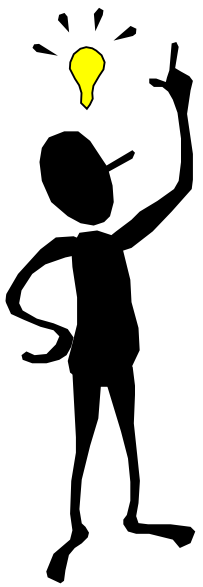
GETTING STARTED WITH RIVANNA AND JUPYTER NOTEBOOKS

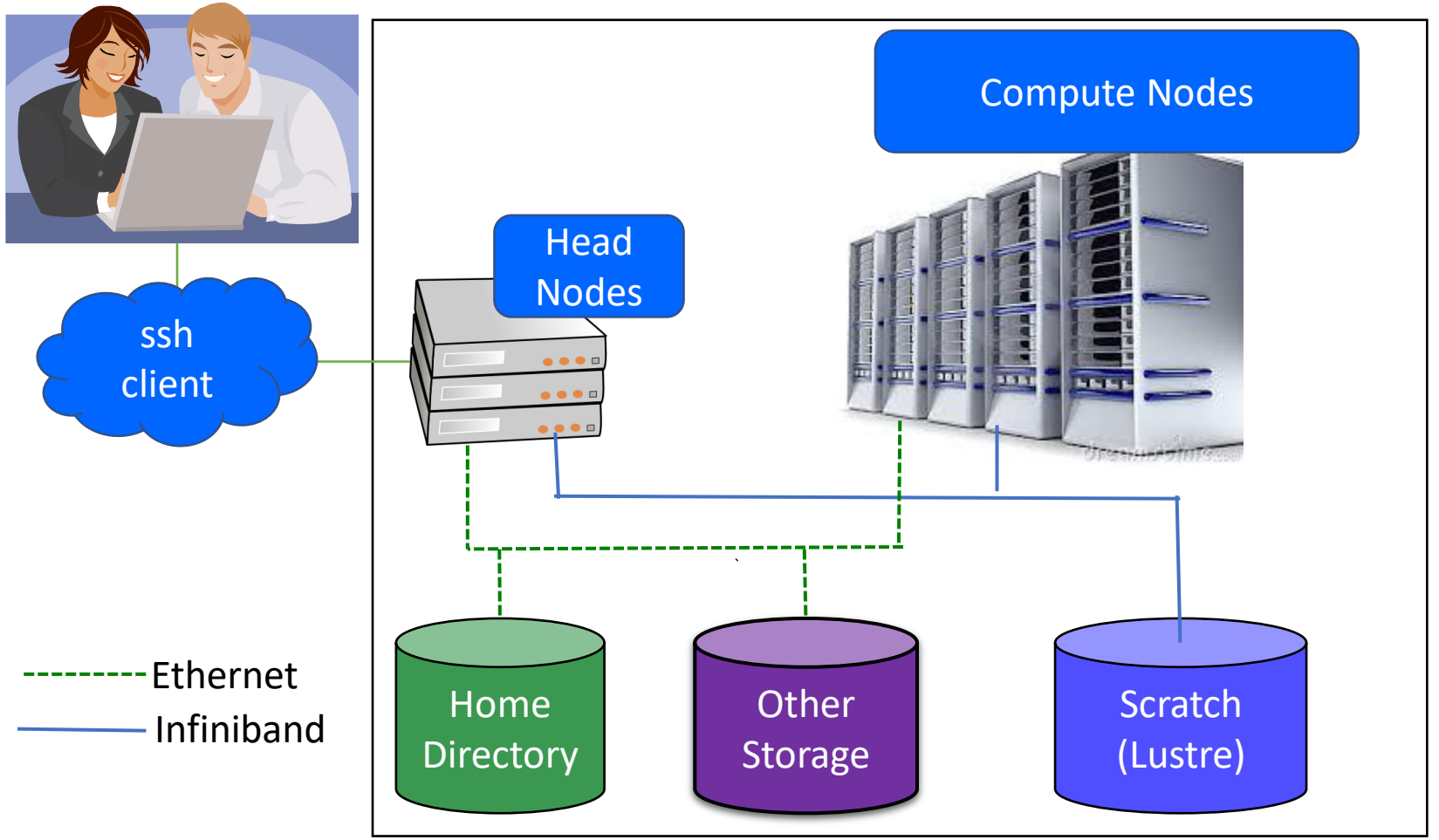
Overview of Rivanna
Connecting to Rivanna with Open onDemand
Copying Files
Starting a JupyterLab Session
Running a Notebook

Terminology



- Rivanna is our high-performance cluster – basically. hundreds of computers networked together.
- Node
  - Basic building block of a cluster
  - Usually, a specialized computer
  - Two types of nodes:
    - Head Node – computer used for logging on and submitting jobs
    - Compute Node -- computer that does most of the work
- Core
  - an individual processor on a computer
  - The nodes on Rivanna have many cores (from 16 – 40)

