```
<!DOCTYPE HTML>
<html>
<head>
    <meta charset="utf-8">
    <title>Jupyter Notebook</title>
    <link id="favicon" rel="shortcut icon" type="image/x-icon"</pre>
href="/static/base/images/favicon-notebook.ico?v=9e5fb7f8501d94094806320e718be6b3">
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <link rel="stylesheet"</pre>
href="/static/components/jquery-ui/themes/smoothness/jquery-ui.min.css?v=3c2a865c83
2a1322285c55c6ed99abb2" type="text/css" />
    <link rel="stylesheet"</pre>
href="/static/components/jquery-typeahead/dist/jquery.typeahead.min.css?v=7afb461de
36accb1aa133a1710f5bc56" type="text/css" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
<script type="text/javascript"</pre>
src="/static/components/MathJax/MathJax.js?config=TeX-AMS-MML HTMLorMML-full,Safe&d
elayStartupUntil=configured" charset="utf-8"></script>
<script type="text/javascript">
// MathJax disabled, set as null to distinguish from *missing* MathJax,
// where it will be undefined, and should prompt a dialog later.
window.mathjax url = "/static/components/MathJax/MathJax.js";
</script>
<link rel="stylesheet"</pre>
href="/static/components/bootstrap-tour/build/css/bootstrap-tour.min.css?v=d0b3c2fc
e6056a2ddd5a4513762a94c4" type="text/css" />
<link rel="stylesheet"</pre>
href="/static/components/codemirror/lib/codemirror.css?v=288352df06a67ee35003b0981d
a414ac">
    <link rel="stylesheet"</pre>
href="/static/style/style.min.css?v=e91a43337d7c294cc9fab2938fa723b3"
type="text/css"/>
<link rel="stylesheet"</pre>
href="/static/notebook/css/override.css?v=e6f18013b8771987812e992b38ec3318"
type="text/css" />
<link rel="stylesheet" href="" id='kernel-css'</pre>
type="text/css" />
```

```
<link rel="stylesheet" href="/custom/custom.css" type="text/css" />
src="/static/components/es6-promise/promise.min.js?v=f004a16cb856e0ff11781d01ec5ca8
fe" type="text/javascript" charset="utf-8"></script>
    <script
src="/static/components/react/react.production.min.js?v=34f96ffc962a7deecc83037ccb5
82b58" type="text/javascript"></script>
    <script src="/static/components/react/react-dom.production.min.js"</pre>
type="text/javascript"></script>
    <script
src="/static/components/create-react-class/index.js?v=94feb9971ce6d26211729abc43f96
cd2" type="text/javascript"></script>
    <script
src="/static/components/requirejs/require.js?v=951f856e81496aaeec2e71a1c2c0d51f"
type="text/javascript" charset="utf-8"></script>
    <script>
      require.config({
          urlArgs: "v=20200428180938",
          baseUrl: '/static/',
          paths: {
            'auth/js/main': 'auth/js/main.min',
            custom : '/custom',
            nbextensions : '/nbextensions',
            kernelspecs : '/kernelspecs',
            underscore : 'components/underscore/underscore-min',
            backbone : 'components/backbone/backbone-min',
            jed: 'components/jed/jed',
            jquery: 'components/jquery/jquery.min',
            json: 'components/requirejs-plugins/src/json',
            text: 'components/requirejs-text/text',
            bootstrap: 'components/bootstrap/dist/js/bootstrap.min',
            bootstraptour: 'components/bootstrap-tour/build/js/bootstrap-tour.min',
            'jquery-ui': 'components/jquery-ui/jquery-ui.min',
            moment: 'components/moment/min/moment-with-locales',
            codemirror: 'components/codemirror',
            termjs: 'components/xterm.js/xterm',
            typeahead: 'components/jquery-typeahead/dist/jquery.typeahead.min',
          },
          map: { // for backward compatibility
                  "jqueryui": "jquery-ui",
              }
          },
          shim: {
            typeahead: {
              deps: ["jquery"],
              exports: "typeahead"
```

```
},
            underscore: {
              exports: '
            },
            backbone: {
              deps: ["underscore", "jquery"],
              exports: "Backbone"
            },
            bootstrap: {
              deps: ["jquery"],
              exports: "bootstrap"
            },
            bootstraptour: {
              deps: ["bootstrap"],
              exports: "Tour"
            "jquery-ui": {
              deps: ["jquery"],
              exports: "$"
            }
          },
          waitSeconds: 30,
      });
      require.config({
          map: {
                'contents': 'services/contents',
          }
      });
      // error-catching custom.js shim.
