#B) "AdeG4hK \} \% (eL\#B) "AdeG4h
*kqEu3kCsr\qf_I{)W^{[6]g.xP*qKcT!E."IIReC)s\Q0tP5g}O61w{}
\label{eq:continuity} $$ '/< z^2xQ^*qKcT!E."IIReC)s\QUJP!*T!\B="6C\D"'J5ST:FA]"B.U0BRzDlxLDo*EIRe9qfmQP*qKcT!E.)8$
)rqRlTY3Eu+cY\SJ)r*pjzT8
JR"E.6E\D**ULQ2kTFU)E.@3\Sp
)rqO""E."NJ
*kgEu3kFU)E.@3\`Sp
)rqOq"s5.C"'J5ST:FA]"B.U0BRzDIX~E.N]\D**ULQguR\
gT8
JR*rRvn||n""!E."NJ
*kqEu3kFU)E.@3\`Sp
S>eV,14/1xCfnSy-|EY=*ryJ?r8
)rqRlTY3Eu+cY`5J)r*dR*+UGfX"7)~PWY{HlvwR$EIRe9qfmQP*qKcTa\{whxW3R,(rU
\'E.NB\D**ULQguR\
gT8
nVE]mwamI/63cPu;?\w=Syn=}lcA.qJ\+E.N[\D**ULQguR\
GlZ*T!\B="6JacjzP[
g~\oj-TJdj:7+hE+/k|~gNE/REIRe9qdm*P*qKcTruEDWz
?SE,AVGL_NEo9+sJ"J5ST:FA]"B.U0BRzDlYzwSv~_5?!m8aVlhewLw1r77p:)rI"'J5ST:FA]"B.U0BRzDl+r;w.?J7
bU@z\%-s<u7h~[~=2
wYygm-?m2?1N)rqRlTY3Eu+cY`5J)r*dR*+UGf8"wS2=4oOuE""E."NJ
*kgEu3kFU)E.@3\`Sp
QvDQk)rqRlTY3Eu+cY\5J)r*dR*+UGf;r>zV\18)U6T:1
U2pqL*#b3"2qR$EIRe9qfmQP*qKcT!E.)"j)rqR"TPfWT86(kTRT8
1UWP")r)R"TPfWT86(kTRTHjqL*#b3=E\l8)U6T:QeuR\
gT8
JR-Y'7bR''TPfWT86(kTRT8
1UWP"qEIRe9qfmQP*qKcT!E."IIReC)s\QQUJP!*T!\B="6C\D"'J5ST:FA]"B.U0BRzDl%E."NJ
*kqEu3kFU)E.@3\`Sp
)rgK\D**ULQguR\
gT8
JR""8)U6T:1
```

```
U2pqL*#b3ED-)rqRlTY3Eu+cY\SJ)r*dR*+UGfH8[R"TPfWT86(kTRT8eT8
JR""8)U6T:1
PU2pqL*\#b3ED-)rqRITY3Eu+cY`5J)r*dR*+UGfH8[R"TPfWT86(kTRT8)]
1UWPpEGR"TPfWT86(kTRT8
1UWPpZE.
E."**ULQguR\
gT8
JRL\DU6T:1
U2pqL*\#b3,8+lTY3Eu+cY`5J)r*dR*+UGfH0Y(rqVTPfWT86(kTRT8))
C2P@y(rqVTPfWT86(kTRTHpny%qL*#b3"7+}x:7>?% "n/V[-
\#BJ5ST:dmIQUJP!cTbtu;1\_\&(ZmYa[\&,igA\{8+lTY3Eu+c
0.5J)r*dp<~;P8
J\*67kKm
Jl+a<;"gE
*kqEuFU)E.@/o\s
G^4z\cTa\1oxdk>+_iC \{.8+lTY3Eu+\?U2jXO\Sp
ghG.r:h;>I^v{8+lTY3Eu+c}
0.5J)r*dpsu
1UWP~En]^{SlvG~rr;>6;>qCo`O"gE
*kqEuFU)E.@?7K4y{]wo6/#!*T!\B="6z@J5ST:gmQUJP!*T!\B="6C =Z9kh(rqVTPfWT86(kTRT8eT8
JR=w=\DU6T:1
PUR*\f-s[+cT!E.dEYQeC)s\Q6P*2
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JNEDUT)rqRlTY3Eu+LUR\& \protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\prote
).#)E."IIReC)sQe6P*2r{Q8
JR""8)U6T:Q&kLuR\
*kqEu3kFU)E.@
wAen{KVGcT!E."IIReC)sw]ZTUR&\e6H:D*+UGfH8[R"TPf
T2Y`kTRTHp2f&V}T0BRzD1%E."NJ
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KReC)s*hS;FA]"B.U0BRzDl*riW&+w"D{-Dvz
```

```
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oiR,,Ou,g96m_W
vg{A\sim.Vwco?uSSN\D**ULTA]1
U2pqL*#b3W6+qHPr)]1 KR`z1s+Vtv3k6"*)2mwqw=`6x'5;9Q{yjagv{_vwmac\98~Z2x!g>rR"TPf
TqfmQP*qKcTt\bO p)rqRlTY3E{NSmv}86(kTRT8
1UWP"gZ{R"TPf
TqfmQP*qKcT!E.Q?qEIRe9MQUJP!*T!\B="6C\D""J5S4Ujw3kFU)E.@T.[V*T!\B="6C\D""J5S4UjwTD]"B.U0BR
zD1%E."NJ
*khiMguR\
gT8
JR""8)U6T = 6UcY`5J)r*dR* + UGfH8[R"TPf
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gT8
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TqfmQP*qKcT!E."lIReC)s*hS;FA]"B.U0BRzDl%E."NJ
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DYRQyKDDcEK5CWPrZ8/j*jkp6\{\{\_[(K9*OrrqqC.T\EmCEmc:ro+rkeI=GC.Q9.0Q\#\Q@=pjm\}LSX\}Enm"", <q\%, (K9*OrrqqC.T\EmCEmc:ro+rkeI=GC.Q9.0Q\#\Q@=pjm\}LSX\}Enm"", <q\%, (K9*OrrqqC.T\EmCEmc:ro+rkeI=GC.Q9.0Q\#\Q@=pjm\}LSX\}Enm"", <q\%, (K9*OrrqqC.T\EmCEmc:ro+rkeI=GC.Q9.0Q\#\Q@=pjm\}LSX\}Enm"", <q\%, (K9*OrrqqC.T\EmCEmc:ro+rkeI=GC.Q9.0Q\#\Q@=pjm\}LSX\}Enm"", <q\%, (K9*OrrqqC.T\EmCEmc:ro+rkeI=GC.Q9.0Q\#\Q@=pjm\}LSX\}Enm"", <q\%, (K9*OrrqqC.T\EmCEmc:ro+rkeI=GC.Q9.0Q\#\Q@=pjm\}LSX\}Enm"", <q\%, (K9*OrrqqC.T\EmCEmc:ro+rkeI=GC.Q9.0Q\#\Q@=pjm\}LSX
"""!j+jP-r
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k-aK,enRl[kl7
$$ [!]nn|z]p0m}LSX\\Enm"",<q\%"""!j+j!yq`mzf:rm}LSX\\Enm"",<q\%"""!j+jjC7_n|w_Y<r9/j*jkp6\\\{[(K9*OrrqqC), figure 1.5], figure 2.5], figure 3.5], figure
nCnq?3v]^t:.O:_EyZ^*Lce/}\sim zZg\{Zf\sim]A?|;Cov|v:\sim 86T>m,"6QsT8XR
55 juD7e x qky - z [_< n wViu - j qm96/:_u - {}/
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SPQ[3DDDy!(jQ8V < G8d\{\}rog/\}:?zm\}uG/SK\%.86T > m,"6QsT8XR
55j/8}my]c_GKooqr__Z9K.1K(mMd[m'yz]{|`
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6sLP"u.yG\PPIXc:ro+rkeI=GC.Q9.0Q\#\Q@=/\@!ws\8(Jrgr6\{\{[(K9*Orrqq??yp^x\}Y\{'\%rFa'O7cx\#mrf1Mhc!(B\Z)PIX)\})\}
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6\{\{MDDTT9*OrrqqAo\Y_bf\/X|KVgYx\}i\{wu'l\G\}
```

```
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: L}L
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v?C;gG];^atxvW.zk#
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 6~N0Q#\QP_j*jkHn4|[{c./m;Kctzv})W6?tO<v?zkj=`$uV#Mxf>1=6g{vgu+[mm3O8Z?FE~my~EKDDcizLEc55CW
  18
 >^li6rqW;|%lnw-JP=a^{ knh?Oa7]b+\-yvc\\}}|pSoO]J8XlFu#k455CW18
_>eobKrsE/_Xr+5h-drvogx{k7>:cvog5mmnC.X3
 1B8{rr,v\g18
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  @~6eu{o=7evh=am3}Xchx8EKDDcG1m;fuL
RPQ[3Fr's=+5[^K::Yci/^zq]]\sim u
 ? > ou = \sim kwSGKP \#^77y/Glw? | > cmnAC.Q; .qRPQ[3Fr = \{z | 8\{9 = \sim ..zdLWWx < Qa7ymy] | Emqo\{|oD\}8bGur\{|fO.0\}My| \} | > cmnAC.Q; .qRPQ[3Fr = \{z | 8\{9 = \sim ..zdLWWx < Qa7ymy] | Emqo\{|oD\}8bGur\{|fO.0\}My| \} | > cmnAC.Q; .qRPQ[3Fr = \{z | 8\{9 = \sim ..zdLWWx < Qa7ymy] | Emqo\{|oD\}8bGur\{|fO.0\}My| \} | > cmnAC.Q; .qRPQ[3Fr = \{z | 8\{9 = \sim ..zdLWWx < Qa7ymy] | Emqo\{|oD\}8bGur\{|fO.0\}My| \} | > cmnAC.Q; .qRPQ[3Fr = \{z | 8\{9 = \sim ..zdLWWx < Qa7ymy] | Emqo\{|oD\}8bGur\{|fO.0\}My| \} | > cmnAC.Q; .qRPQ[3Fr = \{z | 8\{9 = \sim ..zdLWWx < Qa7ymy] | Emqo\{|oD\}8bGur\{|fO.0\}My| \} | > cmnAC.Q; .qRPQ[3Fr = \{z | 8\{9 = \sim ..zdLWWx < Qa7ymy] | Emqo\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8bGur\{|oD\}8
ow5vBo\sim = 3CC.QMiR8DpEz@}m#n#O1M2%tu`xbr;Cnm>:k~&--
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D: u \{*.64* + \{DC.QYR(64* + \{DC.Qij4Mj0\%qFeczq\%""jBRpMzjv6a@iB[c=!K+6yA7la@iB[c=!KFvl\&[ch-1]]]\} \} = 0 + (1.54* + \{DC.QYR(64* + \{DC.Qij4Mj0\%qFeczq\%""jBRpMzjv6a@iB[c=!K+6yA7la@iB[c=!KFvl\&[ch-1]]]\} \} = 0 + (1.54* + \{DC.QYR(64* + \{DC.Qij4Mj0\%qFeczq\%""jBRpMzjv6a@iB[c=!K+6yA7la@iB[c=!KFvl\&[ch-1]]]\} \} = 0 + (1.54* + \{DC.QYR(64* + \{DC.Qij4Mj0\%qFeczq\%""jBRpMzjv6a@iB[c=!K+6yA7la@iB[c=!KFvl\&[ch-1]]]\} \} = 0 + (1.54* + \{DC.Qij4Mj0\%qFeczq\%""jBRpMzjv6a@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7la@iB[c=!K+6yA7
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 uR?xDeq36s/[6mlwumUW.s\{6aZo^sv\_o\\u\{mM7)\}zT9\}NV\\[ov/]aO></wzQi\#>9c=o;nv4[v7oR\#ov'7'?\_?a79O/-i79]NV\\[ov/]aO></wzQi\#>9c=o;nv4[v7oR\#ov'7'?\_?a79O/-i79]NV\\[ov/]aO></wzQi\#>9c=o;nv4[v7oR#ov'7'?\_?a79O/-i79]NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7'?\_?a79O/-i79]NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7'?\_?a79O/-i79]NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7'?\_?a79O/-i79]NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi#>9c=o;nv4[v7oR#ov'7']NV\\[ov/]aO></wzQi