Rivanna Overview



Connect to Rivanna

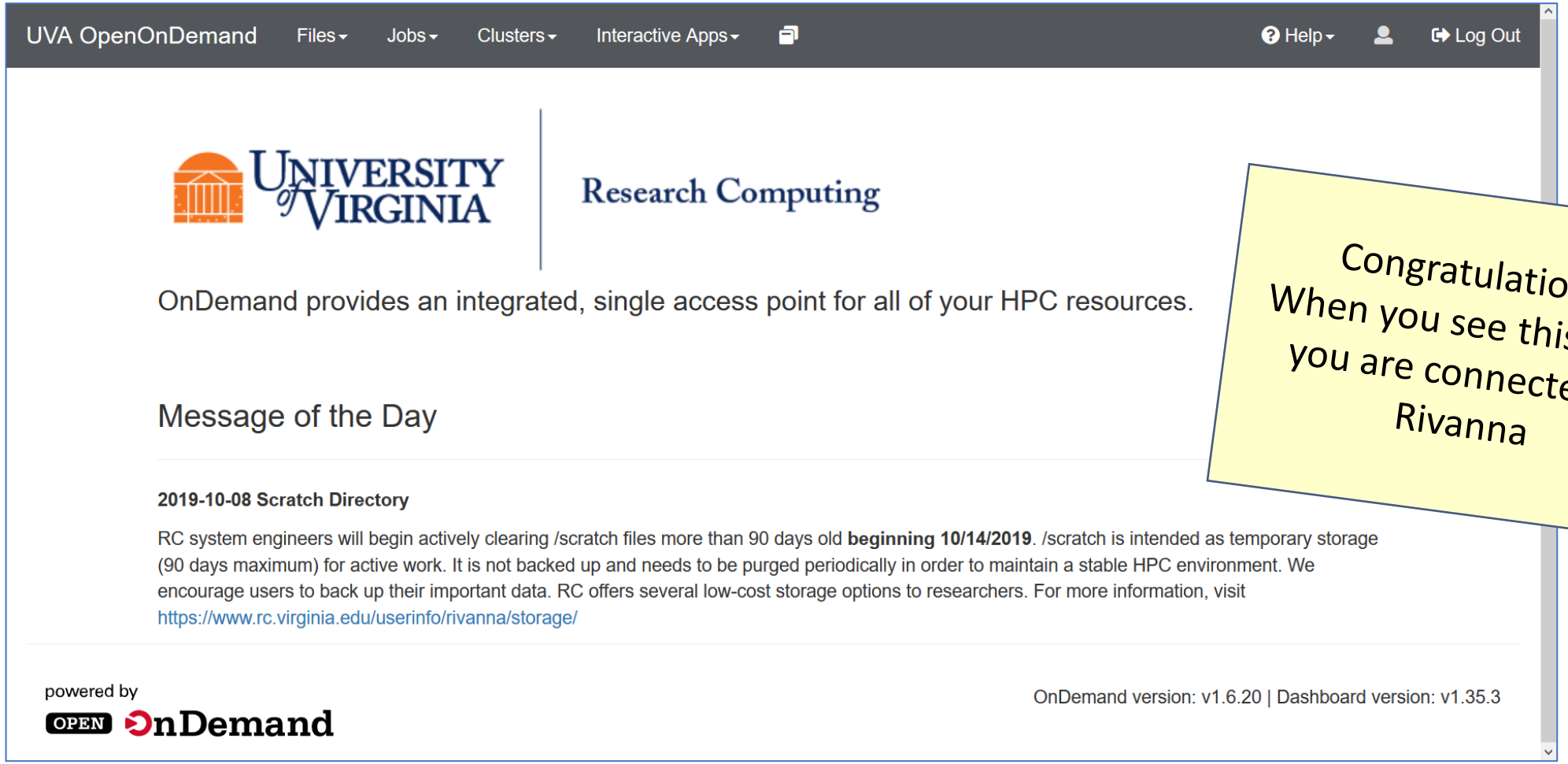
- You will be using our web portal, called Open onDemand, to connect to Rivanna.
- To access Open OnDemand, open your web browser and type

  https://rivanna-portal.hpc.virginia.edu

  You will need to authenticate with Netbadge (i.e., “Netbadge” in).

- After you log in, you will see the Dashboard (shown on following slide).

