

Things to Do While You are Waiting

- Open your web browser and visit hprc.tamu.edu
- Log into TAMU VPN (if you're off campus) and reconnect to Zoom
- If you don't have an HPRC account, please ask*

*speak up in chat or email help@hprc.tamu.edu

Introduction to Python

with exercises using HPRC Portal

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Fall 2021

Outline

- Ain't nobody got time for an outline

Let's GO

Follow Along

Short course material can be found on the short course page.

https://hprc.tamu.edu/training/intro_python.html

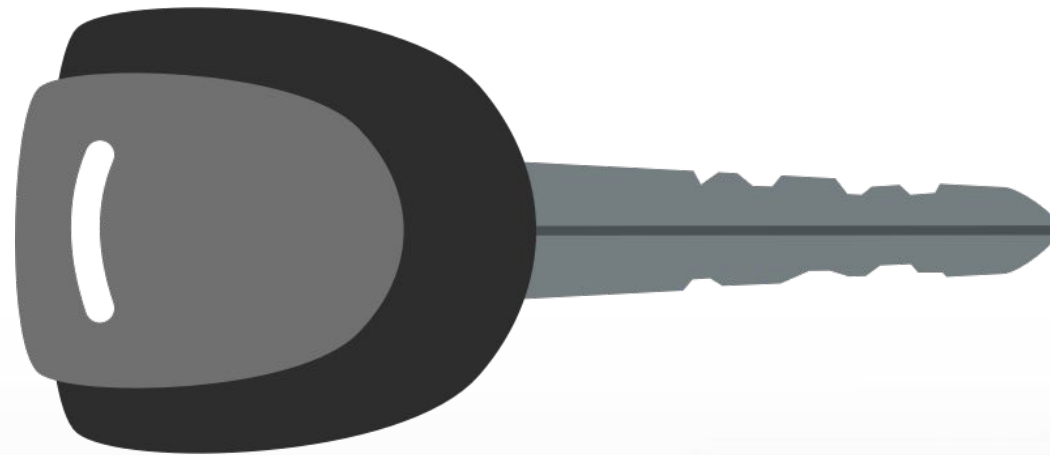
And on disk on Grace

```
/scratch/training/Intro-python
```

```
Intro_Python_fall21_Portal.ipynb (Download to your PC  
or copy to $SCRATCH)
```

```
Intro Python fall21 Colab.ipynb (Save a copy in Drive)
```

Getting Started



Authentication and Access

Three steps to access HPRC resources.

1. Get a HPRC account
2. VPN to TAMU campus
3. Web login (**Portal**, Globus) through CAS
or
SSH/SFTP to HPRC clusters

- Duo NetID two-factor authentication used to enhance security (it.tamu.edu/duo/)
- (Faculty and staff) Use Duo Keys - u.tamu.edu/get_duo_keys
- Instructions in two-factor wiki page (hprc.tamu.edu/wiki/Two_Factor)

Example: SSH login with Duo

```
$ ssh grace.tamu.edu
```

```
*****
```

```
.... warning message (snipped) .....
```

```
*****
```

Password:

Duo two-factor login for UserNetID

Enter a passcode or select one of the following options:

1. Duo Push to XXX-XXX-1234
2. Phone call to XXX-XXX-1234
3. SMS passcodes to XXX-XXX-1234 (next code starts with: 9)

Passcode or option (1-3): 1

Success. Logging you in...