      define("custom", function (require, exports, module) {
          try {
              var custom = require('custom/custom');
              console.debug('loaded custom.js');
              return custom;
          } catch (e) {
              console.error("error loading custom.js", e);
              return {};
          }
      })
    document.nbjs_translations = {"domain": "nbjs", "locale_data": {"nbjs": {"":
{"domain": "nbjs"}}};
    document.documentElement.lang = navigator.language.toLowerCase();
    </script>
```

```
<body class="notebook app "</pre>
    data-jupyter-api-token="69eb9d7cafaa8e8de83fef6a73adae93caf5a98a57dc17fc"
data-base-url="/"
data-ws-url=""
data-notebook-name="Hello%20World.ipynb"
data-notebook-path="Hello%20World.ipynb"
dir="ltr">
<noscript>
    <div id='noscript'>
      Jupyter Notebook requires JavaScript.<br>
      Please enable it to proceed.
  </div>
</noscript>
<div id="header" role="navigation" aria-label="Top Menu">
  <div id="header-container" class="container">
  <div id="ipython notebook" class="nav navbar-brand"><a</pre>
href="/tree?token=69eb9d7cafaa8e8de83fef6a73adae93caf5a98a57dc17fc"
title='dashboard'>
      <img src='/static/base/images/logo.png?v=641991992878ee24c6f3826e81054a0f'</pre>
alt='Jupyter Notebook'/>
  </a></div>
<span id="save_widget" class="save_widget">
    <span id="notebook_name" class="filename"></span>
    <span class="checkpoint_status"></span>
    <span class="autosave_status"></span>
</span>
<span id="kernel_logo_widget">
  <img class="current_kernel_logo" alt="Current Kernel Logo"</pre>
```

</head>

```
src="
"/>
</span>
   <span id="login_widget">
       <button id="logout" class="btn btn-sm navbar-btn">Logout</button>
   </span>
 </div>
  <div class="header-bar"></div>
<div id="menubar-container" class="container">
<div id="menubar">
   <div id="menus" class="navbar navbar-default" role="navigation">
       <div class="container-fluid">
           <button type="button" class="btn btn-default navbar-btn navbar-toggle"</pre>
data-toggle="collapse" data-target=".navbar-collapse">
             <i class="fa fa-bars"></i></i>
             <span class="navbar-text">Menu</span>
           </button>
           <span class="kernel_indicator_name">Kernel</span>
             <i id="kernel indicator icon"></i></i></or>
           <i id="readonly-indicator" class="navbar-text" title='This notebook is</pre>
read-only'>
               <span class="fa-stack">
                   <i class="fa fa-save fa-stack-1x"></i></i>
                   <i class="fa fa-ban fa-stack-2x text-danger"></i></i>
               </span>
           </i>
           <i id="modal_indicator" class="navbar-text"></i>
           <span id="notification area"></span>
           <div class="navbar-collapse collapse">
             <a href="#" id="filelink" aria-haspopup="true"</pre>
```

```
aria-controls="file_menu class="dropdown-toggle" data-toggle="dropdown">File</a>
            aria-labelledby="filelink">
               <a href="#" role="menuitem">New Notebook<span
class="sr-only">Toggle Dropdown</span></a>
                 id="menu-new-notebook-submenu">
               title="Opens a new window with the Dashboard view">
                 <a href="#" role="menuitem">Open...</a>
               <!-- <hr/>-->
               title="Open a copy of this notebook's contents and
start a new kernel">
                 <a href="#" role="menuitem">Make a Copy...</a>
               title="Save a copy of the notebook's contents and start
a new kernel">
                 <a href="#" role="menuitem">Save as...</a>
              <a href="#"</pre>
role="menuitem">Rename...</a>
               <a href="#"</pre>
role="menuitem">Save and Checkpoint</a>
              <!-- <hr/>-->
               id="restore checkpoint" class="dropdown-submenu"
role="none"><a href="#" role="menuitem">Revert to Checkpoint<span
class="sr-only">Toggle Dropdown</span></a>
                <a href="#"></a>
                 <a href="#"></a>
                 <a href="#"></a>
                 <a href="#"></a>
                 <a href="#"></a>
                <a href="#"</pre>
role="menuitem">Print Preview</a>
               <a href="#"</pre>
role="menuitem">Download as<span class="sr-only">Toggle Dropdown</span></a>
                 <a href="#">asciidoc (.asciidoc)</a>
```

```
<a href="#">html (.html)</a>
                <a href="#">latex (.tex)</a>
                <a href="#">markdown (.md)</a>
                id="download notebook">
                  <a href="#">notebook (.ipynb)</a>
                <a href="#">pdf (.pdf)</a>
                <a href="#">rst (.rst)</a>
                <a href="#">script (.txt)</a>
                <a href="#">slides (.slides.html)</a>
