

# nbgrader with JupyterHub

User Guide for Students



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# 1. INTRODUCTION

## What is JupyterHub?

*JupyterHub* is the best way to serve Jupyter notebook for multiple users. It can be used in a classes of students, a corporate data science group or scientific research group. It is a multi-user Hub that spawns, manages, and proxies multiple instances of the single-user Jupyter notebook server.

## What is nbgrader?

*nbgrader* is a tool that facilitates creating and grading assignments in the Jupyter notebooks or JupyterHub. It allows instructors to easily create notebook-based assignments that include both coding exercises and written free-responses. nbgrader then also provides a streamlined interface for quickly grading completed assignments.

## 2. SIGNING IN TO THE SERVER

1. Visit the [mathds.asu.edu](https://mathds.asu.edu) server on your browser.
2. You should be greeted with the ASU's login page as shown below in Fig. 2.1. Use your ASU's login credentials to log in to the server.

- **Note:** In case you were already logged in to your MyASU, you may not see the login page as shown below.

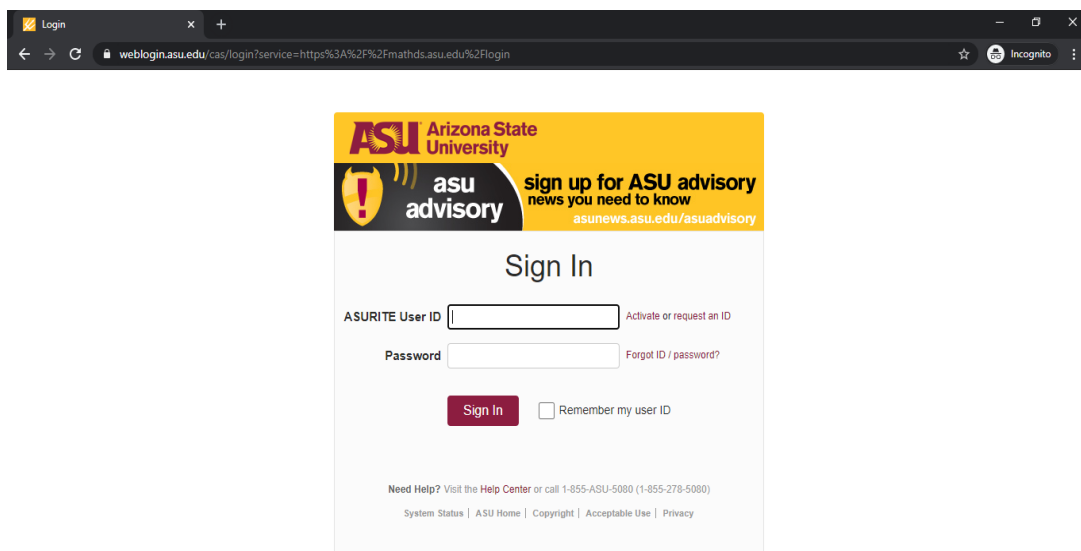


Figure 2.1: ASU's CAS Authentication Page

- If you are able to log in successfully and are an authenticated user, you will be able to see something similar to that shown in Fig. 2.2. This is *JupyterHub*, the main entry point to accessing your course assignments.
- If you are unable to log in to the server or see any errors, most likely it means that you are not authorized to access the JupyterHub server. In that case, please contact your instructor for further help.

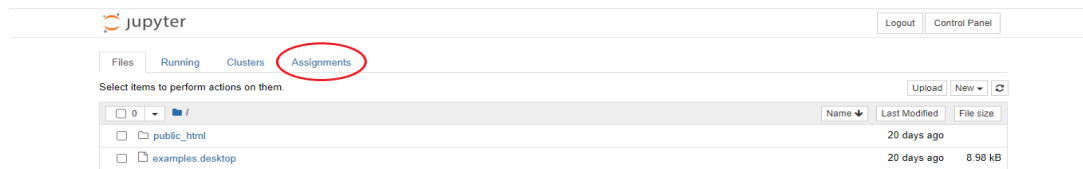


Figure 2.2: JupyterHub Home Screen

- *As a student, you should be able to see the **Assignments** tab as shown in Fig. 2.2. If you don't see the tab or if you see any other tabs, try refreshing the page. If the problem still persists, contact your instructor.*
- *Please note that the files and directories that you will see may be different from what is shown in Fig. 2.2.*