|||G^{\prime}(5) + m^{\prime}(6) - m^{\prime}(6) + m^{\prime}(6) - m^{\prime}(6) + m^{\prime}(6) + m^{\prime}(6) - m^{\prime}(6) + m^{\prime}(
  @Qf}Lz}&[KdZ~Uw;<ro_ojg]ve\{V?2[]V:;fwLn>M]ulUw<ZE9yOl
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?xK'H3qqM>9a}Wil=6CrgqvVN#WHevinz}'rIv'qosyQ6zva!j|p~{a;mf.nmI}!_}9_~#.a++,?lSl6by&mvr'%{\gO?:gG
oW\N83f?n 6?Wq Nzz?ywV?>v/}lec}f=nU!]v>v`oul]yuc-6 oSx-lv;gw{1}@V'}bg>?mCy92?g::8~c Z;:|L5P^|2-
>7^f==\{v^ix=Kb[I[v>m;m\sim f\{\}O4\_N7]\}
|>7[kw=CnVl^l_{y;h;C/fjl-M76p/|_6j1}O|Xb|
Wf:[i[g2v.;F5.e vm&`q|mrpK.Np :eM<%gqF/B3m=ieczMcCnoo
pprM2+k;Z[mqeyq3W=]?R{hzuf}i*rgzh?p_R{3}66%k}B>EZem*\l]Wbq}Gt
;;ayloQ}V{W/}F?'7bgilG\\ou~rn}v#[w-]6CAu
:e=[m
ca\#YmwnC;n\}bwb=\{6wY.t51\>9^{form}\{r/5
Cz>lbz7sGEo/7!\_T^EYe(cCx]K\}6j5efW\#\{q\}WyK7'grMyM\{*N;d?z^rRm\&om4wC\sim k7\%\{w7\}]^N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N|oJ^E9tm|^2N
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H;nv;vlZk\sim yz^?sJ.)kb[u|qCG_Zz]k7HTS'Mom-
k;uu;t#;o{>e|Vn!k:\rVoOo=y7{o6WQH>EX`OrO ~6e#we^/v9>Zg\o=0sl#/eV7l7VM^ 8g6Km3o;tP{!a2;p yW9-
6d?j]oy[jlO}o-`#lkocC&vVEZ6GawoMnC&6}[yl3I^bOpC{/|^/|tr7
= r^2 k; cO Co\& 71 cf w5 = fn~?71]; by {>rt; o+c/WSc/6=1-
M3zat`K4_3f{/z>erm3f[[y_/6;M3~v6m{flc+#VM}`kdvk_N^wE;{mS[i%WV_mu
)[/gkm0;w?c*]W\\IJ\sim{}\&ZL/ku\%_r|{=<zC?K\&>}^{}}m3x=>S!0;u\{\{o]Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o]Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{\{o\}Gm6WQbrwlJ>Ez$ZmDt3%^yQ\{\{g\sim/vm\#FS\}\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}m3x=>S!0;u\{g\sim/vm\#FS\}
n\{\#w < s6? \sim s1: \sim n\}V \setminus +y > 6
{k#Fn?>y;o*[.[l{t.g>?W}v9z{nb}g,JWGU]WAG}y
mUgV{VO7jc{pm7;nf/vvnWt:Wlowld-{C{6>+}F/V}} < nCoy
+4vG}c}Cp-?s{X:-W?_U~cauL|p[\y-z+?'+<vr/Dt_s-Ft6]u;5?W}9lS{>y?qAf}}l#d[71_=c?U_91-
vm[5?#o]V n>Kr=Lz[`?8l-~lgnw<z~MV\.srJ6lw{ic-V/8S;u%[O?.-
O:$?^v?sMUKQ_,G\Wzw/[s5?v$]Rl'6_;$m_}6v~^3wIDAT>6yug__!}_:\}q}IE'Nf~8N?9iMk8}~}Q!w3lSVr!wq;]u/
yiMQ6c^qaUQ;uR\_+o+\}:V>gw?>Sm\_\_]h+lu=6C+Whsf?kz7R\\\{v?'3oCsu\_.\}y\_\{N\}ytfvgV^-\{Mgj6KS\&y(N)\}vfVgV^-\}
oau7lK j>|w}typ`r8x<Q.Kr]u
ynx1m[rex;C?f6M\sim E>y]\sim K6[Q]7g^y\}7\_V!wK\&?|>tFg|rv8|jr?w[gm[ts^Q7,=]-3o]\_OAW?a?g;]p4n8p=UCFt
avVc6YV]q;l-
3ondo[[1]'h[\sim lg=\{ev
g'^ef>gks-68Py\{!II>K\}me\%
om{OY
6m\% = 15_7 wC[[\{[lw0lin = h4?qw.~Ny:njl~sZG^k?l] = \ M+/ery-\{XuS_\}w[v=/2oC3]\} + (v=/2oC3) + (v=/2oC3
?oW r v}~hG-
fm!w?j?3?p>rx;g\\Nnwtlcnf]^{-}(2Ov:ny{[,mavI+iw8a!F;a]&:r0av;P{q_[_V6K/mo/]esu}.w[+v7_q_b~5?w_;u~7+ws]})
\label{eq:continuous} $$ -MRHr^{\#0} = R(w7mZen?AvO)c/_fC6\% [1.06] -ao?v?&uuSmg-gU\{P[ks^x (Wb7Ex8,Ukcl-w7mZen?AvO)c/_fC6\%] ]. $$ -ao?v?&uuSmg-gU\{P[ks^x (Wb7Ex8,Ukcl-w7mZen?AvO]c/_fC6\%] 
5xI[jt~O{{rA_Z}nuo{mF74CmLR3qw|ul-:le3zYnoJ6D'o)3!wNy+w}^x=Ww;*"CWV;y=pC~h<iw\w
r7yvsO|;9|}xw}f?/Fw[+5loMcnG_;v'.}oUb-lKH_Z<b*%$!!e7B:IHIB!4*(
% ~RrE,Pw$fpy~y9s?3.hzt@wMDx8#A]Y~HugyDZ6q2JY"H$D"H$Znnnl
'N^{(1c0m4VjTmoS\%[\z"3G+hiQ[-umNW]D]}
h)*WFBq05O[K_{s}]
<-|'gcr|*63's'n~QmY
u*3-r8Gc
0
```

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h+m=p'\sim i.\<FImX|vPx?;U1vj\#r:y)P\YN!*'<[
 OM[[XrwGH]LY9\sim \{ N_wCFm6\#B \ge 0 \}p4L\%Vv*_UVg ?F=2q\&E \ge 0 \}p4L^2VVg ?F=2qE \ge 0 \}p4L
 SCBe&:uv uxb%M y*a
 ^xw-/l2;6aRRQr)z"<*BgFTn:sMp;Ch1zCg]<p_{`XH^[^V9!3gApO/,q3`WwYz@WqETR~g+{tx:lS"H$D"H$
 *:88])SGhZ{,G/Y0`S
iH\Rc5'[AIhk]+rB)[2pBq05O[bYK_|[s!wHZ,@;yp[t7^C\9>\sim mY]]
Kv,r| v\mr7
=f^><.GJLU
 '908v7ynSv&/^?^6P^/b-p&vl,IK1}W %xs/:%i:_
KwkG7Kprws;mfivp=s#p=.)`U%7|MD\JBPm %DC}P!fMCPnM/e#l:VR8w^Nie 2f^OH
\Gcw gE9q~\
 ;weYsr/xg%d|xgGHx;A
 QOsA^jBnHM
lm:9^p=VvXo pC=IXj=iZh)H$D"H$%1V"++o.]~G7D(#uVGVpHVjq){
jq?QoLb5-;r+r7;mL@1W@tq[MG
s!PR@m>s=myp:o*
n\sim u5Uf(.h[
r?o+-$<=
yj6_L'u7mU!;
Gs_AX;K6Ok 8\sim g!/q(7G|L[7wL&Mn;6KE5X\ApnpJ!L\sim){n\3}
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6[sEb\sim rac]!;>H/=(/q,9.?L/"?P)vEZ-<oa7Y/1Tw"8sy=>!{j||gE;}?PZCYB\sim,N{A\w#srB"-|
x}^W}~R>h.R9;?a'Q{t]J5C9)HvPA-fkzi:7I?<o<F^+Q.i:&D7y7C5'|6E?y=n`Hs)2<_h
D\8omb}>3GO"(MxQKA; najZ5kBjbIG0m~8N'.s=WDS
cO kN1;iaOytwW o+^qbmk!T !6JLzp[')>_!ibCmTf?~>
?!w0T`!GiM\vy'}#{Iv-\{W1K+|e^>1emM?WxIIeOTVbQ5\\TR\ r[Q>y7WqIENDB`]}
PNG
IHDRnsBITO pHYs+ IDATxw|gv_zH#z/b ") (JU]QRDQzRCN*I ^#\. ~30;K(B!0uB!P!B
@!j0B!PCTNQ!B'BHKRQ B^s?Io6L& u=&D2,#c
J$ !B ^B)-)Z,rdBkJyyl<BbSaa;!1$
tbDAW&PU8T,%@Jy?T3BntEr9K)eYV&W@yj2\qRliJhY-fa
P 16Y-BZr6"BNjy+(*Qpc o4"E0 W(q%V*
t/@F}dUW6
m4jbq!8$K\&yHsffrDc\{\%wo<Jy"V6C*]B)\\ \land = xeu9E(R0!eennzH\$\_!\_S[`!pJ;sW\%[LQo3eSjI57stCq]!t(?rp\{left)]
(BnJp0!w\%8\sim*RqaS9)?[\cv:[u]oOt1'S&<h*6sDCq]!td,K]GQ 3w
hHK.eY+BqXC\sim=k'6x6\}z]|o/
k#%36>A~sjI 1;W%uedmMR4DvVrsBadK;o2M=q3j[j]|s/!e:tkCInuUd?BZ.RZ}OaUCk.n&Zl~tJ
Bw]C>E4q
Bn{x;XFa)s}l;J'O>C@`*Y3V0X ?S>0CXf2J*zi`4X)zz @0M:vS(haAp4kgmH#O?lgRM?'je.H;XU%+\#Lj-
g^j90]L0A".!"IpjOAF R0xKWsnf$dRLR)Yi%#1sgVX-Y`6$s"q|}qMRC|P?
KFXx_wWVS|pam&dQ\;{>5C,f}5uu[f3J\-GAKcud]
T#G KU;s$mI+r `5g-dPLuM=P2dRmJ
BH$g`lbDcy
Lt63;nbDyl[HED2+<5{(Pm0T>8x'+0+0_HFx,5*cj|)^[Z}!tQzD@K,svflr6_thd^^}7Rb=O>0`Mm7wnY-I,QIH#
qo3idEM
B#*|J5(X\%#rbx]\}v-|)UZFE9bz+b@\%%SR\PZZGLVMj0>y&xMiw
C@~
oK!.[Z*EEbA8j 6kcg^,4-RJAJ=m|mH>5J9*|fO#G!"7(F4{B\3qG})dh<H?7
D5aX>?,2Llm&$D-=tQx>g1mPlPmP|nO^\SH-
Dy\&([`L\X\%WSZG6\$i^{x}ims:)/<ug~mJ\I679(oM<i:Dh.n\&H)fCzC\$!+y!\e C`qyqYaJqa
%\heJ+938F!#Ha,]5*4c}&ze,Fnkj (n:#.w@G_owW{!~X lt{L92rtl]q~S>m+%D0y<WvZqF@G]L0dB9v
qn!AP\#=7M|Y\&J\$@xua<<\}m1pVKIq~0J+>128]@ty%%!MIO`WU+\32BL 4X|
C*1e3,i8oUcv>kw/XF&kN>[1Qz4v7H
thQTnf]:xTceGY.<W6(\,pkx\oDK!TET
&bT2vdYW^[h?t Ol34DV00eZ}[2b<duGAa!re<~}4LH{ Jh=XGV
9Ch t
VrW/;ke_v
RT,H0na(~Z!Zw>\&`$V}9 H\%S+qs/!\};z
, HhF*\%K"H?B!W@b?m7KGuVqs(5B4Z/a(8QR{"<Y"KTN"BJiB))
3)<]/}aEE9@yB{@h/B!tq af=]4jIp#CR
COd\#r\{>0Qz
```

```
){cmI-!8h|Z%,i^fJYB @ 8SSz(-RJKdCPX,fB[skNrrCGb!?rZ&DC5 % n"G"0 /K)(Rm%>2 <!ZKt|Ofh(Cn%0%#N{B(
@ds| (J,#xVb6N6~1@%@ y`)Rq[lD-/JH5/erh^^&O#B+>O0=dBCNr':B!08sjB+e<%V/dpOiIw_F-^hH2j+`FfFB!
o=/O&r|_z:kaXnC|@G:z3\ DMV:+)Pdx32*iUTy_B!Jr)oo=2Jy{|U*d(!pBX)xoh6zJ.-g@US\#B.}
-]s.=]@FJ|DevdY[{2c"dA
&zj10BZ'N3sMVv{>-ZKy/BJQ
\KuLnQ%jXcDK'o0P7p~<5JCi8#KP!BBh
Kj/Rj2l\#. R6;J!-:\!{9\b 9TI}>\!(!<\_RR`QdX\#B=XInjep]rGP
q|Vn"Nff]b6L[1sr[.5K'Fe
7P"Fzi4^zi4^,+cYVg57@IKK}qO=v 5xh,{)k vS\g#D<`7}5%@lwB&ZDf
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CDe} onxFFyO
fff,['u:x/i4Zaa]&LcyW._)m4i
,^8no#""}hag8[G-|vWeKtmNZPvl1;f`P^zWoZ-cF}OX}zzZPP1i7GDF;M4RqzdT7zYI
LeWX18<.^8I-F?'6G\{eq7.Q9;\}\% = 8<^++V2V+RxH\{8|zBQQnII-II-IAaavzT2/.pX],WX/
<Ng0'z\sim4]i
3<
CBBqcR3fRz#>{2`Q9}J(doRTTdXn\W_|5w&MJLO|<CX5uKvn7
zn, 9=99I+]7fN@bX]9gI=w(\_0n+FCRRSdbk)o6]K+-\%"+MivqdER; [\&8z>\%9yJ+=vg:*q\$VmoLv]9X]J?