Open onDemand Dashboard



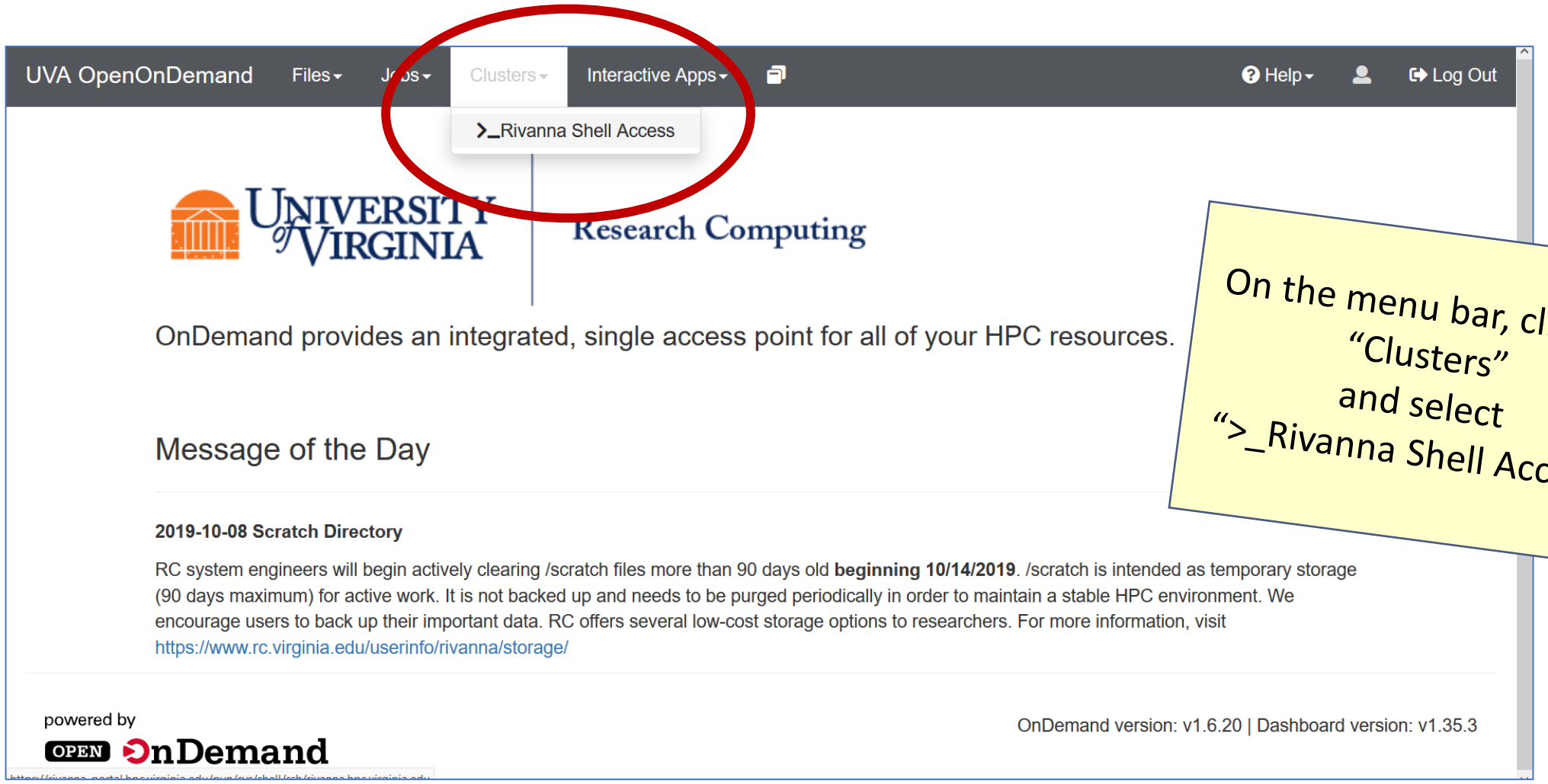
Congratulations!
When you see this page, you are connected to Rivanna

Copying the Notebooks to your Account

- To get a copy of the sample Jupyter Notebooks in your account, you will open a shell (i.e., a terminial window) and use a command to copy the Notebooks (plus other necessary files) from a shared location to your scratch directory

- The next two slides will show how to do these steps.

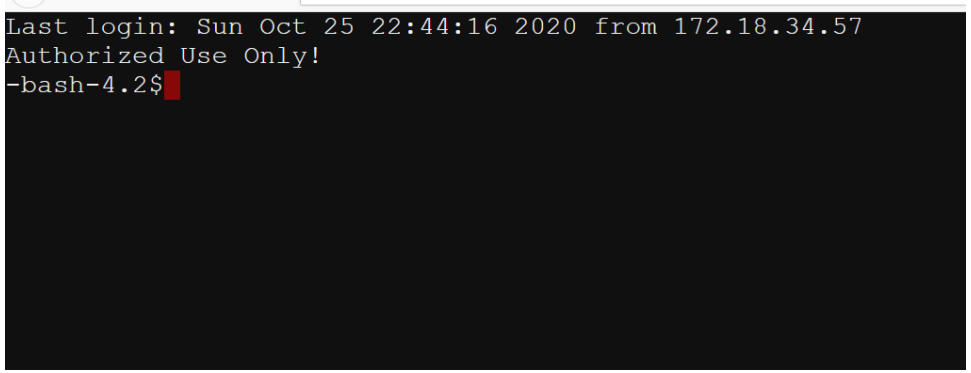
Open a Shell



On the menu bar, click on "Clusters" and select ">_Rivanna Shell Access"

The Shell

- A new tab will open with a black window and words like "Authorized Use Only!".