## 3. ASSIGNMENTS

### 3.1 Understanding the Assignments tab

- At the beginning of the semester (when no assignment has been released), you might find something similar to what is shown in Fig. 3.3 when you click on the Assignments Tab after signing in to Jupyterhub.

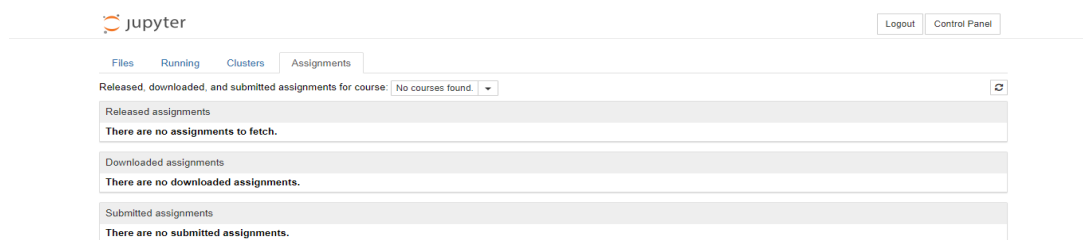


Figure 3.3: Assignments Tab

- As you might see, there is an empty dropdown that currently indicates *No courses found*. Moreover, the *Released assignments*, *Downloaded assignments* and *Submitted assignments* sections are empty.

#### Course List Dropdown

- If you are enrolled in multiple courses that use nbgrader, the dropdown menu will list all those courses and you may access the assignments by selecting the appropriate course from the dropdown menu as shown in Fig. 3.4.

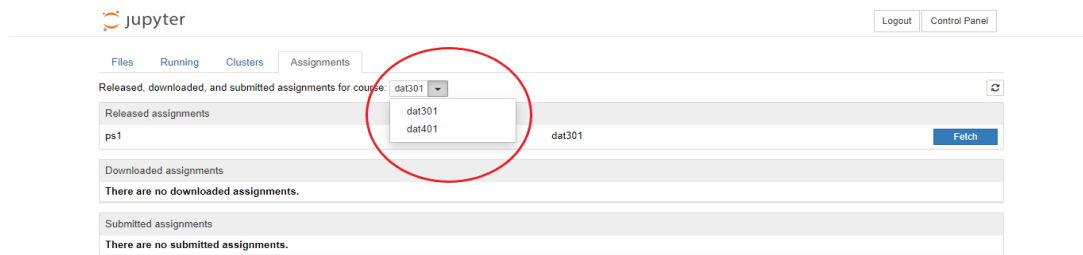


Figure 3.4: Course List Dropdown

## Receiving assignments

- There are two ways you might receive an assignment on Jupyterhub in the *Assignments* tab based on how the instructor wants you to receive it:
  1. Under the *Released Assignments* section (as shown in Fig. 3.5).
  2. Under the *Downloaded Assignments* section (as shown in Fig. 3.6).

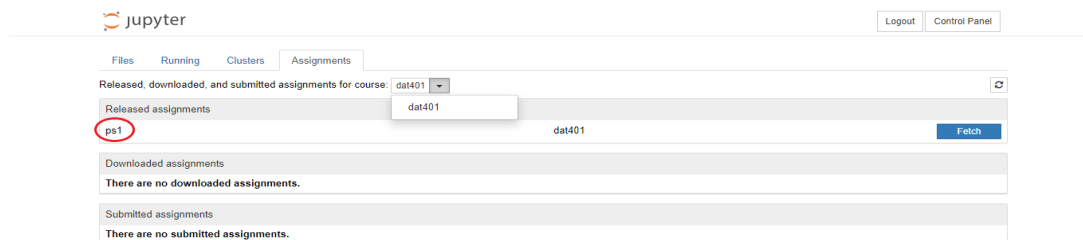


Figure 3.5: Receiving an assignment under the *Released Assignments* section

- If an assignment has been released to you and if you find it under the *Released Assignments* as shown in Fig. 3.5, then you may access the assignment by clicking on the *Fetch* button. This will download a copy of the assignment for you and you may access the files by clicking on them.