t=)TZ\%C/s H-W
{
78kfFR99P^nzNv9Sq?3O~'99ry;SUo~?Y| }!r NWq>p\TT4 YBgM;q1O:?1rq[Iq3g]zbiMs+9t$\
}HxQ1CuIeY`J8H(g't,]F? t\DEqi{s+&o2 3S FZ/&NS,B%OXD}V*,N,]_XfeqqqvQ\n[:w?vi+
...ik?eN]3///^ i\&iL[j#~IUJJ]`OOO?t:q3g]zbiMs+#?dkA\nmYIe{Umb}]
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&]Cnt;BVR
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?.`;TsnG! :W~Lkal{3C*#l|tH^MC;g=y/**:v;)+]8d2&&&,F8,CgM&S^^|f2rrw}0`%z-h49}jbf:uml6ysP*
@bUF
WG&G^7L&LyEZW.L?/^4AUs.up9k&!%'%hAcbcwlj2SRWX&^Q'vgR*q\I8;$jwv8Xv{ey'G5$=^*3+s+V^^m^jE
QQBnd=z>,?iXp-%gv.zzJi xE*n4q}y\JJL6}{A)Oi?,d2Mot[$X|Vy.t
,UNn
PJZJM>p[G.{I;<7[\setminus{Z]vT\sim Jj}]sZTy5B{K`c'mXf}}
;jK:12m1<\%'a $">G0P\Rq@i
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sy>B!m?'Z/h)JWJ 0
Ve2c!,$YB5L?$Df7;sCeOB!"ki+m oxY=~? B!{9R02CCevnRPQyB!s'bF&d`0!R72# IO L)g4Y%@*KY(!Z'8dUpafB!
byR^F)f21)Tx<_Hq
Xf+-pT\%P
VW\z4B!w< V+gh!rm:0e1eL
```

```
|=B!7s L`2u9Fx<22VPU*WBZ9vl@5+q!jTdA13C!PQOrB!jA!PC9B!"B!aB!BRXX(,m$8B!j['0B!PIO9| B0\q
B$3>9B!jLIq*B!T3E1B!P
PaB
x-!BR.8B!WC*?d2fs8>B{!adJZP}Y,;B!PS*j0I B!U&>uB!bx`B!x_B!
i!B!!B
@!j0B!PC9B!"B!aBs B5D!B!!B
@!j0B!PC9B!"Y]B8
+U7d\#):{'j:%:^D||aavB5hwZ7)>>B-`13g;rj<<!P[u
Rzs BI]\8B!*Ls B5D!B!X,#F
n^B7E5XS5_lh!+F5kam[:\u'??p==c\#>!x0pS^@ZSt[]6cRR?7x:
!Dkh
3&TUDS]Gtwr_~ 888++(kI;w{2w-7w=(8NB!2?o:Y\u8Y}xw[FPB!@An"3nM4CChI3Flhsb0V(-
T55R09f~G"(";qTIL8w"}RM&S@@@xZ.os~k<G*17_9}z]6k6|f[tj+
^:im!< -6?EEE5wj6NB5%LLh(bU'MhB\ m-zO?:@Wk/E+|%V:\u~2S1S&3m^;T+9P6
l, \sim l_1/m_2 LV, l_2/m_3 LV, l_3/m_3 W. 5MB8VI + 1M&M + ./|qyB2k0NBa^h\} = 1J5KgY + 2J5KgY +
C%f:jbbHb$Q<r6!=ArVL9%4}8 6cF PB|-[
<<|...-nmmM6|^{w<u0X,}V<0~\#_6\}M&kVWddRood:aGY\;W:D!TK2L<xmec;Wsj&JtfPN:o\Wr$H2:1/k\_cy@
d\{Ob5Lq9+/<;xPPPqce2q.,3:000((h@)=AO>p^{\land}
"::z)))0t?~_Iqbq?X,U&e+
aARWX9zTjuN+'BZf1!$+ftfgPeeCr%{LGokz%R$LF
vL7q/skC-[m'M|]-
.]*WC=i@yyg1s];w2U-
fYX`$'mw%Kr;NBdV3[XhDxeR@^.y<.L{rBJ$:]D]04DO(Rc(II)Pr|a6E4M?dembo1}:>"@T'>!I <[(
*qVSQY>~~R =`n"Wc*Zn|kKHE)(^2C8"7M|v[F|1 j%TU7@eq8J:}ouIVfyC!2iFQ\U*6Gq")OJ
e??I0
g <}>,Os`yHu{*@v!0pl1My@idCBCB`w5U;@>>>PTTWaoNv6^V,)0m]+miBTPX
0((H2;;|u-!\SzIhG
w=mMA\']]$=%#C`I[u,W3rWhzxA%J8UcJys!or=3NST }
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nr-So+I < z?KL \%?Z[Br X'6mx3+xtVZb7n3r+/MZ0o^5.+((Zr#V:W)x)]
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e>B!t'5U
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Wb5B~t5B!jGaE&{YO,xe))A0B!PsB!aBs B5D!B!!B
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R{O>l-wO=OVTb$\&\&5yefd^p?xwutUyvAZ=}
CVj1u;^@'z_(
\w''N{G=q.\sim kS}\c)/si|mhh{NN}S/K7o\_szs.FV|Ji&MMx!22re!}x8t]333
p^^ne/__2ndNpaJ7laz^E /N(jNk\difffxxS&GFF:k@aaY8#X$HVkoWo\\l4:z#""Mxo9)=-
```

```
m\&oF]G)#>uk)""#&LXvq3/,_KJrYS\\~yxxivsc'??-19)w=z,W'}\"Z|>gC^
 a,rV}IJGUZ_qW4fimTJ87;oVme[\YJouC
 Q#wp|L,LKNxj=x:8B =K$v'j4[.[dip^{[<?xsnXo<uJ-m[6l>w,[O?q(gN>?t?3GLL7n8mXY:k~AC?r$)WaDEGI="[+
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 ~i7giIIYoZv)[lD3^{d4_3&6*]4I+qom{w^gF9Y.Zr5onX{7+#:G.R%%%7iLRswVQJ
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 -}o1F\+UkCEJu}>7vllf\+}]Q{voR<==~fUYW{gNRs iIvYf4cfsY7}
 tgC|wQF\%e+ y1\$'mNmV4iTX4)J]4i",xxxzaY]/556cF[g\sim mK\$*qJaHi?gF^AB9 "rkA\nT9a= \{\bZ+nMq9Y6Z\{nMq9Y6Z\}\} \}
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 AelDFum+JUjUUT*V'}dXuRW"qv>IDJ\lRuOFQgGDDF9|g]FzmaaJuX3gG^jL&zY_TKP?#,QIUZYWk4_b#=Pig
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V/]v9EtJz ,,cF{YEse gwUW^5 V|o qNYr3L;bl,}HoZ?E]plo Ov6/// R:v{zz5sb
 YO:e/^JTt3o|}c tkXmxg+S|9w.g.YC#GZdI*mv&N.t(wPXXfMUtj7[7N/>c}I$$tjg 0$B!iRR&8qgSJfB:wZvmB0k
 VR*WX!\#kW\$GEG4\{877Tq\_zqmlXzy+ZJc-[\$Z1w\%ivq+Wp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}!!sz[JJ8s:u\norm{1}{1}J8s:u\norm{1}{1}Vpqk\_vZU+Wfx\_\{Y?n\}rvq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\norm{1}{1}}vq+Vp^{\n
9n'8vtowT*=U?
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5r(DPG!P91u7TgwT\<!\{y>B!P9
z>B!@!j0B!PC9B!"B!aBs B5D!B!j9+ytqZ[B4`g}VBsOVff!#
>e#G/-&^re#Gy#FW^'L
#|<1/]zscFzSSS]nM7~'tJ"#
br.<(ki/_K3P)\<r7n{6a[B^7kgee-7_&wL&3M{|}} un< me, @L5a~@`6N1#(8h+.xDG/Nh4999n]diuhqxm*v']7y-1} for example 1 and 1 and 2 and 2 and 2 and 3 an
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Q()9\sim W'=n7!uzZ1ii11JKM EW
1! > ]]sZoFTmU^f)m?i61!V`ZjTT+Uw9fVAA < cBIZ`h4GZm4j \\ )UVkV6R \\ |-6[,.5J^T]
 *EkXok0xw%r(8Fc:JrjLC<:wlG!z5jN!|jM)B0b+R`Hr_{{{}}T?.,<l{yy}
 8Y"r(FO?:L \le CJ9z?o\#=yq/w=lBNkaM), -z+f\#+YgX`V < 11KTh93hV+DU^QMcb\pUhh\}00B!JxU+V&&;kZ-fW+VgX`V < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgX`V < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgX`V < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgX`V < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgX`V < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgX`V < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgX`V < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgXVV < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgXVV < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgXVV < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+VgXVV < 11KTh93hV+DU^QMcb\pUhh]00B!JxU+V&&;kZ-fW+V&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhh]00B!JxU+V&&&;kZ-fW+VQWcb\pUhhl00B!JXU+V&&&;kZ-fW+VQWcb\pUhhl00B!JXU+V&&&;kZ-fW+VQWcb\pUhhl00B!JXU+V&&&;kZ-fW+VQWcb\pUhhl00B!JXU+V&&&;kZ-fW+VQWcb\pUhhl00B!JXU+V&&&;kZ-fW+VQWcb\pUhhl00B!JXU+V&&&
 1@XA@QY\{K+`7VP"z\{R"
EEATIc87\$yLdy3y\$>x7e"\\ +++[[[[WYXX",,,KKKyv](:kbr>/N=\_V;Nm[TD0\{IIIMMJH0899\}i]]]]
 K5q]SG%wWSc:rSSS7byv<XL\]Dy#GcjBB9"dy|R"EZ8hmQ4w"a>UO~544YJ XYY- J$3~"
|23._IG_P{aCq0+#}El_"{aP"p/J
i (#2i (ze^wzDJ_>) > paP:7UVT-
Hxx&CpaF
 aXHpp!6m)=Q\#\$o2?iz.w-QSShG3wyGwbF!"2byRB;wz:a@=*j=\}y/B-
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0@.Xq^DED>{laP`%9BJNL*}[ d/NHVgG)Frrb|B}} AW\H;v211. Zk---YCK}(7$GMnQzyKLYK;w.%)Y
X7228^]fMTd'ZZZ3<f~LI2>yH*%u:/2v>tF>O)#um`3S3EAAtf
SO.Pty@bz!_`0GySo@QUU<Q\PnaMGvfVMMI.nzZ=axII,&kEysNxVUh=SDERRbQ|\BMMMII7n666jjj=K__x]z
UltfOM[DGFc?9QbH('^#%9`%Y;n7)6}5P<S3S[y2`.N^~ZRbR lod2157'wM:]]]nq4%KE
.{2xYYuuL&O?144d2fff%e!CC@ HMI~>F}b"B79B(|qWWW{h L&S.^JKI
1k|;wBHKKjAWVa#("$YGNSfW9u:tC7mB9hmm`nn^UUg1eeRV%K
eeGEDy!~8aSY5
>/5';+FFFKd4O=\LvE=B #szB>5c.n55xk+Y/{Zq#X,V}Ww#b~~JRkmlm:kD+be0ookr/^o]??|W=<math>\vir/BL\&S$~
V(1!Q[[!k29Q<W<^
Eoq84/Bh7PH|2;+k;B}cr97ol6g{iP tlhhNAnN\?z'U}
N:=09O?7x;EEKK2P"[a^cnnRtyWW.`0fxx~CndF?;wA9qc't+[ |ut
IQn2kll < /7fLf3w \\ L?Ct:I\{[<Q0a633?L@F'i!CtN2IQWWcfkieOYs9\}@sS3Z1>\}dc\}
B(7'oal^B'ab'MqfBwqsa0LL@41005U'::zHD{&~`>})S_se?d[\\""7oTVZJ'|>[iE.svvv![[[]]]]:c/~|2
[U < LnwG + ewBt"8p) \ BF + AV\% \ \% 1 \% YYQ \ pB8iM@Ecs]
+2IaA\%C=F?tv'H()20xHgrQa3z=\GGG^2\%o6Xw\}]Qy-
xhmc]1y[S33B:%\QD%Zmhhe6>Q:$5%%7' .J'q9E$/7qm?m]ry=AV=&2<<=5%3]D"sk&n@yY(p8" 1{immmw!fa
Sty:PK:J:fR?d2{2`PL(E<h/hKI
R?L=F?tv'TVHL@2SEfMtfP(A`7xp)vP"*uuuyF)
%*\iT***IIKM]JO/Oo'$= b\sim B\<7\sim s445GQ:9
syFjJM)/miiGOk;!JQR[TSSDV-/^O:xWO3b;gddmddLSm(:kiZZZ%7Z:X,y&Osrr
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ZXZ;G|o6},:$h066&0x!_YXv@bjj*7`:rCO>Q8jM$v.wM%}9]V9a!iGFF4mk"#"N|A{xX6\>ge['?:::7uJ`G
o>s\QB3^B2Y\WCPVaaSSg.~BVaz==o\%\&EED\{mV\#~=\%1>(;+x'q1c.
yvv,,,B<.@519aX}]SNjh91!"'yyy_xlmmx\wKGfhMMJH0rw_EE%-5"|3y2E&eEu ~4'B3-;(:5$oXuxxF
Bg.nqq%%%/;L&:2m9pQ7MKonjD7_!_~>,DNKKX,njj:qCiF&=st\-
.b.uTi)ml^M<1lUUUiS3f?}Z8hmQ}}"#">!qgX?M5F656`;xv<XL\]Dyd0<IDAT#GcjBB9"dy|R"EtuzRQAbmcly2
EH&Bo ;+?;Dq(h<=&aa
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nKK|cB|#gCSyyy~6ow@gfef\7(I&d7!+5Zzw^1^xbgkiiiooCN"utt*,t6Gh(I&d7CYJ11!qyVu
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b{"wKXLnnmb.0L6J@e5} (_IENDB`
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IHDR}>sBITO pHYs+ IDATxwxL&J@I/
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aG &/,-x9-8-SR#& \2hY = Qc6yqhX5w\deFHn:+Dk@0~@SRtO4tg]fVs=*$K&Fpc
s]4(7#NF!yOWs3|E3gCQ_LUmC`4ri-w2YA&3UBW~))h->,{uqu<Yq}^qG
e,3AyRQI-8d`NFqTt[)O0UeuGNn^?^Z*
+]QMti|R \sim 2^F{: "}-W07I.