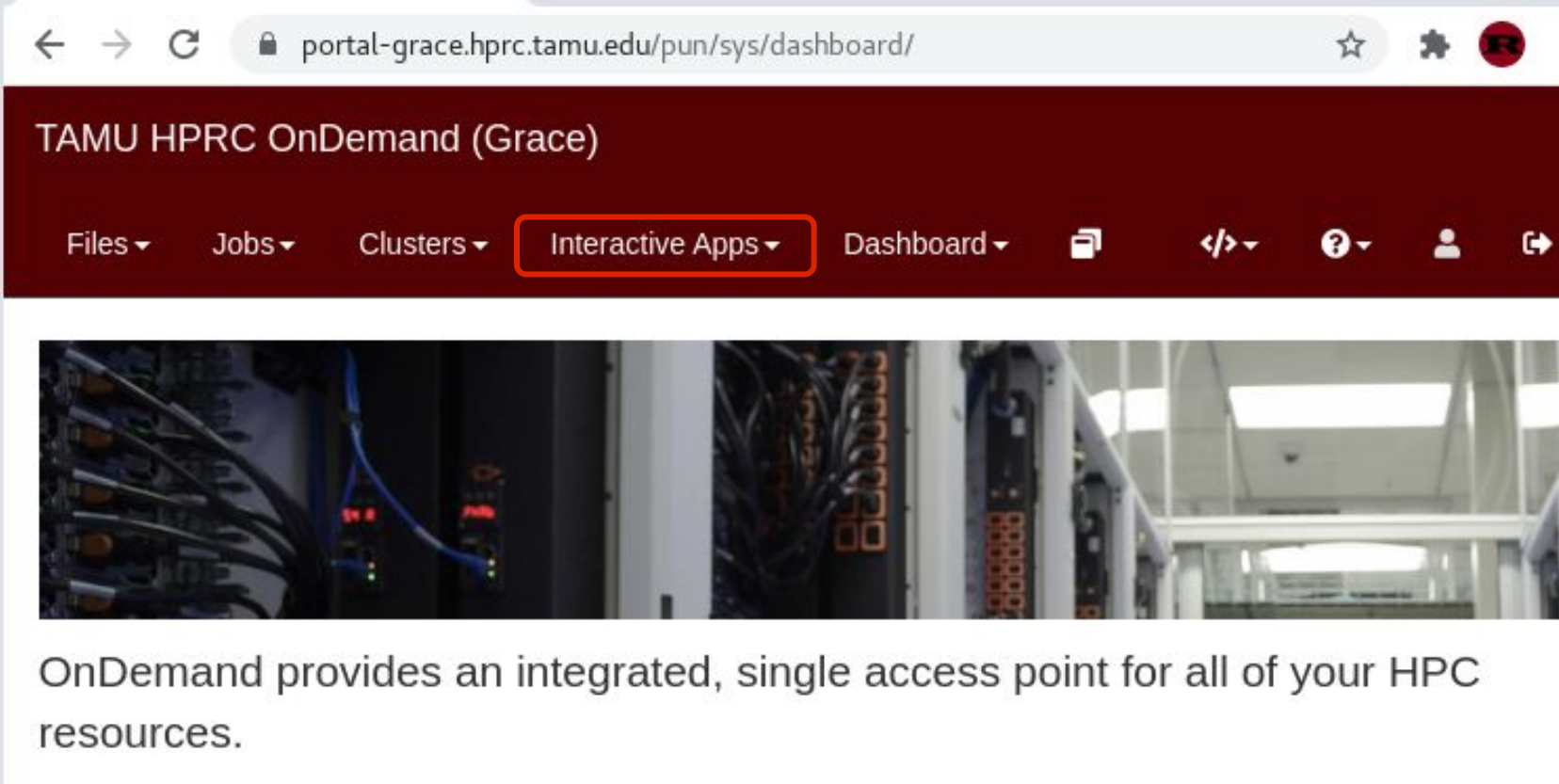
Hands-on exercises:

Activate TAMU VPN

Go to: portal.hprc.tamu.edu
and select: **Grace**

Once you have logged in, respond to a poll

portal.hprc.tamu.edu



portal-grace.hprc.tamu.edu/pun/sys/dashboard/

TAMU HPRC OnDemand (Grace)

Files ▾ Jobs ▾ Clusters ▾ **Interactive Apps ▾** Dashboard ▾

OnDemand provides an integrated, single access point for all of your HPC resources.

- [Files](#) > copy and edit files on the cluster's filesystems
- [Jobs](#) > submit and monitor cluster jobs
- [Clusters](#) > open a shell terminal (command line) on a login node
- [Interactive Apps](#) > start graphical software on a compute node and connect to it
- [Dashboard](#) > view file quotas and computing account allocations

Launch Interactive Apps

Navigate

- Menu > Interactive Apps > TESTING > Jupyter Notebook (TESTING)

Choose an Type of environment

- Module load + ...