- This is your shell. You can type Linux commands in the shell.

Command to Copy Files

- Type the following in the shell:

```
cp -r /project/rivanna-training/ML_with_Python /scratch/$USER
```

- This command will copy a folder and its contents to your scratch directory.

Exit out of the Shell

- You are now done with your shell. You can exit from it by closing the tab and clicking on “Leave page”.

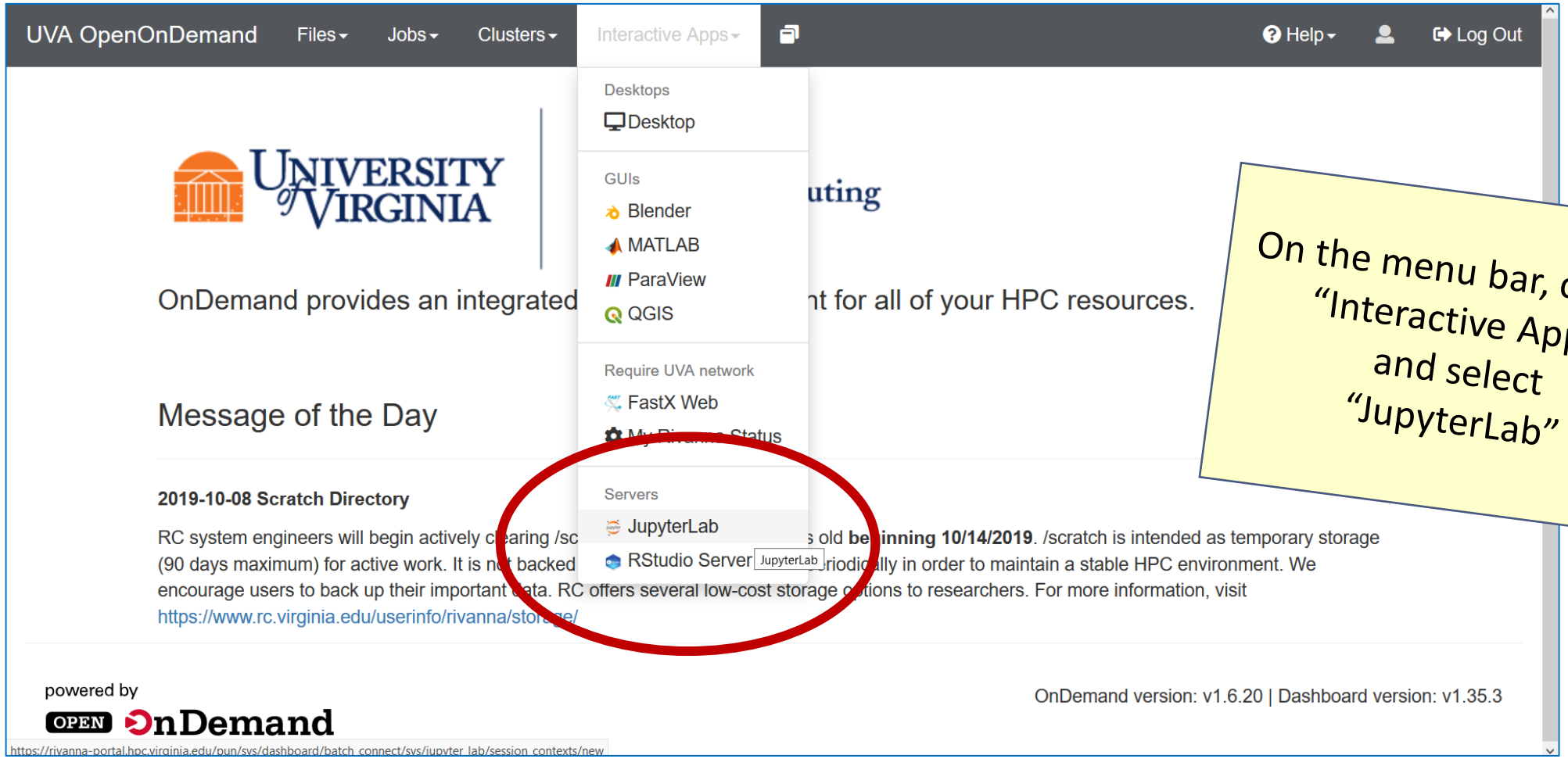
- You should be back at the Open onDemand dashboard.
  - If not, click the tab on your browser that is labeled “Dashboard”.
  - If that fails, re-enter https://rivanna-portal.hpc.virginia.edu in you web browser.

Starting JupyterLab

- Before you can open up a Jupyter Notebook, you will need to request a JupyterLab session on Rivanna and provide some details for the resources that the Notebook needs. (For example, our sample Notebooks need to run on a GPU.)