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F^,X' DzkoRt.:u=^'UhFjowvNZZY
x~LmV9Q|OeLf
wvf;;-C6VH"UwDa@0k`iLZ\(sY8hg-x!|?Q*X!
~f
/gKjwm_{agA}{\#MZa5q[YQ*}YD\}MX1J{<nertPW}{8e^A}
u~jBeFqoZ8(LXeN8NJ%h2!<'Q$IHXxrr{E1VJ0Nbt(gG]
bRW; 0!\*LA0[{\$=Pgu!<>}
(k[:0pYo
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c"4vq0NrM1w&o'?Z8cOt|_?82IPKQ0{V.v+WFp[800 j`3
$88%Kjdw6nOWl\&kX]&Ks@Bo@:hwuY@/<YBKA_g8aV```0RoV"nhRUQZiL&L j>
f' Z3GRL31rXgMO[8@Z%,L1_]'Qx;Y~StXrQ+#{4~6"iY,{?E7$J]}{G@
L'=0j\$zuv\_0+RPh\ ]j\sim xz5\#\%'WDp\_n=6Y-\$H1yTG6|?*G`P0CCX(p)MgRXXQ*UToued\}\{En\%L\ !JC\backslash P0CCX(p)MgRXXQ*UToued\}\{En\%L\ !JC\backslash P0CCX(p)MgRXQ*UToued\}\{En\%L\ !JC\backslash P0CCX(p)MgRXQ*UToued\}\{En\%L\ !JC\backslash P0CCX(p)MgRXQ*UToued\}\{En\%L
~9rNQdKfIz%S:i@~}@(2iS<s)Jx`MtR4n;PbF9n?a43y{yFO<
vvC]Q]E s3OLU-Ocfcgbv(tWK5lrn0NGQ{Bjs]}h^c5./8fD:}S5#>!l5J$s0856\GZRwO~VbC`._
1C;>t;{%vNvjKu`v[3
Y&{
3EAfv2rm^_z28Dg4TJu]4"[3^/1q$Ls!C!!i
=Ox"c^L_?}H2aVJWurlf&n:+#Gq/
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}VMYBk0=tG5Ipryft0}_7oZXW!NqVIf.b9 L R`
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A\Rc8oJU>9~4#x.84+qKwY?7'FKJu
 ?`-WR~2Dgm7pZs-.GUnyx(;'IeDv *?I*E
\ Een:R7DGu
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enz{H4
3 Z!y8?kj{sFu(DE
>n}.bjGp0E?
NeQgU[\?UJbV& G]2eg{ny&M~GbXeu\T/mipj%f!Fn`yoSD
$|x!PpozSD,>oct
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;D~f@G e/
?2
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::X\setminus[.r*u\_FG\setminus kVyK\mid MTZ\%R+\#88nO8H)jzWbua]\mid KMY9E\mid GsQk
\simi\sim[N<jc(2PVDE-S*u0|(y\setminusm?s2Cxm?S\simUD,/e?iaXU{Q)N8:$=C
<K]?ZvHw2}YZUKT3*gs1uy^e|MA2GN&c~VpZFVbbcnWsY5Pm2ZqSRCuu71J)*gs$OMP/8$ZwRG9g(u)03o1c
yel(/Xgg['l&XsDkjURSx\
odVN@=F#e.e8nOhf
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\%Eqi].08f4ADKonzb`VZ!HSB[*nyK-ll,!o5.C@b]Y[&Yb#GJtCBFJn,1D`HS)L
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*7sS+e3CR,>.tSXU&2a ]j9MG<?T+>@DY-CN92IMvFVN`ulS"9T Z&Nzs"SN+5*b^<TMX H0O=l3#f6 &E
uRV < \#z6WX + e < 9(kXZ\&L^d)
jO tS%/e=j%:3N8r.D4rLadDPSiB$ =KCU/fj9R`4GAf&W"K@x?#hZR".qxRNGp$GI8ih=V9L@R9Phz"d
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=7'(DQ"D DHw7`
 iD!wb$#
Bb)R1-m'''Ms3\_T''qHK|''@@7\sim''--uoV^/=sZ)?T706u'''yxVvusl\&Euspt|\%k|\}*T*|99)jF+0oiY`H\&|L'e(?c)+2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2(-1)^2
-5aSIij{`A'A01`A1~V#QvxqG9{;f`)#3#I7kc0";O<?u8MB>_SSSNN?%_mJlsAC7;}Vlhm7]2##Z3fk;-
=u6}CXycIII>>}EV[6oHH-Z=V"^vuGgoY[oUS==fy+
jweggW\eYp,ffd({;~1333 00JQSS
QG@FFs>\#gN5\_Cu\{Xpu<7lyE"\backslash !qLH*7~*UT>=nbpE:=
E?b0uz5u=h4?G>^2j* pWWbim>!>N(6hxo_{2,xO:R*?|h60!-})
ZzIlse \\ il[l>..nUTUV5v < g(*7Q')i?qm99fGAkuji\\ \\ \\ tVg``6gkyMFV$'=jk4iVOMs\\ \\ \\ kvOM|a2zkUhrs4*^{A}VQ'' \\ \\ tVg``6gkyMFV$'=jk4iVOMs\\ \\ tVg``6gkyM
m&[!,cGTJI0_/e m9q :.3#kD#,f_~c}3fY6];=8.eXhsgYs['=rA232XzrNn1ys22xck;2"1fwam^}
Zr9fy8aV1b+^{b})2FqQ|1x|o,\{1yn]::1v|4?zqFyF\#t`ooXzORSSfwGtHO;A_j5?k4B[j0RmK]\#0II\sim>q|Nm\sim Gt\}1tBmrs1
3jxff05"\X {e60
IDATfLi"]; dYuk13jx]^-r9, eRRcyiS\&b[Zf4":bm_ZV.gYd25]U()G*U)DeOUqvwFw0paU*^U\yU\&lL-ruller (Line) for the control of the cont
5(_i3WLm/_"89)B|M Tz~"P'
 mOQTj?{.._bm(n8_2M:zXn^^MHJLk;nMtO/.]dZO9G(>uWW~PQISGG@ YVJr2 @
E"(s+/@Cm[>EQukU2ery.QB8u$CD5B5CHc],}||A>K.VVAFE"DVTY.YnnB
 g3EQAAiE4X4ldcO86p\O#pswp>8y\#F)\E
mG6j(4nK6;y<Mvust
ta_Fkyl_Z(Z((
 b.f`wam:.B,/Q6~>P@YY8.;`ums_4e:Px))/ba6BaO?(*_,wKg@xs^4mD"bl6tk7&Y5F.,V"dB>>tiiCSf`%],MFHINq
ZbrsFc`rJ?Tr+X2T>,kjqnExyyB(c0Q8[zZjK(jWB4
m_r"Yfm^uL&W[p1gNN"RSSoKvyl\ZP7+MF# 5Vs>UXS1Lic1.
 ,pRX+cCik_E5ko{wLf\NTAdX\oykgNMf:
```

```
\{5y=-faO+dmvE\}
OAE|+BHNB{X,>)}V dd9EM2}11/^8se?):,`QUVKn-[s%G|5jLkVE.sQ.6Su^r /?=oOhAQEA,q
(JD"c9+]fED"M.w-rrr;J$BkNy`_*UQoG^pZY,0%i`0a[jnivj-
___?u|||,MGqNN/qiR7>%OB|B_bF7rqqqY&%&Z~l\)?33`YVRUjo,?|/==Fiyy
".o
eЕ
|~p>HH7KbB\M,i4knnDo{iAEi(Z*I@,q;r7B1MKQ!
e3.rA&, b
vn~e2yz!|cQGRR
];7`,\0wQJ|3rM}Zt|9+W,]x~^^.qO<6VZX,$)rrrvT*^vP$jMNv1"JJ)cV9|[@h{ek^xCG[eFvy1EcF7bJT*?B~+=-
d2^9Y=r(\%\%h4)
|Q^1qP$7_6c1V2pB}XXr+u^{\y}rq>s/*K~a2If_=?h@gg~u,_x~-+W,me
_{b2||}XR[7oXmk;IiSQc--]r;;eL~ym[YO@@7nt9u9zke>SjB=l~<7w={uF}
A{O1Zc7_1zb?ZgeO}\%&+?{|z|}
:qG>,N]2NV\setminus\{
aO>O<`0};w~@@h8y
RM1rE=";MfKYN]<iSt^D-Ff
FJ''k,%:K?7Oh|kN=`DHaxh2'7<Vd,X=\GHTxV92
6L]:/c4@|TECRan39&>G)m=7cBA/Z,GYL[Y:WJ"DQB!EFWNA|`;.pq'}=kA
ECpe4-?zf8M^0BeY/JA&cBP; (
;c"&?Osagb?2? |q#cx ec\AA!01
zX,sRnSejsdrwHR<?BHUMZAQFvU|-!\%=BRf=EQRKAQeyD\backslash d_{\{PDi'ln\}OAQFaTz\}}
KNA8ev[\eAj2YcYYAAoTT(WU9(E6v
fX$ (&"~czy.AA[RP(Z-Ej6`Y(PPU"c0"!],c (_&0bLH$hLA 0:h,16`&P%HDb= 'xp } @< wAA
AADYx "AAeE AA' (+OAQV$ H<AADYx "AAeE AA' (+OAQV2|c;,{G zAA e:h8VQX,:8tYZ\
=w_cR\\F#'{#0BA*u`RD(TjJ(_AA`_N15M>+ 0c$F!%id2`AAX!c}}|M<<=NRcY.:Cv<r&CW fh2!P
H0M)@d2\#p!VrEI|OKAr-w?\%@\%vXPL|\sim x7f\&, *M\qn|L4[-=rU\%_VqT_:ADSp4qwg@modeledge]
rJ!qH$Iwpe2[(iyX(|[u 4w,% JH-
`l02sr~WVQjVk<NPW$tWSv)WE\8'ySoeJ]eO*VR;'zHbP&JfGHag<]8N"c()LuBQ0fF,56XJ%hj
0H3ndI\U'Znce>S[{Io-@j3}i.^xc s:u-PC!gon{gvoq
;n]PK41vcK{oQc4aRTwP;x<;3;~gfR'h9Y`3,C*6q+T\I0=T~6oR-Jux>Q+Is E1aA0fXH$y0^^<l]*;;[`6*UZ$e&Nv}
='Yz%k9jPY!U[rF]|XSt,0.|y#LkI#t}4Cn}1TukmlVMmla+nf9YF$ @ /s1] 2dU(j
"YNFe7OUv4@P 9GMRuW}z#Qiv]lf}@{~'v2p8tFf0RO;$SIj^`
zIXT}ez;u\
n2[U0r @)
hKKfGo'@_9'x;PLjhdU(5E1^<WaXYhLE{Qw5rp|UC`1Zfy[H@J#EYmhLP?ocp?GRC@mG1$LE]l5')W{2@
G#tK =3>j<nQ(() wyu(`Ivf_Ix9]V6wp3GWW2. :6)s[s3p 6G 0]pEg%N3r*3g'LIrpX![hb&
SfW4v1r-H
y>3#`0Tt0<6QA6J1`k4 e2ZU!\UT3
|-GNjRLyx2Vmjk^M:S<"SQ<QLSI2qp!E'83VDd5pIE zNm'j,
WnzrXK#qop`t*%ERI&0pa;A %KmM{?!!FH0/(sY*=(-;hz^\;>*EB=U}z1oE{*PNh}}C$`,V
_@|21_Eah"m*|%_)^(SDAWSQ[tCjZ{ (?1n
leM5c'aw,>GLJX$&V
Qn\&-K@(A*9]=LM2J\}8PZO[/nT*x(vpP?fTx93\ l4s0=\sim m\&8i5TgwfK3rYm`^Oh'6>So]0^G;L7pX<p.i\%GO.]\{p?, p.i\%GO.\}
&nc#u,2qZ^@@ =#][N ?`03EQ*k9
-+0^R2k11Zn-!itMIKo
```

```
51^$o[#@ .+SDh)@ cW1[9za2byvFF) f9@cL0~Thj*D+}?R@ [}pG]b98Ex*f9e'
#aYcd*(,5:rD$SZ`d%3J{Yp"IGKy{/sV @(s(eEL>B@,2ds;zR`@HQGR1esd<H*iZf*K9YD!,Y6! j"
skJ-OGT1e8z!0fU_UBa)L14zBXrWw)59e!\@ 60a2a_c4@9-'0p#8c$_@
 @(d4@S@@ "< B'OcP
,( J
_8&h$|*B En8H)my' qjj<NP
g*BtZ~aAH&H17gZ[(imG,)LQHxa3"a]2& @ G
J!B;Bf8scl*!\%ozia\{J^6"<\!C8.}\{-}\{Nenv=-7BUNNK2}\{NaKX3eWp)\{>}xEi
E < Lg; N = VVT_8; s = (0g(C||; oy u.Y^t[7/^; f_WJi]: c.r IDATOKOj[NOx51x~n*=z21E(PxOO8BZxJzR-+oE)]
6mzK
~ozGZzRv|Jnxz}{cbb(7("}7PxjVb,Jkts/v3%$jEWrAAUYoNyn{uV+S`#_)~xm9|ac@x {Li4Be
S'T0x4BFG9?/8dX<y
6mX0sg~bek4;Z&UG
,V^{~
=tdeT,#FiL6aaQD"}lM>sznoQQhnIS
iS'=/sgO
+/MHRs@Y|p5,8n/j^{^C}chc0zv:m-t9j}Y-]4x6?=A?p[O>V=~1]:fZ M,<6B>I
W\setminus |"|T*?=\sim s)>0
\label{limits} $$ x9::v]/GiEt?{IdhO~f]wjRVx9ZyjgRmMSh-m}8zyeV'OkM5wwxv$\&&8(]1!1.?p~iW>kYxYWP|`kz4A?