Choose a Module

- Python/3.8.6

Jupyter Notebook (TESTING)

version: 3205f76

This app will launch a [Jupyter Notebook](#) server on the [Grace cluster](#).

Notice: This form has changed. Please pay attention to what options you select and what the defaults are.

Type of environment

Module load + Python virtualenv

Select the type of environment in which Jupyter is installed. [Help me choose](#)

Module selected

Python/3.8.6

Select a module to load. All modules listed will also load the appropriate Python and Jupyter by default.

Launch Interactive Apps

Leave “optional environment” *blank*

Choose a Number of hours

- 3 hours

Launch

Number of hours

Number of cores:

Specify the number of cores [1-48] allocated on a node from the [Grace cluster](#).

Total memory (GB)

Requested total memory (2 - 360GB)

Node type

Choose "GPU" if the notebook needs to run on an Nvidia GPU node.

Account

This field is optional.

Email

This field is optional.

Launch

Connect to Interactive Apps

- Portal submits a job to the cluster
- Jupyter server runs on a Node
- Wait (about minute), Refresh page, Connect to Jupyter.

The screenshot illustrates the lifecycle of a Jupyter Notebook job on a cluster. It shows three overlapping panels representing different stages of the job's execution:

- Queued State (Top Panel):** The job is titled "Jupyter Notebook (TESTING) (1409525)" and is in a "Queued" state. It was created at 2021-10-07 16:13:42 CDT, requested 3 hours, and has a session ID of fc121577-0537-47a1-9988-d1b1c314361f. A red "Delete" button is visible.
- Starting State (Middle Panel):** The job is now "Starting" and has allocated "1 node | 1 core". It was created at the same time as the queued state. The "Time Remaining" is 2 hours and 59 minutes. A red "Delete" button is visible.
- Running State (Bottom Panel):** The job is now "Running" on host ">_c622". It was created at the same time as the previous states. The "Time Remaining" is 2 hours and 59 minutes. A red "Delete" button is visible. A blue "Connect to Jupyter" button is also present.

Partial text from the background interface includes: "Please be patient depends on the" and "Your session is process can take".