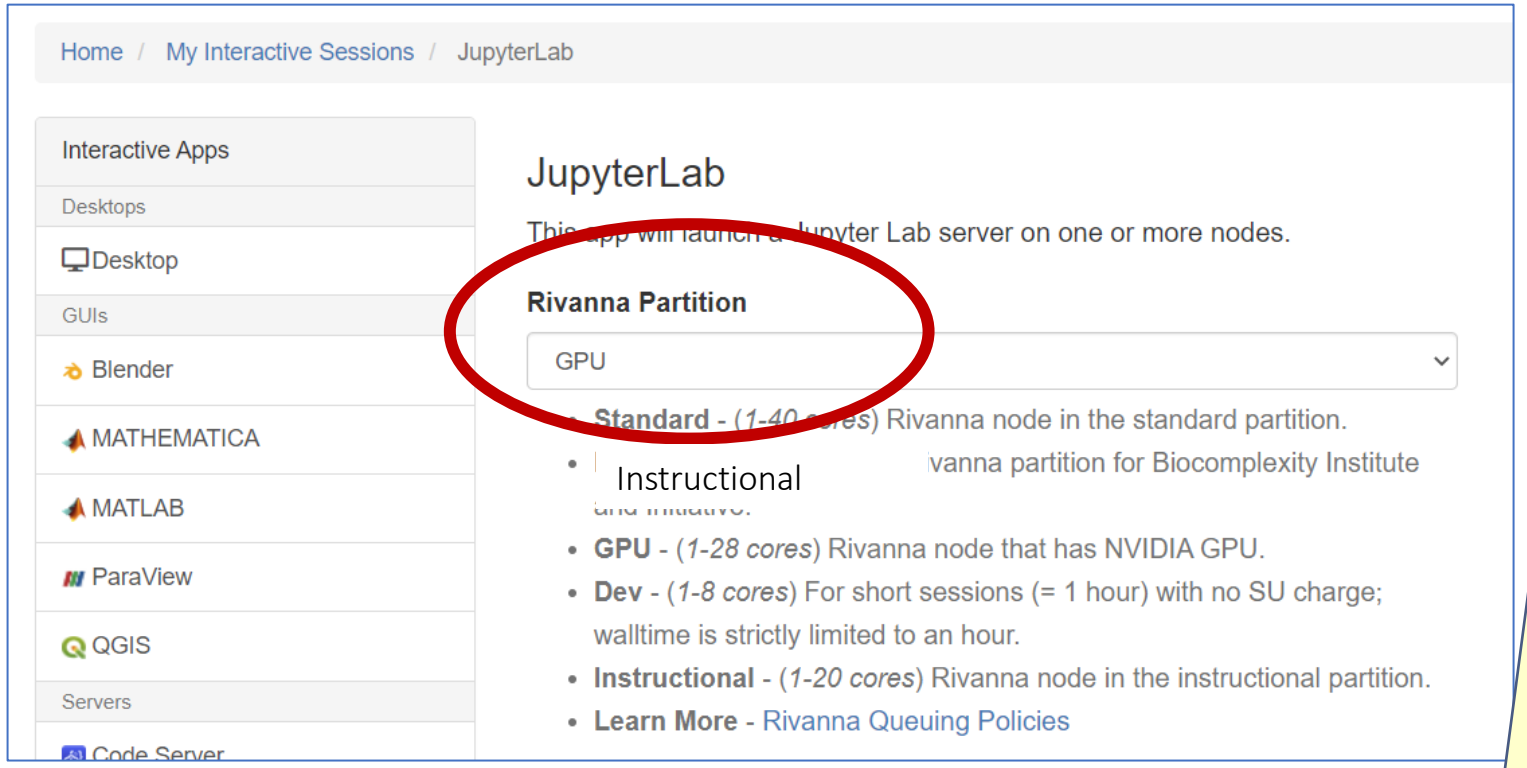
- The next several slides will take you through the steps to start a JupyterLab session.

Select JupyterLab from Interactive Apps



On the menu bar, click on "Interactive Apps" and select "JupyterLab"