BQ90cPLYn,<2?v$0]7w3O
u\s\sim[ZzeVp\{?\D;]rwW[0"\#G]h)3hZ\}\d?03O.YbiiL8\6fNckm\{;@D5oZnM2xc>Tv\$4EQs/ZhYfFm\_G[\#zA\simu6ouc]hghangering and the control of th
\sim/S7h#mi\)`RSR@D*dU\\\l=i-kZfWRlmfXJ7g
8n4l|Pog9W < zk7 = \sim jqKWT.0se + Z,7Zugv\% \#'rCpS\_`nZj* \land tqk, \land |q|
S8|3q
uM=u3Z-, [0d2h.]L1rZ.t{S7 *+ZB/Z$ummzkW&oc}
V^fuu5KZJLLX8 = p\#[plcG.gvB{2@402r21q}!DJ1F!]sB2.LK]M5h@p{wR;t}
.]=jiyqvd}|RL&5mmcJr
h)0jZ6kno/5v\cc_{<}u"Hd2YU\*oH(g)|SS'Y@iIlb6']\\-o\$yzzs
> /IS.^P8]b91>zt!^"g+^,IISOOhl4h$G0bRuaefd2a.A82bF@Qt;T*9wXLfs,7m4?a^y:vsOU(MBG=u"}N
6:|\&x.jSg\}k,S'4>qvq|oJ''7w\sim n](
m[VJ*Us>b.I3?jys,w jT"wp..U|Yti33gN
qP8ls;tLQT*U?} ;t\ra"(| xwtW2O5}wcX-#@;XNu<a~D9FFmMd5DP:(Vvppn~azO-eYi;!!>cW7kIuvqW+]rV:DLfz
CWX,f vjk}EF6XLJJXbvvvvv6xxz FzM##9xL&SOYFb!BbRbpVbQv\#& "##F-
H\$B'.^<?'7mURi=fYEhOBs\{[7:DQ\&Ihrd2Y@`WHd_MK0?~?\&\%fee<'Ua]\mbox{$^1$ infZtbUtrZ1(our@"M8(<q$~$)$ 2 geffor $^2$ infZtbUtrZ1(our@"M8(<q$~$)$ 3 geffor $^2$ in
ja?5o;h"}[3!9>/*DIh\buvV?~_W0)sB52&'\BdUYYW\(w CZ*2E,08?dm6:u.~EZvk
7B,4i|eo[|)t < vjz7m) = 2ntd1o)uA
O\A\{0s^m'Bso2yJ\#us\{v\{NAvAYEhH=V,d\}\}\}
 {n(\D"1jL.H\$.tFJ\%Z)}
3r+/}U,Bw|ur=amb+kA;wl{,|8u[~o/-[&"Z.wr%&w wtT/{{;'b^D6 (G3C6/,GC526(2x[ciu zE-
 {NPy]7n^|syadx9ci>g)z^OIIcc_b}
5PL}bb-.'41
\.>###99'}4RSS
ur HbxOD={<...AV+Hy.7u>rZm;wJs:
/_n3//rwz5pfnA.a=J''''@VFsjo>}-_~9e1U.T}P6)Y-*8;NsT-
gGu5QQ}VpvqIId4oNBBl4qDO/Dsriy"3D.MFmltDiLE5vd>umQJ!1.A<<<-
c$g.A]h4>{`0>t099YQOADuCs{N622?g
```

```
5 > gO < zx_8/K/UFohp8..M*7\% [\sim MQ = \{zKY4 \sim = \{gWtts/]5|H \setminus 0.07 = 1\&5\% e = \ b^9 + FnKMJ = -p=3/_dk4*jJ-12..M* = -p=3/_dk4*jJ-12
ZpgOZ1"/J
(]JW%jo:xSC\,(M1f6YF&q=r,IAA' /*fQ,|1d<h|B:EQs,uC9bY*[8(?_|{3cEwusk_VOO9?/plgS#
0IS=rh6j2eW/_<?26F,<;u|>hgq!;WvrPWW>N:_ZZ?#A{}
ds-z^{Y}5h-2l>l\ 2aH6G+M< U[S47mo4;.>>A:lx[6?y"7\sim\_4<< l\#nII7gbT]
w ?*
mnmuvSLhQV]^3*iqfR-Z
gzw&mQclB[m7c_t_+5.ooMfXV88E"_BuYA+>
^t&&H*mM"c2v$: N74j\n/@aIICk~(AHwHjXt79`m'@t!8h"P XGW1XOLD^!-6"%ufFFvv[T+8
&]V.
Wy]AJ<sup>*</sup>4u9pE01_=vpon( m9*0M7{DBq*T0j!g]&m}CO7?*4FoP$%8V fVx1BHrV$4yEi>1g6zJqI4-%@
gJE,cFP1.Z<E
!c*r
J
<Uj@ )%RVrwwR]7M,kggR-`T1z(o(Hpc^@ eKQS4IQ"(-fDYqAc21XC. M {mS%wS<D)t;1C PO
:(-;5-%s:P^IB @x|]7^SGXeDiD"AR}6oZ?o`5s];QYFz>S0[L&S QeeMkJs3%B@ }r;;M]<$"R
0cNi6*a=m0J[.Tp2/X9RMD>K}C@ 3o=!Wz/vQUABNJe%\(&>Sr3 R~ycnTU(oP*?XIQt>tq.^8&
VQ89Sy + !|\% Q4] Hy0csR \ [O>V=\sim 1] v477 jv; N< i[-7\_p2\{k<<\}1 Mvl4q] N = (1-1) v477 jv; N< i[-7\_p2\{k<-\}1 Mvl4q] N = (1-1) v477 jv; N< i[-7\_p2[k] N = (1-1) v477
2L[6ozF8ZdiIdT3
w_w^V}\sim 2}8joK*Uo#4k5u6.]KxcpakZ//!F-drRU-[}t
NT*olCas5kxOMIqtTg<}[>5~?pI5JKM]feXcabUWXj2ar~6O ;cq=l:h<`(u<x<p"x<`'0N#(&95)jJ
xt:y"cwp#En
VoR:=r(;;]<y~~[d8.JY1~j.1<9z~js|7r`1LV0k=r8..Kv?8A>v-v`tOh+rztdn1njd]MNMxc jy_Fcz_IMMaYztW_(:6d
!cjhm#
2
w>y8+G`6co.S1':oj,:co\9+++})W/11:x<n7R39a78eRM&ztwqg:ro IDAT.zD5]0<?v-
u:ny'~Uyw999z~Y!1x@w8KR+S))ttrce F+wy=+W(CN4MGGG T:)t-
[ ] tsn = z6m### < z8 + < U'Qc96OuW(yqcVJ*Us>4s@D"j]Z*U~F oVn 
}g=16a4+FO"#bbT*dFWj2L&JCf&=@ w07bm
Ze3q]oEL&$|d ny:OO/w80El(\]CoPRbQ",|5;1nfZtR\\\7bh%3U]\]B*Wddde>9)n[FF7Xy0L2Y;eef+! I
N\tvv>iiw$_/^Q]*VU@UXbh4j37if[ 5nV}_8yXLsNgggWK%cf]$a|bi?nE%'9>@?7c,[
=w|dMw2.r=9m5yGEQL9`7]|iKUv
ZB
6N$+[6H$u|[N[-;rOB.fr-WikET^1"<[7]k7l6M}1MZw3KI7]"?7j0=<<{ANNNMBH,08?qm+k{wqm
5aBO C!Nxgq$'%u>^^qcG"#>y"z0DFQ6O//^,{JqZ7hS1H$kGEjjJURRP8q(HNN*HK4.VF222zW.@DDQ-
NN\$ILXo7u>rZm;wU*4yd\sim O/1-/_aFQQn^{>W>hy&-y.-5`TYY"EV'O]+/j4K
?DOgDx8qq/IT$lqj}>;ddd[R]xao+h4>{`0>t099YQ,R4!!>'GkPFMMtlfu5k7
P'B'<"% % & z>ym
->>fGLSC&$}{v{Tfi}KG
b{;fc\#JR"<\sim;o]v{-HsrY\#:v}
c\g.A/K/e^Q(-Zzgzg=)(zZVu_iW0YN)>qnzP8V\z=oU_233-Nx7z]16=~AJ\!;
 |x'=|+VkW/o^{S}[QQ|2wUb|>*Tp^{.}s@ \\ 00\sim qSbu \\ \{W/6B@Q^{9}dP?5j2u''-8\%9iS4jSv::|[]|>'aTsYs9/^xzy\sim -3bt \\ |x'=|+VkW/o^{S}[QQ|2wUb|>*Tp^{.}s@ \\ 00\sim qSbu \\ \{W/6B@Q^{9}dP?5j2u''-8\%9iS4jSv::|[]|>'aTsYs9/^xzy\sim -3bt \\ |x'=|+VkW/o^{S}[QQ|2wUb|>*Tp^{.}s@ \\ 00\sim qSbu \\ \{W/6B@Q^{9}dP?5j2u''-8\%9iS4jSv::|[]|>'aTsYs9/^xzy\sim -3bt \\ |x'=|+VkW/o^{S}[QQ|2wUb|>*Tp^{.}s@ \\ 00\sim qSbu \\ 00\sim qSbu
>|>c%a|y6lx3eWl9pOno_OXdsffQLjL&O/Unnm;jn!&m_|M>>/_$[15F3N23W,_h%|Q?[4]YUY\/Z_4jE`!WmCoy(a'
```

```
@ >?8fH54#N1AO6,bynF5WA \ a^942M&P3bAN@x_=1 yqb@!2)67<|}Ro!PPKNl3d"e1hA )z:n(5`U&'Om@
?P~;(fvjTG'QKsGdBmj;tUJwl O+93xO3"F'1GR |KO(*VQ`@ eHf| Udzc`gc,D"GU2yA;nRa
Ci17dV7w/O!ro,z;BPwGYuOUZ:M>|f=pk9m@ !1:%KI98^k+/x<,l].H#KA
hLund/zJTUN#ZDu(>y>!Sh}aw0NdU/+e$Rbp=Mtr3}{eWZ vTS9|e'rt/lR
@ a`r0P$Fyn'F(2iQK`@*.c"CZU90U]B))hvnt%)7$YIHiK2%tJC:v@HM9,z6YiA#y
]dg_k$V-(wn9qSU|v@ew\&"U=wW|9Rn^Qx4gZ>9eDF=!Q
R kh&F7PkMUN$0;@ o;cO9XI(FD'!{5j|W/ITUvp^,
E?4p#qJ1eU&MJU@ !90p-fzW?KV'1q>X^[0Jq"@HT_hl/jYQ6
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tK'
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cc: M = 9 UpG1yKek]Fk8kt6b\{[K5^*bD((TzWwc < Qwg < 3s3Xy3 - , K < 3F6^*W) * 56VX2|o|3J\{; w/[6 - \sim B - (Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty + (Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + Symulty + (Symulty + Symulty +
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wfznJ]z<igokA6li4]@}%{zI2##" +< <s)`?wv.gm=u/m4h0}4uFQisYwo{TXQ*^rsn)8
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cR)^*\<T\%41+85avM12N|wrG00frj\ 0!gUhD\%=MWEek\&+cr\ V/\$)BwY8@((0asJb\(-x@\);z7Tmq-U/<JS@\}c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@\}c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@]c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@]c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@]c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@]c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@]c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@]c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@]c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<JS@]c6<Oy-Weight (0asJb)(-x@\);z7Tmq-U/<Dy>Weight (0asJb)(-x@\);z7Tmq-U/<Dy>W
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Google Cloud Platform Terms of Service

Last modified: May 20, 2015

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If you are accessing the Google Cloud Platform Services as a customer of a Google Cloud Platform reseller, the terms below do not apply to you, and your agreement with your reseller governs your use of the Google Cloud Platform Services.