Figure 3.6: Receiving an assignment under the *Downloaded Assignments* section

- If an assignment has been released to you and if you find it under *Downloaded Assignments*, then you **will not** have to fetch the assignment as it has been already provided by your instructor to you in your Jupyterhub account.

## 3.2 Validating your Assignment

- After you've finished working on your assignment, it is recommended that you validate your assignment before making a submission using the *Validate* button.

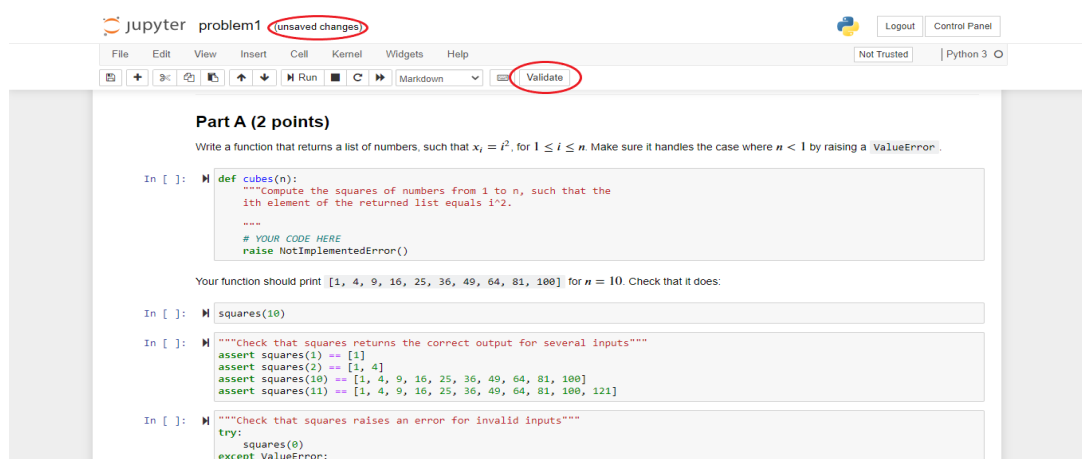


Figure 3.7: Assignment File



- If your assignment passes all the tests, you'll get a success pop-up:

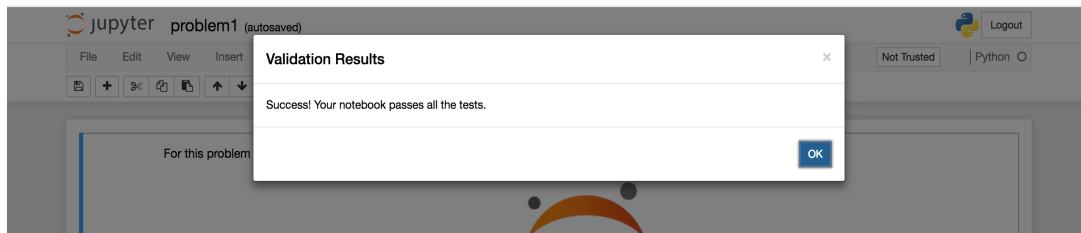


Figure 3.8: Successful validation!