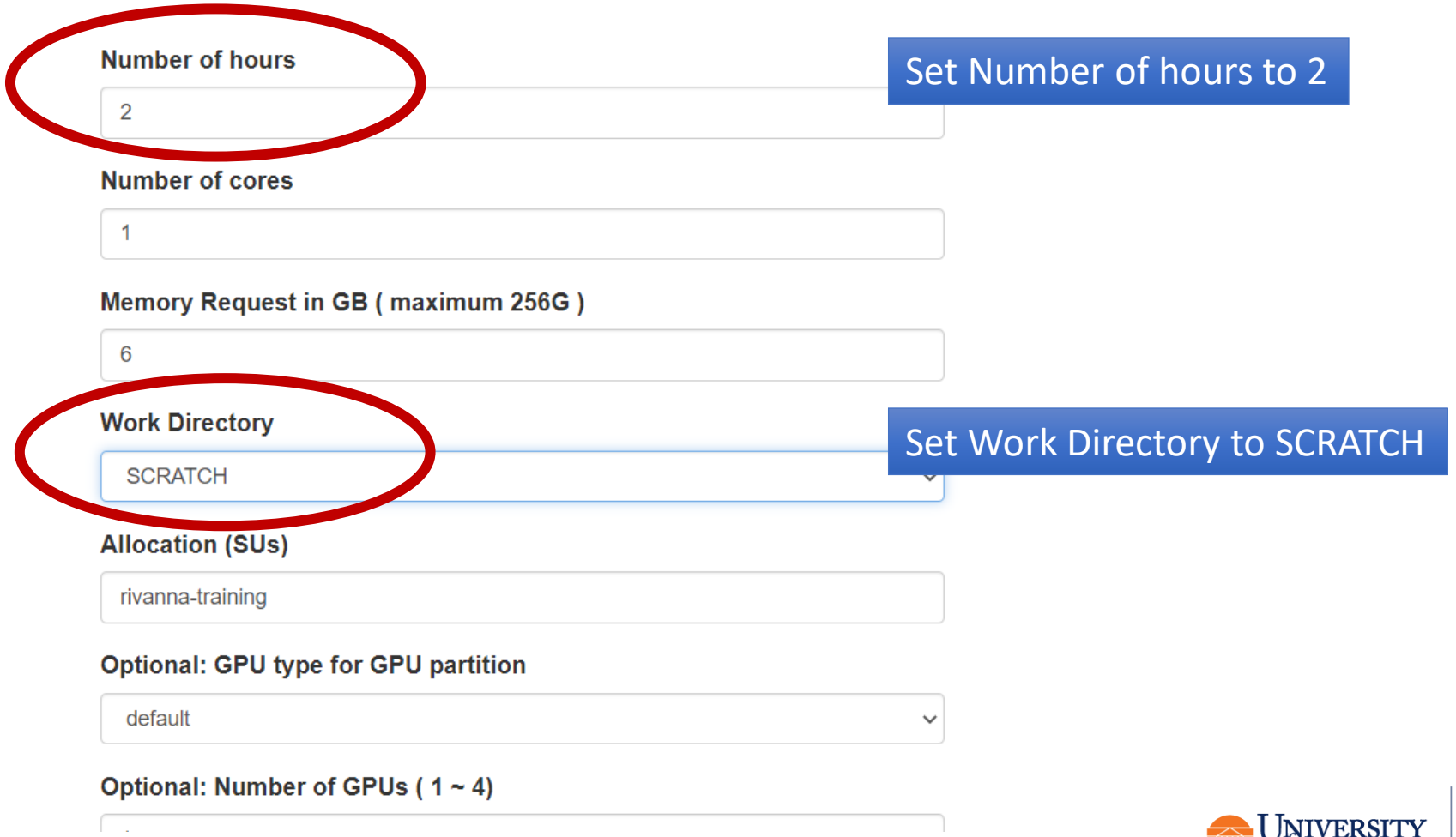
JupyterLab Session Selections (1/3)



Select the GPU Partition

To fill out the webform, follow the instructions on this and the two subsequent slides.