                <a href="#"</pre>
role="menuitem">Deploy as</a>
              title="Trust the output of this notebook">
              <a href="#" role="menuitem">Trust Notebook</a>
            title="Shutdown this notebook's kernel, and close this
window">
              <a href="#" role="menuitem">Close and Halt</a>
```

```
<a href="#" class="dropdown-toggle"</pre>
id="editlink" data-toggle="dropdown" aria-haspopup="true"
aria-controls="edit menu">Edit</a>
           aria-labelledby="editlink">
             <a href="#"</pre>
role="menuitem">Cut Cells</a>
             id="copy_cell" role="none"><a href="#"</li>
role="menuitem">Copy Cells</a>
             <a</pre>
href="#" role="menuitem" aria-disabled="true">Paste Cells Above</a>
             <a</pre>
href="#" role="menuitem" aria-disabled="true">Paste Cells Below</a>
             <a</pre>
href="#" role="menuitem" aria-disabled="true">Paste Cells & amp; Replace</a>
             <a href="#"</pre>
role="menuitem">Delete Cells</a>
             <a</pre>
href="#" role="menuitem" aria-disabled="true">Undo Delete Cells</a>
             <a href="#"</pre>
role="menuitem">Split Cell</a>
             <a href="#"</pre>
role="menuitem">Merge Cell Above</a>
             <a href="#"</pre>
role="menuitem">Merge Cell Below</a>
             <a href="#"</pre>
role="menuitem">Move Cell Up</a>
             <a href="#"</pre>
role="menuitem">Move Cell Down</a>
             <a href="#"</pre>
role="menuitem">Edit Notebook Metadata</a>
             <a href="#"</pre>
role="menuitem"> Find and Replace </a>
             <a href="#"</pre>
role="menuitem">Cut Cell Attachments</a>
             <a href="#"</pre>
role="menuitem">Copy Cell Attachments</a>
             role="none"><a href="#" role="menuitem" aria-disabled="true">Paste Cell
Attachments</a>
             <a</pre>
href="#" role="menuitem" aria-disabled="true"> Insert Image </a>
```

```
<a href="#" class="dropdown-toggle"</pre>
id="viewlink" data-toggle="dropdown" aria-haspopup="true"
aria-controls="view menu">View</a>
             aria-labelledby="viewlink">
               title="Show/Hide the logo and notebook title (above
menu bar)">
                  <a href="#" role="menuitem">Toggle Header</a>
               title="Show/Hide the action icons (below menu bar)">
                  <a href="#" role="menuitem">Toggle Toolbar</a>
               title="Show/Hide line numbers in cells">
                  <a href="#" role="menuitem">Toggle Line Numbers</a>
               role="none">
                  <a href="#" role="menuitem">Cell Toolbar</a>
                  id="menu-cell-toolbar-submenu">
               <a href="#" class="dropdown-toggle"</pre>
id="insertlink" data-toggle="dropdown" aria-haspopup="true"
aria-controls="insert menu">Insert</a>
             aria-labelledby="insertlink">
               title="Insert an empty Code cell above the currently
active cell">
                  <a href="#" role="menuitem">Insert Cell Above</a>
               title="Insert an empty Code cell below the currently
active cell">
                  <a href="#" role="menuitem">Insert Cell Below</a>
            <a href="#" class="dropdown-toggle"</pre>
data-toggle="dropdown">Cell</a>
            the next one">
                  <a href="#">Run Cells</a>
               below">
                  <a href="#">Run Cells and Select Below</a>
```

```
helow">
                  <a href="#">Run Cells and Insert Below</a>
                id="run all cells" title="Run all cells in the
notebook">
                  <a href="#">Run All</a>
                (but not including) this cell">
                  <a href="#">Run All Above</a>
                cells below it">
                  <a href="#">Run All Below</a>
                title="All cells in the notebook have a cell type. By
default, new cells are created as 'Code' cells">
                  <a href="#">Cell Type</a>
                  id="to code"
                      title="Contents will be sent to the kernel for
execution, and output will display in the footer of cell">
                      <a href="#">Code</a>
                    id="to markdown"
                      title="Contents will be rendered as HTML and
serve as explanatory text">
                      <a href="#">Markdown</a>
                    id="to raw"
                      title="Contents will pass through nbconvert
unmodified">
                      <a href="#">Raw NBConvert</a>
                  <a</pre>
href="#">Current Outputs</a>
                  id="toggle current output"
                        title="Hide/Show the output of the current
cell">
                        <a href="#">Toggle</a>
                     title="Scroll the output of the current cell">