Google Cloud Platform License Agreement

This Google Cloud Platform License Agreement (the "Agreement") is made and entered into by and between Google and the entity agreeing to these terms ("Customer"). "Google" means either (i) Google Ireland Limited, with offices at Gordon House, Barrow Street, Dublin 4, Ireland, if Customer's billing address is in any country within Europe, the Middle East, or Africa ("EMEA"), (ii) Google Asia Pacific Pte. Ltd., with offices at 8 Marina View Asia Square 1 #30-01 Singapore 018960, if Customer's billing address is in any country within the Asia Pacific region ("APAC"), or (iii) Google Inc., with offices at 1600 Amphitheatre Parkway, Mountain View, California 94043, if Customer's billing address is in any country in the world other than those in EMEA and APAC.

This Agreement is effective as of the date Customer clicks to accept the Agreement (the "Effective Date"). If you are accepting on behalf of Customer, you represent and warrant that: (i) you have full legal authority to bind Customer to this Agreement; (ii) you have read and understand this Agreement; and (iii) you agree, on behalf of Customer, to this Agreement. If you do not have the legal authority to bind Customer, please do not click to accept. This Agreement governs Customer's access to and use of the Service. For an offline variant of this Agreement, you may contact Google for more information.

- 1. Provision of the Services.
- 1.1 Services Use. Subject to this Agreement, during the Term, Customer may: (a) use the Services, (b) integrate the Services into any Application that has material value independent of the Services and provide the Services, solely as integrated into that Application, to End Users, and (c) use any Software provided by Google as part of the Services. Customer may not sublicense or transfer these rights except as permitted under the Assignment section of the Agreement.
- 1.2 Console. Google will provide the Services to Customer. As part of receiving the Services, Customer will have access to the Admin Console, through which Customer may administer the Services.
- 1.3 Facilities and Data Transfer. All facilities used to store and process an Application and Customer Data will adhere to reasonable security standards no less protective than the security standards at facilities where Google processes and stores its own information of a similar type. Google has implemented at least industry standard systems and procedures to (i) ensure the security and confidentiality of an Application and Customer Data, (ii) protect against anticipated threats or hazards to the security or integrity of an Application and Customer Data, and (iii) protect against unauthorized access to or use of an Application and Customer Data. Except as set forth in the Service Specific Terms, Google may process and store an Application and Customer Data in the United States or

any other country in which Google or its agents maintain facilities. By using the Services, Customer consents to this processing and storage of an Application and Customer Data. Under this Agreement, Google is merely a data processor.

- 1.4 Accounts. Customer must have an Account and a Token (if applicable) to use the Services, and is responsible for the information it provides to create the Account, the security of the Token and its passwords for the Account, and for any use of its Account and the Token. If Customer becomes aware of any unauthorized use of its password, its Account or the Token, Customer will notify Google as promptly as possible. Google has no obligation to provide Customer multiple Tokens or Accounts.
- 1.5 Safe Harbor. Google is enrolled in the U.S. Department of Commerce Safe Harbor Program and will remain enrolled in this program or another replacement program (or will adopt a compliance solution which achieves compliance with the terms of Article 25 of Directive 95/46/EC) throughout the Term.
- 1.6 New Applications and Services. Google may: (i) make new applications, tools, features or functionality available from time to time through the Services and (ii) add new services to the "Services" definition from time to time (by adding them at the URL set forth under that definition), the use of which may be contingent upon Customers agreement to additional terms.

## 1.7 Modifications.

- a. To the Services. Google may make commercially reasonable Updates to the Services from time to time. If Google makes a material change to the Services, Google will inform Customer, provided that Customer has subscribed with Google to be informed about such change.
- b. To the Agreement. Google may make changes to this Agreement, including pricing (and any linked documents) from time to time. Unless otherwise noted by Google, material changes to the Agreement will become effective 30 days after they are posted, except if the changes apply to new functionality in which case they will be effective immediately. If Customer does not agree to the revised Agreement, please stop using the Services. Google will post any modification to this Agreement to the Terms URL.
- 1.8 Service Specific Terms and Data Processing and Security Terms. The Service Specific Terms and Data Processing and Security Terms are incorporated by this reference into the Agreement.

# 2. Payment Terms.

- 2.1 Free Quota. Certain Services are provided to Customer without charge up to the Fee Threshold, as applicable.
- 2.2 Online Billing. Google will issue an electronic bill to Customer for all charges accrued above the Fee Threshold based on (i) Customers use of the Services during the previous month (including, if any, the relevant Fee for TSS set forth in the Fees definition below); (ii) any Reserved Units selected; (iii) any Committed Purchases selected; and/or (iv) any Package Purchases selected. For use above the Fee Threshold, Customer will be responsible for all Fees up to the amount set in the Account and will pay all Fees in the currency set forth in the invoice. Customer will pay all Fees in accordance with the payment terms applicable to the Fees. Google's measurement of Customers use of the Services is final. Google has no obligation to provide multiple bills.
  - 2.3 Taxes. Customer is responsible for any Taxes, and Customer will pay Google for the Services without any

reduction for Taxes. If Google is obligated to collect or pay Taxes, the Taxes will be invoiced to Customer, unless Customer provides Google with a timely and valid tax exemption certificate authorized by the appropriate taxing authority. In some states the sales tax is due on the total purchase price at the time of sale and must be invoiced and collected at the time of the sale. If Customer is required by law to withhold any Taxes from its payments to Google, Customer must provide Google with an official tax receipt or other appropriate documentation to support such withholding.

- 2.4 Invoice Disputes & Refunds. To the fullest extent permitted by law, Customer waives all claims relating to Fees unless claimed within sixty days after charged (this does not affect any Customer rights with its credit card issuer). Refunds (if any) are at the discretion of Google and will only be in the form of credit for the Services. Nothing in this Agreement obligates Google to extend credit to any party.
- 2.5 Delinquent Payments. Late payments may bear interest at the rate of 1.5% per month (or the highest rate permitted by law, if less). Google reserves the right to suspend Customers Account, for any late payments.
  - 3. Customer Obligations.
- 3.1 Compliance. Customer is solely responsible for its Applications, Projects, and Customer Data and for making sure its Applications, Projects, and Customer Data comply with the AUP. Google reserves the right to review the Application, Project, and Customer Data for compliance with the AUP. Customer is responsible for ensuring all End Users comply with Customers obligations under the AUP, the Service Specific Terms, and the restrictions in Sections 3.3 and 3.5 below.
- 3.2 Privacy. Customer will protect the privacy and legal rights of its End Users under all applicable laws and regulations, which includes a legally adequate privacy notice communicated from Customer. Customer may have the ability to access, monitor, use, or disclose Customer Data submitted by End Users through the Services. Customer will obtain and maintain any required consents from End Users to allow Customers access, monitoring, use and disclosure of Customer Data. Further, Customer will notify its End Users that any Customer Data provided as part of the Services will be made available to a third party (i.e. Google) as part of Google providing the Services.
- 3.3 Restrictions. Customer will not, and will not allow third parties under its control to: (a) copy, modify, create a derivative work of, reverse engineer, decompile, translate, disassemble, or otherwise attempt to extract any or all of the source code of the Services (subject to Section 3.4 below and except to the extent such restriction is expressly prohibited by applicable law); (b) use the Services for High Risk Activities; (c) sublicense, resell, or distribute any or all of the Services separate from any integrated Application; (d) create multiple Applications, Accounts, or Projects to simulate or act as a single Application, Account, or Project (respectively) or otherwise access the Services in a manner intended to avoid incurring Fees; (e) unless otherwise set forth in the Service Specific Terms, use the Services to operate or enable any telecommunications service or in connection with any Application that allows End Users to place calls or to receive calls from any public switched telephone network; or (f) process or store any Customer Data that is subject to the International Traffic in Arms Regulations maintained by the Department of State. Unless otherwise specified in writing by Google, Google does not intend uses of the Services to create obligations under HIPAA, and makes no representations that the Services satisfy HIPAA requirements. If Customer is (or becomes) a Covered Entity or Business Associate, as defined in HIPAA, Customer will not use the Services for any purpose or in any manner involving Protected Health Information (as defined in HIPAA) unless Customer has received prior written consent to such use from Google.
- 3.4 Third Party Components. Third party components (which may include open source software) of the Services may be subject to separate license agreements. To the limited extent a third party license expressly

supersedes this Agreement, that third party license governs Customers use of that third party component.

- 3.5 Documentation. Google may provide Documentation for Customers use of the Services. The Documentation may specify restrictions (e.g. attribution or HTML restrictions) on how the Applications may be built or the Services may be used and Customer will comply with any such restrictions specified.
- 3.6 DMCA Policy. Google provides information to help copyright holders manage their intellectual property online, but Google cannot determine whether something is being used legally or not without their input. Google responds to notices of alleged copyright infringement and terminates accounts of repeat infringers according to the process set out in the U.S. Digital Millennium Copyright Act. If Customer thinks somebody is violating Customers or its End Users copyrights and wants to notify Google, Customer can find information about submitting notices, and Google's policy about responding to notices at http://www.google.com/dmca.html.

## 4. Suspension and Removals.

- 4.1 Suspension/Removals. If Customer becomes aware that any Application, Project (including an End Users use of a Project), or Customer Data violates the AUP, Customer will immediately suspend the Application or Project (if applicable), remove the applicable Customer Data or suspend access to an End User (as may be applicable). If Customer fails to suspend or remove as noted in the prior sentence, Google may specifically request that Customer do so. If Customer fails to comply with Googles request to do so within twenty-four hours, then Google may suspend Google accounts of the applicable End Users, disable the Project or Application, and/or disable the Account (as may be applicable) until such violation is corrected.
- 4.2 Emergency Security Issues. Despite the foregoing, if there is an Emergency Security Issue, then Google may automatically suspend the offending, Application, Project, or End User Account. Suspension will be to the minimum extent required, and of the minimum duration, to prevent or resolve the Emergency Security Issue. If Google suspends an End User account, Application, Project, or the Customer Account, for any reason, without prior notice to Customer, at Customers request, Google will provide Customer the reason for the suspension as soon as is reasonably possible.
  - 5. Intellectual Property Rights; Use of Customer Data; Feedback.
- 5.1 Intellectual Property Rights. Except as expressly set forth in this Agreement, this Agreement does not grant either party any rights, implied or otherwise, to the others content or any of the others intellectual property. As between the parties, Customer owns all Intellectual Property Rights in Customer Data and the Application or Project (if applicable), and Google owns all Intellectual Property Rights in the Services and Software.
- 5.2 Use of Customer Data. Google may use Customer Data and Applications only to provide the Services to Customer and its End Users and to help secure and improve the Services. For instance, this may include identifying and fixing problems in the Services, enhancing the Services to better protect against attacks and abuse, and making suggestions aimed at improving performance or reducing cost.
- 5.3 Customer Feedback. If Customer provides Google Feedback about the Services, then Google may use that information without obligation to Customer, and Customer hereby irrevocably assigns to Google all right, title, and interest in that Feedback.
  - 6. Technical Support Services

- 6.1 By Customer. Customer is responsible for technical support of its Applications and Projects.
- 6.2 By Google. Subject to payment of applicable support Fees, Google will provide TSS to Customer during the Term in accordance with the TSS Guidelines. Certain TSS levels include a minimum recurring Fee as described in the "Fees" definition below. If Customer downgrades its TSS level during any calendar month, Google may continue to provide TSS at the same level and TSS Fees before the downgrade for the remainder of that month.

## 7. Deprecation of Services

- 7.1 Discontinuance of Services. Subject to Section 7.2, Google may discontinue any Services or any portion or feature for any reason at any time without liability to Customer.
- 7.2 Deprecation Policy. Google will announce if it intends to discontinue or make backwards incompatible changes to the Services specified at the URL in the next sentence. Google will use commercially reasonable efforts to continue to operate those Services versions and features identified at https://cloud.google.com/terms/deprecation without these changes for at least one year after that announcement, unless (as Google determines in its reasonable good faith judgment):
- (i) required by law or third party relationship (including if there is a change in applicable law or relationship), or
  - (ii) doing so could create a security risk or substantial economic or material technical burden.

The above policy is the "Deprecation Policy."

### 8. Confidential Information.

- 8.1 Obligations. The recipient will not disclose the Confidential Information, except to Affiliates, employees, agents or professional advisors who need to know it and who have agreed in writing (or in the case of professional advisors are otherwise bound) to keep it confidential. The recipient will ensure that those people and entities use the received Confidential Information only to exercise rights and fulfill obligations under this Agreement, while using reasonable care to keep it confidential.
- 8.2 Required Disclosure. Notwithstanding any provision to the contrary in this Agreement, the recipient may also disclose Confidential Information to the extent required by applicable Legal Process; provided that the recipient uses commercially reasonable efforts to: (i) promptly notify the other party of such disclosure before disclosing; and (ii) comply with the other partys reasonable requests regarding its efforts to oppose the disclosure. Notwithstanding the foregoing, subsections (i) and (ii) above will not apply if the recipient determines that complying with (i) and (ii) could: (a) result in a violation of Legal Process; (b) obstruct a governmental investigation; and/or (c) lead to death or serious physical harm to an individual. As between the parties, Customer is responsible for responding to all third party requests concerning its use and its End Users use of the Services.