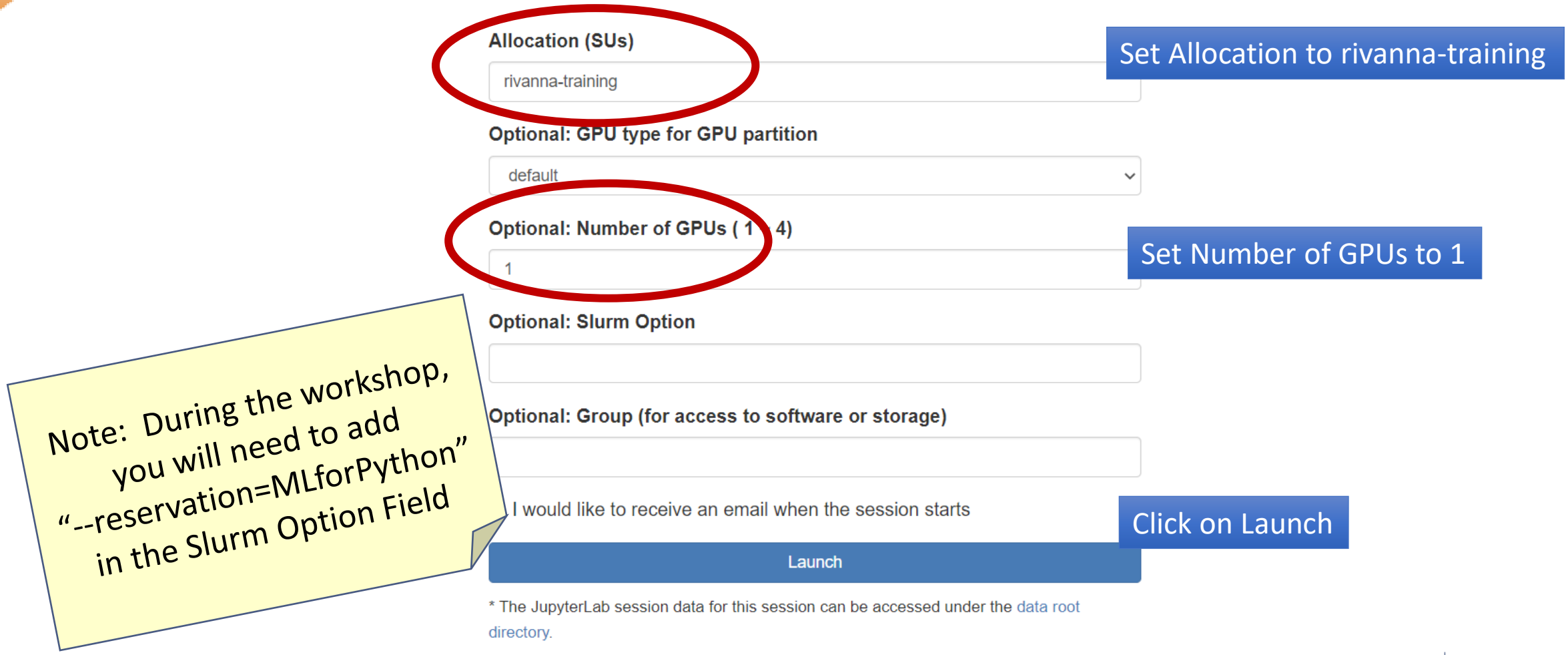
JupyterLab Session Selections (2/3)



Set Number of hours to 2

Set Work Directory to SCRATCH

JupyterLab Session Selections (2/3)