- If it doesn't pass all the tests, you'll get a message telling you which cells failed:

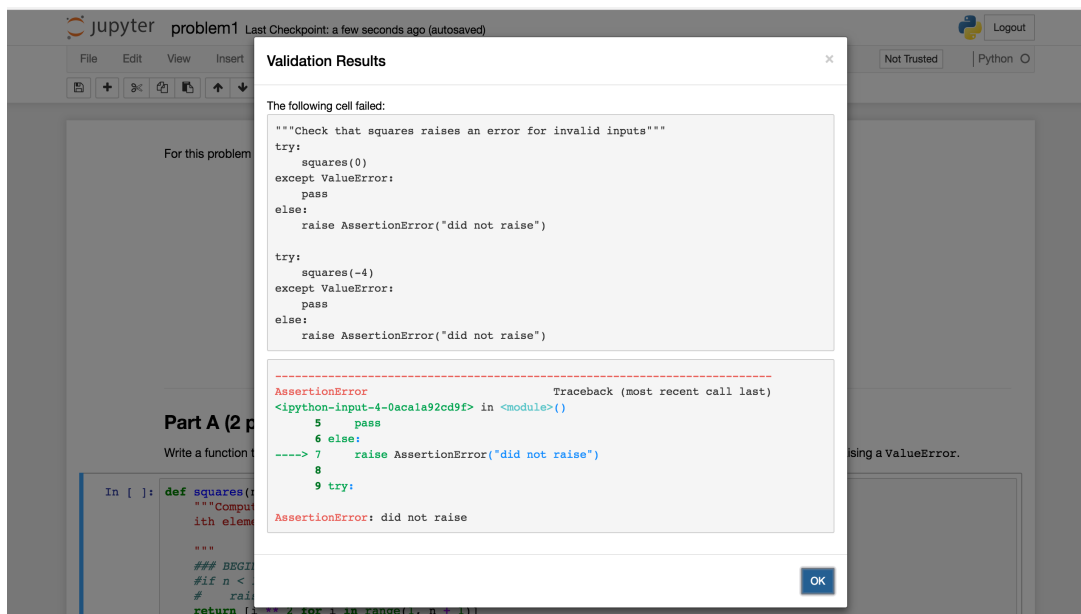


Figure 3.9: Validation failure!

### 3.3 Submitting your Assignment

- To submit an assignment, click on the **Submit** button in the **Downloaded Assignments** section as shown below:
- After you've submitted your assignment, you will see a timestamp of your submission in the **Submitted Assignments** section as shown in Fig. 3.11.

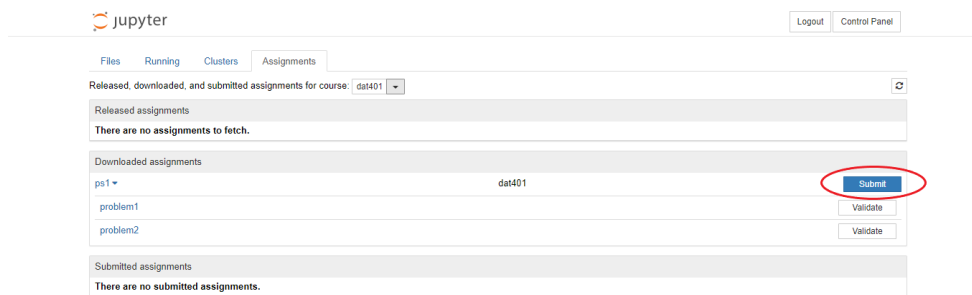


Figure 3.10: Submitting an assignment



Figure 3.11: Submitted assignments logbook

- You may resubmit as many times as you need and your **most recent submission will be considered**. **Note that you will still be able to submit/resubmit your assignment even after the deadline, but you will be awarded a score of zero in that case!**

### 3.4 Getting feedback on your submission

- After your submission has been fully graded, the instructor may release feedback for your submission. You may access the feedback using the ***Fetch Feedback*** button as shown in Fig. 3.12.
- If the feedback is made available by the instructor, then you will see a message saying ***(feedback available to fetch)*** as shown in Fig. 3.13.