## 9. Term and Termination.

- 9.1 Agreement Term. The Term of this Agreement will begin on the Effective Date and continue until the Agreement is terminated as set forth in Section 9 of this Agreement.
  - 9.2 Termination for Breach. Either party may terminate this Agreement for breach if: (i) the other party is in

material breach of the Agreement and fails to cure that breach within thirty days after receipt of written notice; (ii) the other party ceases its business operations or becomes subject to insolvency proceedings and the proceedings are not dismissed within ninety days; or (iii) the other party is in material breach of this Agreement more than two times notwithstanding any cure of such breaches. In addition, Google may terminate any, all, or any portion of the Services or Projects, if Customer meets any of the conditions in Section 9.2(i), (ii), and/or (iii).

- 9.3 Termination for Inactivity. Google reserves the right to terminate the Services for inactivity, if, for a period exceeding 180 days, Customer: (a) has failed to access the Admin Console; (b) a Project has no active virtual machine or storage resources or an Application has not served any requests; and (c) no electronic bills are being generated.
- 9.4 Termination for Convenience. Customer may stop using the Services at any time. Customer may terminate this Agreement for its convenience at any time on prior written notice and upon termination, must cease use of the applicable Services. Google may terminate this Agreement for its convenience at any time without liability to Customer.
- 9.5 Effect of Termination. If the Agreement is terminated, then: (i) the rights granted by one party to the other will immediately cease; (ii) all Fees owed by Customer to Google are immediately due upon receipt of the final electronic bill; (iii) Customer will delete the Software, any Application, Instance, Project, and any Customer Data; and (iv) upon request, each party will use commercially reasonable efforts to return or destroy all Confidential Information of the other party.
- 10. Publicity. Customer is permitted to state publicly that it is a customer of the Services, consistent with the Trademark Guidelines. If Customer wants to display Google Brand Features in connection with its use of the Services, Customer must obtain written permission from Google through the process specified in the Trademark Guidelines. Google may include Customers name or Brand Features in a list of Google customers, online or in promotional materials. Google may also verbally reference Customer as a customer of the Services. Neither party needs approval if it is repeating a public statement that is substantially similar to a previously-approved public statement. Any use of a partys Brand Features will inure to the benefit of the party holding Intellectual Property Rights to those Brand Features. A party may revoke the other partys right to use its Brand Features under this Section with written notice to the other party and a reasonable period to stop the use.
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- 13.3 Exceptions to Limitations. These limitations of liability do not apply to breaches of confidentiality obligations, violations of a partys Intellectual Property Rights by the other party, or indemnification obligations.
  - 14. Indemnification.
- 14.1 By Customer. Unless prohibited by applicable law, Customer will defend and indemnify Google and its Affiliates against Indemnified Liabilities in any Third-Party Legal Proceeding to the extent arising from: (i) any Application, Project, Instance, Customer Data or Customer Brand Features; or (ii) Customers, or its End Users, use of the Services in violation of the AUP.
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  - 14.3 Exclusions. This Section 14 will not apply to the extent the underlying Allegation arises from:
    - a. the indemnified partys breach of this Agreement;
- b. modifications to the indemnifying partys technology or Brand Features by anyone other than the indemnifying party;
- c. combination of the indemnifying partys technology or Brand Features with materials not provided by the indemnifying party; or
  - d. use of non-current or unsupported versions of the Services or Brand Features;
  - 14.4 Conditions. Sections 14.1 and 14.2 will apply only to the extent:
- a. The indemnified party has promptly notified the indemnifying party in writing of any Allegation(s) that preceded the Third-Party Legal Proceeding and cooperates reasonably with the indemnifying party to resolve the Allegation(s) and Third-Party Legal Proceeding. If breach of this Section 14.4(a) prejudices the defense of the Third-Party Legal Proceeding, the indemnifying partys obligations under Section 14.1 or 14.2 (as applicable) will be

reduced in proportion to the prejudice.

b. The indemnified party tenders sole control of the indemnified portion of the Third-Party Legal Proceeding to the indemnifying party, subject to the following: (i) the indemnified party may appoint its own non-controlling counsel, at its own expense; and (ii) any settlement requiring the indemnified party to admit liability, pay money, or take (or refrain from taking) any action, will require the indemnified partys prior written consent, not to be unreasonably withheld, conditioned, or delayed.

### 14.5 Remedies.

- a. If Google reasonably believes the Services might infringe a third partys Intellectual Property Rights, then Google may, at its sole option and expense: (a) procure the right for Customer to continue using the Services; (b) modify the Services to make them non-infringing without materially reducing their functionality; or (c) replace the Services with a non-infringing, functionally equivalent alternative.
- b. If Google does not believe the remedies in Section 14.5(a) are commercially reasonable, then Google may suspend or terminate Customers use of the impacted Services.
- 14.6 Sole Rights and Obligations. Without affecting either partys termination rights, this Section 14 states the parties only rights and obligations under this Agreement for any third party's Intellectual Property Rights Allegations and Third-Party Legal Proceedings.
- 15. U.S. Federal Agency Users. The Services were developed solely at private expense and are commercial computer software and related documentation within the meaning of the applicable Federal Acquisition Regulations and their agency supplements.

### 16. Miscellaneous.

- 16.1 Notices. All notices must be in writing and addressed to the other partys legal department and primary point of contact. The email address for notices being sent to Googles Legal Department is legal-notices@google.com. Notice will be treated as given on receipt as verified by written or automated receipt or by electronic log (as applicable).
- 16.2 Assignment. Neither party may assign any part of this Agreement without the written consent of the other, except to an Affiliate where: (a) the assignee has agreed in writing to be bound by the terms of this Agreement; (b) the assigning party remains liable for obligations under the Agreement if the assignee defaults on them; and (c) the assigning party has notified the other party of the assignment. Any other attempt to assign is void.
- 16.3 Change of Control. If a party experiences a change of Control (for example, through a stock purchase or sale, merger, or other form of corporate transaction): (a) that party will give written notice to the other party within thirty days after the change of Control; and (b) the other party may immediately terminate this Agreement any time between the change of Control and thirty days after it receives that written notice.
- 16.4 Force Majeure. Neither party will be liable for failure or delay in performance to the extent caused by circumstances beyond its reasonable control.
- 16.5 No Agency. This Agreement does not create any agency, partnership or joint venture between the parties.

- 16.6 No Waiver. Neither party will be treated as having waived any rights by not exercising (or delaying the exercise of) any rights under this Agreement.
- 16.7 Severability. If any term (or part of a term) of this Agreement is invalid, illegal, or unenforceable, the rest of the Agreement will remain in effect.
- 16.8 No Third-Party Beneficiaries. This Agreement does not confer any benefits on any third party unless it expressly states that it does.
  - 16.9 Equitable Relief. Nothing in this Agreement will limit either partys ability to seek equitable relief.
  - 16.10 U.S. Governing Law.
- a. For U.S. City, County, and State Government Entities. If Customer is a U.S. city, county or state government entity, then the Agreement will be silent regarding governing law and venue.
- b. For U.S. Federal Government Entities. If Customer is a U.S. federal government entity then the following applies: ALL CLAIMS ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE SERVICES WILL BE GOVERNED BY THE LAWS OF THE UNITED STATES OF AMERICA, EXCLUDING ITS CONFLICT OF LAWS RULES. SOLELY TO THE EXTENT PERMITTED BY FEDERAL LAW: (I) THE LAWS OF THE STATE OF CALIFORNIA (EXCLUDING CALIFORNIAS CONFLICT OF LAWS RULES) WILL APPLY IN THE ABSENCE OF APPLICABLE FEDERAL LAW; AND (II) FOR ALL CLAIMS ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE SERVICES, THE PARTIES CONSENT TO PERSONAL JURISDICTION IN, AND THE EXCLUSIVE VENUE OF, THE COURTS IN SANTA CLARA COUNTY, CALIFORNIA.
- c. For All Other Entities. If Customer is any entity not set forth in Section 16.10(a) or (b) then the following applies: ALL CLAIMS ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE SERVICES WILL BE GOVERNED BY CALIFORNIA LAW, EXCLUDING THAT STATES CONFLICT OF LAWS RULES, AND WILL BE LITIGATED EXCLUSIVELY IN THE FEDERAL OR STATE COURTS OF SANTA CLARA COUNTY, CALIFORNIA, USA; THE PARTIES CONSENT TO PERSONAL JURISDICTION IN THOSE COURTS.
- 16.11 Amendments. Except as set forth in Section 1.7(b), any amendment must be in writing, signed by both parties, and expressly state that it is amending this Agreement.
- 16.12 Survival. The following Sections will survive expiration or termination of this Agreement: 5, 8, 9.5, 13, 14, and 16.
- 16.13 Entire Agreement. This Agreement sets out all terms agreed between the parties and supersedes all other agreements between the parties relating to its subject matter. In entering into this Agreement, neither party has relied on, and neither party will have any right or remedy based on, any statement, representation or warranty (whether made negligently or innocently), except those expressly set out in this Agreement. The terms located at a URL referenced in this Agreement and the Documentation are incorporated by reference into the Agreement. After the Effective Date, Google may provide an updated URL in place of any URL in this Agreement.
  - 16.14 Conflicting Terms. If there is a conflict between the documents that make up this Agreement, the

documents will control in the following order: the Agreement, and the terms at any URL.

16.15 Definitions.

"Account" means Customers Google Cloud Platform account.

"Admin Console" means the online console(s) and/or tool(s) provided by Google to Customer for administering the Services.

"Affiliate" means any entity that directly or indirectly Controls, is Controlled by, or is under common Control with a party.

"Allegation" means an unaffiliated third partys allegation.

"Application(s)" means any web or other application Customer creates using the Services, including any source code written by Customer to be used with the Services, or hosted in an Instance.

"AUP" means the acceptable use policy set forth here for the Services: http://cloud.google.com/terms/aup

"Brand Features" means the trade names, trademarks, service marks, logos, domain names, and other distinctive brand features of each party, respectively, as secured by such party from time to time.

"Committed Purchase(s)" have the meaning set forth in the Service Specific Terms.

"Confidential Information" means information that one party (or an Affiliate) discloses to the other party under this Agreement, and which is marked as confidential or would normally under the circumstances be considered confidential information. It does not include information that is independently developed by the recipient, is rightfully given to the recipient by a third party without confidentiality obligations, or becomes public through no fault of the recipient. Customer Data is considered Customers Confidential Information.

"Control" means control of greater than fifty percent of the voting rights or equity interests of a party.

"Customer Data" means content provided, transmitted, or displayed via the Services by Customer or its End Users; but excluding any data provided when Customer creates its general Google account (either under a gmail.com address or an email address provided under the "Google Apps" product line).

"Data Processing and Security Terms" means the terms set forth at: https://cloud.google.com/terms/data-processing-terms.

"Documentation" means the Google documentation (as may be updated from time to time) in the form generally made available by Google to its customers for use with the Services including the following: (a) Google App Engine, set forth here: https://cloud.google.com/appengine/; (b) Google Cloud SQL, set forth here: https://cloud.google.com/storage; (d) Google Prediction API, set forth here: https://cloud.google.com/prediction; (e) Google BigQuery Service, set forth here: https://cloud.google.com/compute/; and (g) Google Cloud Datastore, set forth here: https://cloud.google.com/datastore/.

"Emergency Security Issue" means either: (a) Customers or its End Users use of the Services in violation of the AUP, which could disrupt: (i) the Services; (ii) other Customers or its End Users use of the Services; or (iii) the Google network or servers used to provide the Services; or (b) unauthorized third party access to the Services.

"End Users" means the individuals Customer permits to use the Services, Application, or Project.

"Fee Threshold" means the threshold (as may be updated from time to time), as applicable for certain Services, as set forth here: https://cloud.google.com/pricing/.

Feedback means feedback or suggestions about the Services provided to Google by Customer.

"Fees" means the applicable fees for each Service and any applicable Taxes. The Fees for each Service are set forth here: https://cloud.google.com/pricing/.

"High Risk Activities" means uses such as the operation of nuclear facilities, air traffic control, or life support systems, where the use or failure of the Services could lead to death, personal injury, or environmental damage.

"HIPAA" means the Health Insurance Portability and Accountability Act of 1996 as it may be amended from time to time, and any regulations issued under it.

"Indemnified Liabilities" means any (i) settlement amounts approved by the indemnifying party; and (ii) damages and costs finally awarded against the indemnified party and its Affiliates by a court of competent

jurisdiction.

"Instance" means a virtual machine instance, configured and managed by Customer, which runs on the Services. Instances are more fully described in the Documentation.

"Intellectual Property Rights" means current and future worldwide rights under patent, copyright, trade secret, trademark, and moral rights laws, and other similar rights.

"Legal Process" means a data disclosure request made under law, governmental regulation, court order, subpoena, warrant, governmental regulatory or agency request, or other valid legal authority, legal procedure, or similar process.

"Package Purchase" has the meaning set forth in the Service Specific Terms.

"Project" means a grouping of computing, storage, and API resources for Customer, and via which Customer may use the Services. Projects are more fully described in the Documentation.

"Reserved Capacity Units" have the meaning set forth in the Service Specific Terms.