                        <a href="#">Toggle Scrolling</a>
                     title="Clear the output of the current cell">
                        <a href="#">Clear</a>
```

```
<a</pre>
href="#">All Output</a>
                  id="toggle_all_output"
                       title="Hide/Show the output of all cells">
                       <a href="#">Toggle</a>
                     title="Scroll the output of all cells">
                       <a href="#">Toggle Scrolling</a>
                     id="clear all output"
                       title="Clear the output of all cells">
                       <a href="#">Clear</a>
                     <a href="#" class="dropdown-toggle"</pre>
data-toggle="dropdown">Kernel</a>
             id="int kernel"
                  title="Send Keyboard Interrupt (CTRL-C) to the Kernel">
                  <a href="#">Interrupt</a>
               title="Restart the Kernel">
                  <a href="#">Restart</a>
               title="Restart the Kernel and clear all output">
                  <a href="#">Restart & amp; Clear Output</a>
               title="Restart the Kernel and re-run the notebook">
                  <a href="#">Restart & amp; Run All</a>
               title="Reconnect to the Kernel">
                  <a href="#">Reconnect</a>
               title="Shutdown the Kernel">
                  <a href="#">Shutdown</a>
               <a href="#">Change kernel</a>
```

```
id="menu-change-kernel-submenu">
                <a href="#" class="dropdown-toggle"</pre>
data-toggle="dropdown">Help</a>
             user interface"><a href="#">User Interface Tour</a>
                keyboard shortcuts"><a href="#">Keyboard Shortcuts</a>
                allowing you to edit Keyboard shortcuts"><a href="#">Edit Keyboard
Shortcuts</a>
                <a rel="noreferrer"</a>
href="http://nbviewer.jupyter.org/github/ipython/ipython/blob/3.x/examples/Notebook
/Index.ipynb" target="_blank" title="Opens in a new window">
                        <i class="fa fa-external-link menu-icon</pre>
pull-right"></i></i>
                      Notebook Help
                      </a>
                      <a rel="noreferrer"
href="https://help.github.com/articles/markdown-basics/" target="_blank"
title="Opens in a new window">
                        <i class="fa fa-external-link menu-icon"</pre>
pull-right"></i></i>
                      Markdown
                      </a>
                <a id="notebook_about"</pre>
href="#">About</a>
```

```
</div>
       </div>
   </div>
</div>
<div id="maintoolbar" class="navbar">
 <div class="toolbar-inner navbar-inner navbar-nobg">
   <div id="maintoolbar-container" class="container"></div>
 </div>
</div>
</div>
<div class="lower-header-bar"></div>
</div>
<div id="site">
<div id="ipython-main-app">
   <div id="notebook_panel">
       <div id="notebook"></div>
       <div id='tooltip' class='ipython_tooltip' style='display:none'></div>
   </div>
</div>
</div>
<div id="pager">
   <div id="pager-contents">
       <div id="pager-container" class="container"></div>
   <div id='pager-button-area'></div>
</div>
<script type="text/javascript">
   sys_info = {"notebook_version": "6.0.0", "notebook_path":
"C:\\Users\\anura\\Anaconda3\\lib\\site-packages\\notebook", "commit_source": "",
```

```
"commit_hash": "", "sys_version": "3.7.3 (default, Apr 24 2019, 15:29:51) [MSC
v.1915 64 bit (AMD64)]", "sys_executable":
"C:\\Users\\anura\\Anaconda3\\python.exe", "sys_platform": "win32", "platform":
"Windows-10-10.0.17763-SP0", "os_name": "nt", "default_encoding": "utf-8"};
</script>
<script
src="/static/components/text-encoding/lib/encoding.js?v=d5bb0fc9ffeff7d98a69bb83daa
51052" charset="utf-8"></script>
<script src="/static/notebook/js/main.min.js?v=eef572336006937e9a017afbdebc65fe"</pre>
type="text/javascript" charset="utf-8"></script>
<script type='text/javascript'>
 function _remove_token_from_url() {
    if (window.location.search.length <= 1) {</pre>
    }
    var search parameters = window.location.search.slice(1).split('&');
    for (var i = 0; i < search parameters.length; i++) {</pre>
      if (search parameters[i].split('=')[0] === 'token') {
        // remote token from search parameters
        search parameters.splice(i, 1);
        var new search = '';
        if (search_parameters.length) {
          new search = '?' + search parameters.join('&');
        var new_url = window.location.origin +
                      window.location.pathname +
                      new search +
                      window.location.hash;
        window.history.replaceState({}, "", new_url);
        return;
      }
   }
  _remove_token_from_url();
</script>
</body>
</html>
```