Figure 3.12: Fetch Feedback

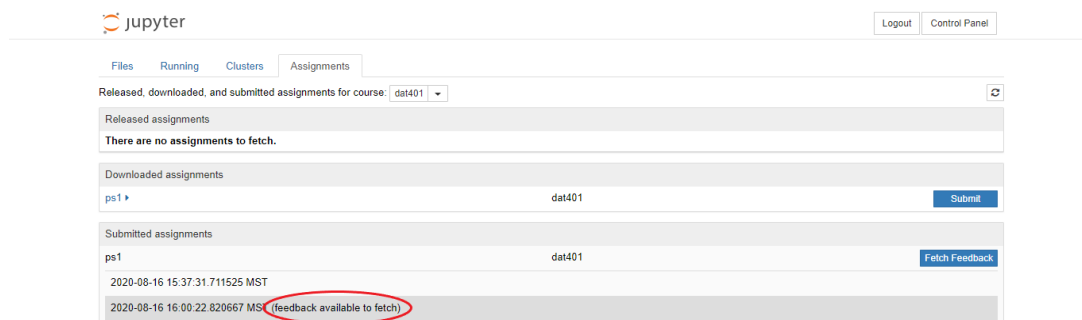


Figure 3.13: Feedback available to fetch

- After you’ve fetched the feedback using the ***Fetch Feedback*** button, a hyperlink with text saying “(view feedback)” will appear as shown in Fig.

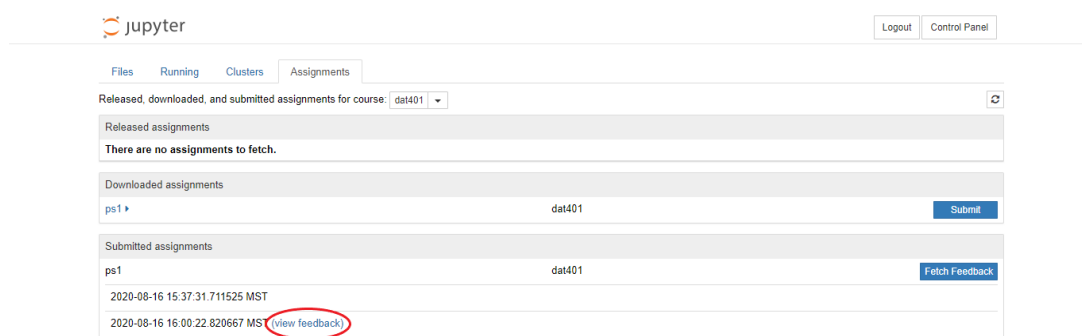


Figure 3.14: View feedback

- An illustration of how the feedback might look like is provided in Fig. 3.15.

problem1 (Score: 2.0 / 10.0)

1. Test cell (Score: 1.0 / 1.0)
2. Test cell (Score: 0.0 / 1.0)
3. Comment
4. Test cell (Score: 0.0 / 0.5)
5. Test cell (Score: 0.0 / 0.5)
6. Written response (Score: 0.0 / 1.0)
7. Comment
8. Coding free-response (Score: 0.0 / 2.0)
9. Comment
10. Task (Score: 1.0 / 4.0)

Before you turn this problem in, make sure everything runs as expected. First, **restart the kernel** (in the menubar, select Kernel→Restart) and then **run all cells** (in the menubar, select Cell→Run All).

Make sure you fill in any place that says "YOUR CODE HERE" or "YOUR ANSWER HERE", as well as your name and collaborators below:

For this problem set, we'll be using the Jupyter notebook:

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**Part A (2 points)**

Write a function that returns a list of numbers, such that  $x_i = i^2$ , for  $1 \leq i \leq n$ . Make sure it handles the case where  $n < 1$  by raising a `ValueError`.

Figure 3.15: Feedback

## 4. SIGNING OUT OF THE SERVER

- To sign out of your JupyterHub user account, click on the **Logout** button as indicated in Fig. 4.16.



Figure 4.16: Signing out of the JupyterHub Server

- You will be redirected to the ASU's Sign Out page. You can now close the tab and sign in again with your ASURITE credentials when required.