"Reserved Unit Term" has the meaning set forth in the Service Specific Terms.

"Reserved Units" have the meaning set forth in the Service Specific Terms.

"Services" means the, services as set forth here: https://cloud.google.com/services (including any associated application programming interfaces); and TSS, but the Services do not include Google Translate API.

"Service Specific Terms" means the terms specific to one or more Services set forth here:

https://cloud.google.com/terms/service-terms, except the terms relating to (a) Google Translate API; and (b) Fees for Google Cloud Datastore set forth at that Service Specific Terms URL do not apply.

"SLA" means the Service Level Agreement as applicable to: (a) Google App Engine set forth here:

https://cloud.google.com/appengine/sla; (b) Google Cloud Storage set forth here:

https://cloud.google.com/storage/sla; (c) Google Prediction API set forth here:

https://cloud.google.com/prediction/sla; (d) Google BigQuery Service set forth here

https://cloud.google.com/bigquery/sla; (e) Google Cloud SQL set forth here: https://cloud.google.com/sql/sla; (f) Google Compute Engine set forth here: https://cloud.google.com/compute/sla; (g) VPN set forth here:

https://cloud.google.com/vpn/sla; (h) Google Cloud DNS set forth here: https://cloud.google.com/dns/sla; and (i)

Google Cloud Datastore set forth here: https://cloud.google.com/datastore/sla.

"Software" means any downloadable tools, software development kits or other such proprietary computer software provided by Google in connection with the Services, which may be downloaded by Customer, and any updates Google may make to such Software from time to time.

"Taxes" means any duties, customs fees, or taxes (other than Googles income tax) associated with the purchase of the Services, including any related penalties or interest.

"Term" has the meaning set forth in Section 9 of this Agreement.

"Terms URL" means the following URL set forth here: https://cloud.google.com/terms/.

"Third-Party Legal Proceeding" means any formal legal proceeding filed by an unaffiliated third party before a court or government tribunal (including any appellate proceeding).

"Token" means an alphanumeric key that is uniquely associated with Customers Account.

"Trademark Guidelines" means Googles Guidelines for Third Party Use of Google Brand Features, located at: http://www.google.com/permissions/guidelines.html.

"TSS" means the technical support service provided by Google to the administrators under the TSS Guidelines.

"TSS Guidelines" means Googles technical support services guidelines then in effect for the Services. TSS Guidelines are at the following URL: http://support.google.com/enterprise/terms (under Google Cloud Platform Services).

"Updates" means the periodic software updates provided by Google to Customer from time to time. Updates are designed to improve, enhance and further develop the Services and may take the form of bug fixes, enhanced functions, new software modules and completely new versions.

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[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

#### Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software—to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal

permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and

modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any

warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

- 2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:
  - a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- b) Accompany the work with a written offer, valid for at

least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

- c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

- 7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:
  - a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
  - b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.
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If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

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This section is intended to make thoroughly clear what is believed to

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When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

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To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

- 2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:
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  - b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
  - c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
  - d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the

application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

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<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"</p>

<sup>&</sup>quot;http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Vaadin Licensing</title>
k rel="stylesheet" type="text/css" href="css/styles.css" />
<!--[if IE]>
 <link rel="stylesheet" type="text/css" href="css/ie.css" />
 <![endif]-->
</head>
<body>
<div id="header">
 <h1>Vaadin &ndash; thinking of U and I</h1>
 <div id="version"></div>
</div>
<!-- /header -->
<div id="content">
  <h1>Licensing</h1>
  >
    <strong><i>Vaadin Framework</i> is intended to be freely used and extended by
    anyone without any fees</strong>. In order to guarantee these freedoms, <i>Vaadin
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Version 2.0</a>.
  >
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  >
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  >
   If you have any questions on licensing terms, please contact us through <a
   href="http://vaadin.com/contact">the vaadin.com web-site</a>.
  <h3>Included Third-Party Software and Licenses</h3>
  <h4>Vaadin Production Dependencies</h4>
```

The following dependencies are used by the Vaadin runtime libraries when running the application in the production mode, and some also by the development libraries:

```
<thead style="background: #ccc;">
    PackageLicense
   </thead>
   Apache Commons<br/>
      CLI<br/><!-- Used by theme-compiler -->
      Discovery<br/>
      IO<br/>
      Jexl<br/>
      Lang<br/>
      Logging<br/><!-- Used by theme-compiler -->
      Math<br/>
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- Used by GWT and vaadin-server -->
     Bean Validation (JSR-303) API
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    Google AppEngine API*
     <a href="licenses/google-cloud-platform-terms-of-service.txt">Google Cloud Platform Terms of
Service</a>
    Google Collections
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-shared, vaadin-client-compiler, etc. -->
    Google GWT
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    Closure Stylesheets
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
```

```
 ASM 
     <a href="licenses/ow2-asm-license.txt">ASM Project License</a>
    <!-- In vaadin-shared-deps -->
    Guava
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-shared-deps -->
    JSON
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- Used by vaadin-server -->
     JSoup
     <a href="licenses/the-mit-license.txt">The MIT License</a>
    streamhtmlparser
     <a href="licenses/new-bsd-license.txt">New BSD License</a>
    <!-- If vaadin-push used. Atmosphere has some internal dependencies, but they are all Apache 2. -->
     Atmosphere Framework^
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>,<br/>br/>
       <a href="licenses/common-development-and-distribution-license-v1-0.txt">Common Development and
Distribution License, Version 1.0</a>
    <!-- Used by vaadin-push -->
    SLF4J^
     <a href="licenses/the-mit-license.txt">The MIT License</a>
    <!-- Used by vaadin-push -->
     jQuery^
     <a href="licenses/the-mit-license.txt">The MIT License</a>
```

```
<!-- Used by font icons -->
  FontAwesome
   <a href="licenses/OFL.txt">SIL OFL 1.1</a>
  <!-- Included in the Valo theme -->
  Open Sans
   <a href="licenses/apache-license-version-2-0.txt">Apache License, version 2.0</a>
  >
   Roboto
   <a href="licenses/apache-license-version-2-0.txt">Apache License, version 2.0</a>
  Roboto Condensed
   <a href="licenses/apache-license-version-2-0.txt">Apache License, version 2.0</a>
  Source Sans Pro
   <a href="licenses/OFL.txt">SIL OFL 1.1</a>
  Lato
   <a href="licenses/OFL.txt">SIL OFL 1.1</a>
  Lora
   <a href="licenses/OFL.txt">SIL OFL 1.1</a>
  <a href="https://github.com/heygrady/scss-blend-modes">SCSS Blend Modes</a>
   <a href="licenses/the-mit-license.txt">The MIT License</a>
  <a href="https://github.com/Team-Sass/Sass-list-functions">Sass list functions</a>
   <a href="licenses/the-mit-license.txt">The MIT License</a>
  <!-- The extracted vaadin-sass-compiler -->
  Vaadin Sass Compiler
   <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
  <!-- Bourbon sass library -->
  Bourbon
   <a href="licenses/the-mit-license.txt">The MIT License</a>
```

```
<a href="https://github.com/timruffles/ios-html5-drag-drop-shim">drag-drop-polyfill</a>**
     <a href="licenses/bsd-2-clause-drag-drop-polyfill.txt">BSD-2-clause</a>
    * Not required by Vaadin, only used if provided by the user.<br/>br/>
^ Only if <tt>vaadin-push</tt> is used.<br/>
** Used only when mobile drag and drop is enabled.
<h4>Vaadin Development Dependencies</h4>
  The following dependencies are only used by the Vaadin
    development libraries. Some are also used when running a
 Vaadin application in the development mode:
  <thead style="background: #ccc;">
    PackageLicense
   </thead>
   <!-- Required by Smartsprites -->
    Apache Ant<br/>
       Ant Launcher
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    Apache Commons<br/>
       BCEL<br/>
       <!-- Beanutils<br/>--> <!-- Does not appear to be used anywhere -->
       Codec<br/>
       Collections<br/>
       Digester 3<br/>
       EL < br/>
       Modeler
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- Is this used anywhere? -->
    Apache HttpComponents Core
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
```

```
<!-- In vaadin-client-compiler -->
Apache Jakarta Regexp
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
Apache Mime4j
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
<!-- The Mime4j does not appear to be used anywhere. Remove if necessary.
Apache James Server<br/>
   Apache James Mime4j
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
-->
<!-- In vaadin-client-compiler -->
Apache Tapestry
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
Apache Tomcat<br/>
   Catalina<br/><!-- Is this used anywhere? -->
   Coyote<br/><!-- Is this used anywhere? -->
  Jasper<br/><!-- In vaadin-client-compiler -->
  JK<br/><!-- Is this used anywhere? -->
  Naming <!-- In vaadin-client-compiler -->
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
<!-- In vaadin-client-compiler -->
Apache Xalan
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
<!-- In vaadin-client-compiler -->
Apache Xerces
<a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
<!-- Used by GWT and smartsprites -->
```

```
Args4j
     <a href="licenses/the-mit-license.txt">The MIT License</a>
    <!-- Used by theme-compiler -->
    CSS Parser
     <a href="licenses/gnu-lesser-general-public-license-version-2-0.txt">GNU Lesser General Public
License, version 2.0</a>
    <!-- In vaadin-client-compiler -->
    CUP
     <a href="licenses/cup-open-source-license.txt">CUP Open Source License</a>
    <!-- In vaadin-client-compiler -->
    CyberNeko HTML Parser
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-client-compiler -->
    Eclipse JDT
     <a href="licenses/eclipse-public-license-v1-0.txt">Eclipse Public License - v 1.0</a>
    <!-- In vaadin-shared-deps but only invoked in development mode -->
    Flute
     <a href="licenses/w3c-software-copyright-notice-and-license.txt">W3C Software Copyright Notice and
License</a>
    <!-- Is this used anywhere? -->
     Google Closure Compiler
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-client-compiler -->
     Google Protocol Buffers
     <a href="licenses/google-bsd-license.txt">BSD License</a>
```

```
<!-- In vaadin-client-compiler -->
    HtmlUnit
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- In vaadin-client-compiler -->
    ICU
     <a href="licenses/icu-license-icu-1-8-1-and-later.txt">ICU License</a>
    <!-- In vaadin-client-compiler -->
    Jetty
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a><br/>br/><a
href="licenses/eclipse-public-license-v1-0.txt">Eclipse Public License - v1.0</a><br/>ot/a><br/>ot/a><br/>ot/a>="licenses/jetty-web-
container-license.txt">Jetty Web Container License</a>
    <!-- Is this used anywhere? -->
    Jsilver
     <a href="licenses/apache-license-version-2-0.txt">Apache License, Version 2.0</a>
    <!-- Includes portal-service -->
    Liferay Service Interfaces*
     <a href="licenses/gnu-lesser-general-public-license-version-2-1.txt">GNU Lesser General Public
License 2.1 or newer</a>
    <!-- In vaadin-client-compiler -->
     Mozilla Rhino
     <a href="licenses/mozilla-public-license-v1-1.txt">Mozilla Public License v. 1.1</a>
    <!-- Is this used anywhere? -->
    MX4J
     <a href="licenses/the-mx4j-license.txt">The MX4J License</a>
    <!-- Used by theme-compiler -->
```

```
SAC: The Simple API for CSS
     <a href="licenses/w3c-software-copyright-notice-and-license.txt">W3C Software Copyright Notice and
License</a>
    <!-- Used by theme-compiler -->
    SmartSprites
     <a href="licenses/smartsprites-bsd-license.txt">BSD License</a>
    <!-- Explicitly excluded from vaadin-client-compiler
    Swingworker
     <a href="http://www.gnu.org/licenses/lgpl-2.1.html">GNU Lesser General Public License 2.1</a>
    -->
   * Not required by Vaadin, only used if provided by the user.
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 href="http://vaadin.com/company">Vaadin Ltd</a>.
 </div>
<!-- /content-->
<div id="footer">
 <span class="slogan">Vaadin &ndash; thinking of U and I/span>
</div>
<!-- /footer -->
</body>
```

</html>

# 1.4 yangtools 1.1.2-Carbon

# 1.4.1 Available under license:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"</p>
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html>
<head>
 <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
 link rel="stylesheet" href="LICENSE-2.0 fichiers/style.css" type="text/css">
 <meta name="author" content="The Apache Software Foundation">
 <meta name="email" content="apache.AT.apache.DOT.org">
 <title>Apache License, Version 2.0 - The Apache Software Foundation</title>
</head>
<body>
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 Version 2.0, January 2004<br>
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 other entities that control, are controlled by, or are under common
 control with that entity. For the purposes of this definition,
 "control" means (i) the power, direct or indirect, to cause the
 direction or management of such entity, whether by contract or
 otherwise, or (ii) ownership of fifty percent (50%) or more of the
 outstanding shares, or (iii) beneficial ownership of such entity.
>
```

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```

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=== Design considerations
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```
module legal-chained-identity-test {
 namespace "urn:opendaylight.org/legal-chained-identity-test";
 prefix lcidt;
 identity first-identity {
    base second-identity;
 }
 identity second-identity {
    base third-identity;
 }
 identity third-identity {
    base fourth-identity;
 }
 identity fourth-identity {
    description "the highest identity";
 }
}
```

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