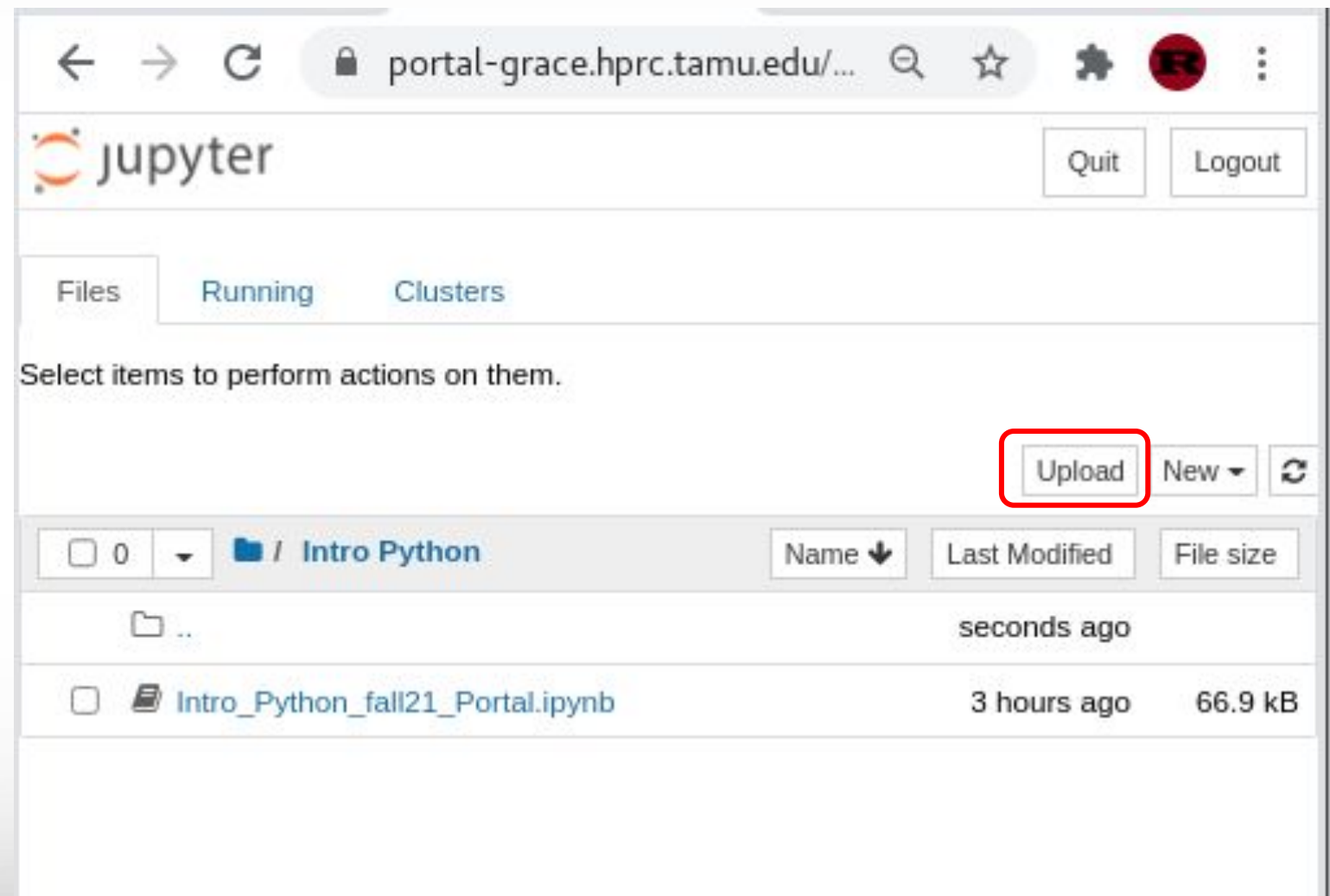
Interactive Apps

Jupyter starts in a File Browser.

Upload the file

`Intro_Python_fall21_Portal.ipynb`

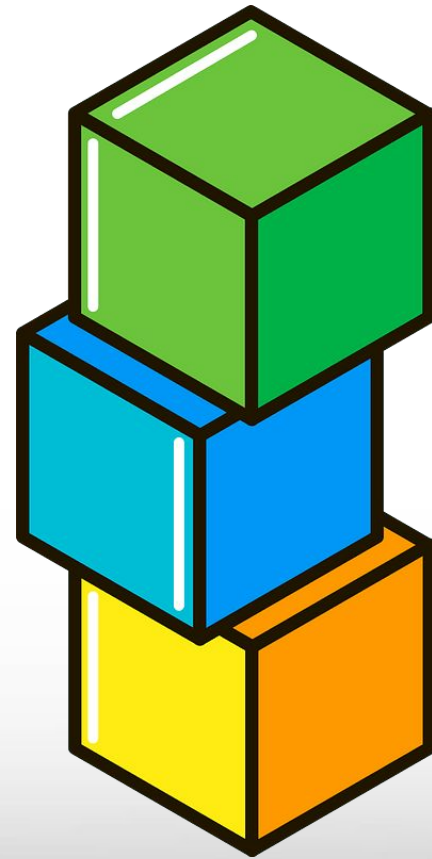
Click the **file name** to open the file.



Hands-on exercises: Launch a Jupyter Notebook

Once you have the notebook open,
respond to a poll

Python Basics



(continued in Python Notebook)

Need Help?

- Try these:
 - First check the FAQ hprc.tamu.edu/wiki/HPRC:CommonProblems
 - Also try the Grace User Guide hprc.tamu.edu/wiki/Grace
 - Email your questions to help@hprc.tamu.edu. (Managed by a ticketing system)
- Help us, help you -- we need more info
 - Which Cluster
 - UserID/NetID (*UIN is not needed!*)
 - Job id(s) if any
 - Location of your jobfile, input/output files
 - Application used if any
 - Module(s) loaded if any
 - Error messages
 - Steps you have taken, so we can reproduce the problem
- Or visit us @ 218A Blocker (Making an appointment is recommended.)



**HIGH PERFORMANCE
RESEARCH COMPUTING**
TEXAS A&M UNIVERSITY

Thank you.

Please fill out the post-course Survey.

“really very please do; it matters
to me personally.” - Richard