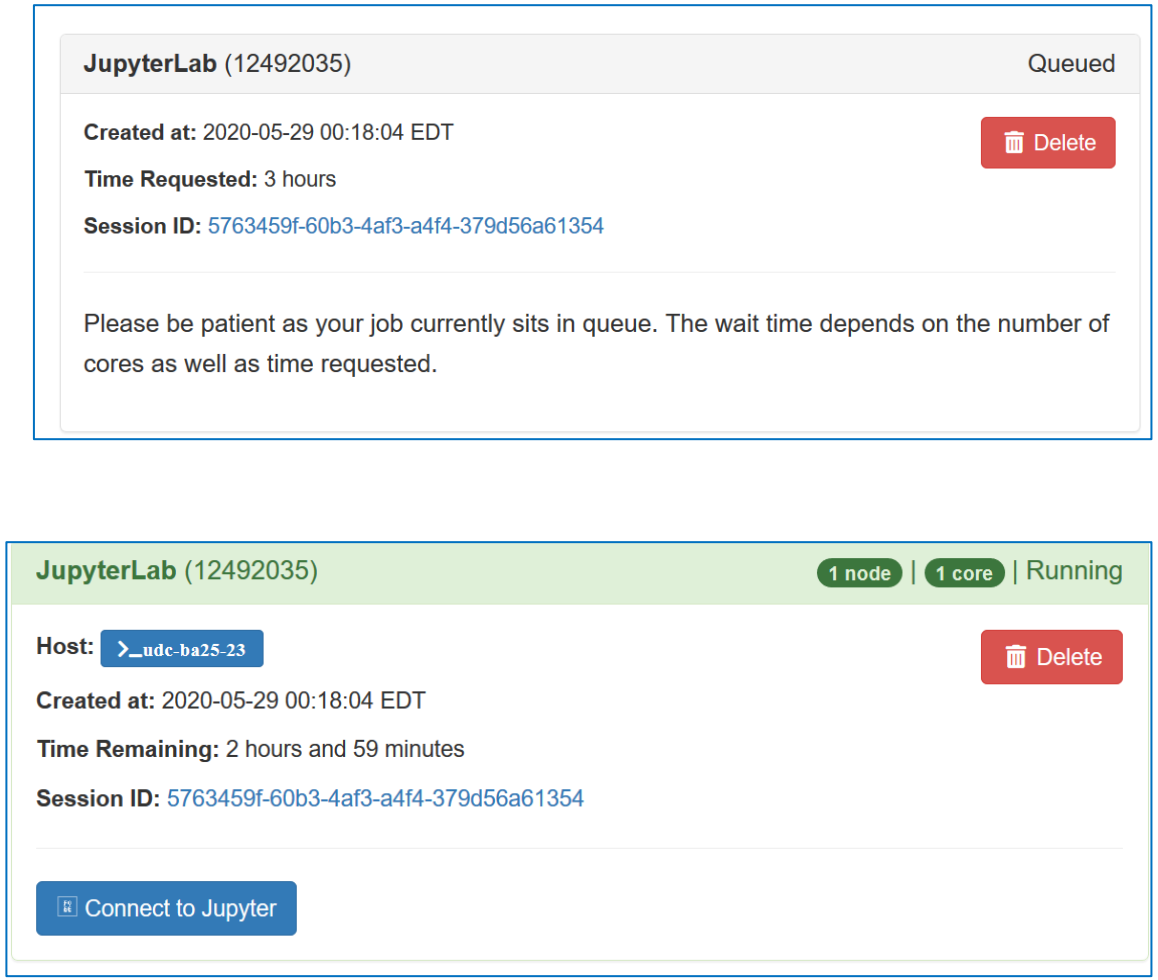
Set Allocation to rivanna-training

Set Number of GPUs to 1

Click on Launch

Note: During the workshop, you will need to add "--reservation=MLforPython" in the Slurm Option Field

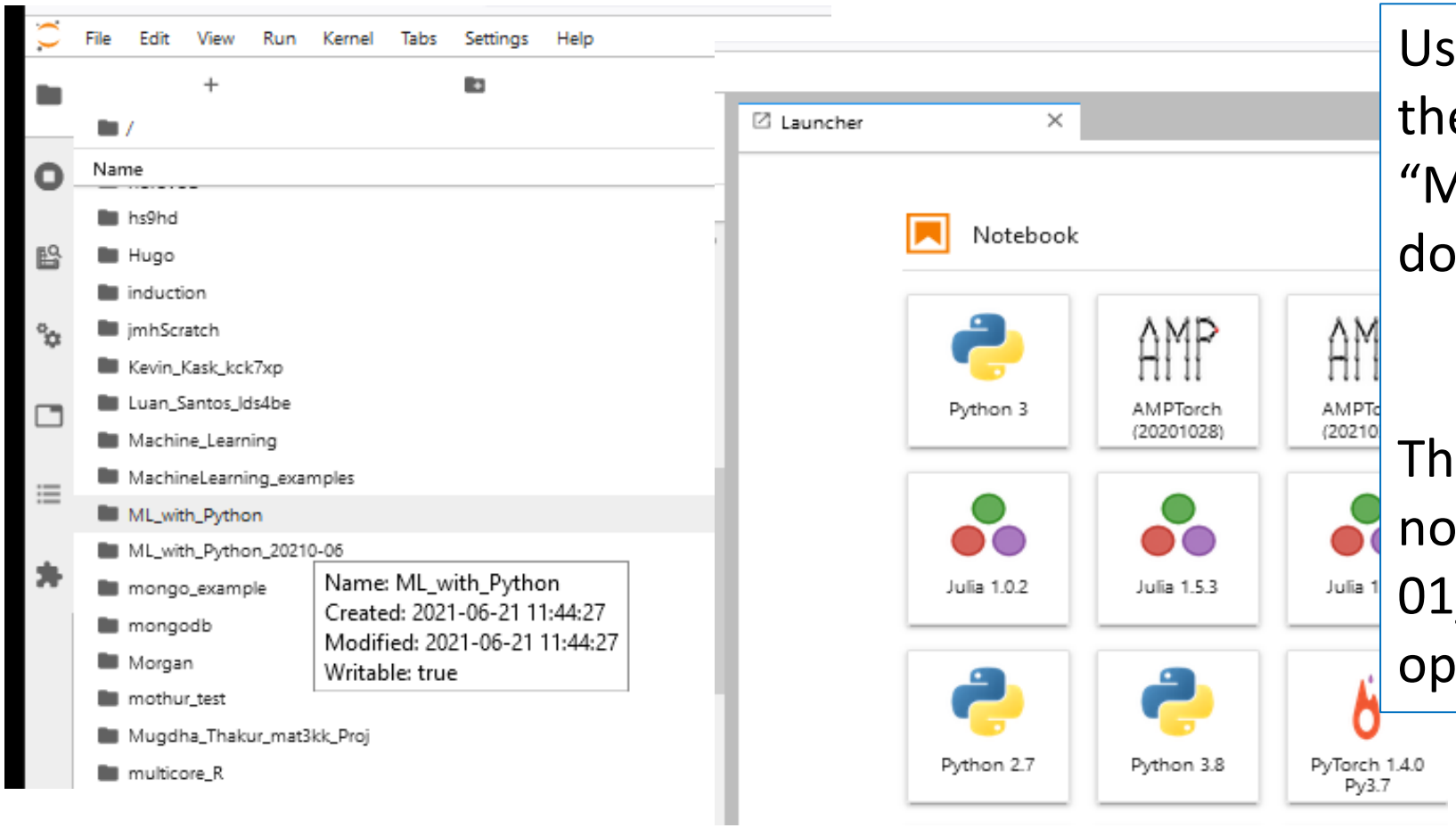
Wait for the Session to Start



The screen will transition from a "Please be patient" statement to a "Connect to Jupyter" button.

Click on the "Connect to Jupyter" button.

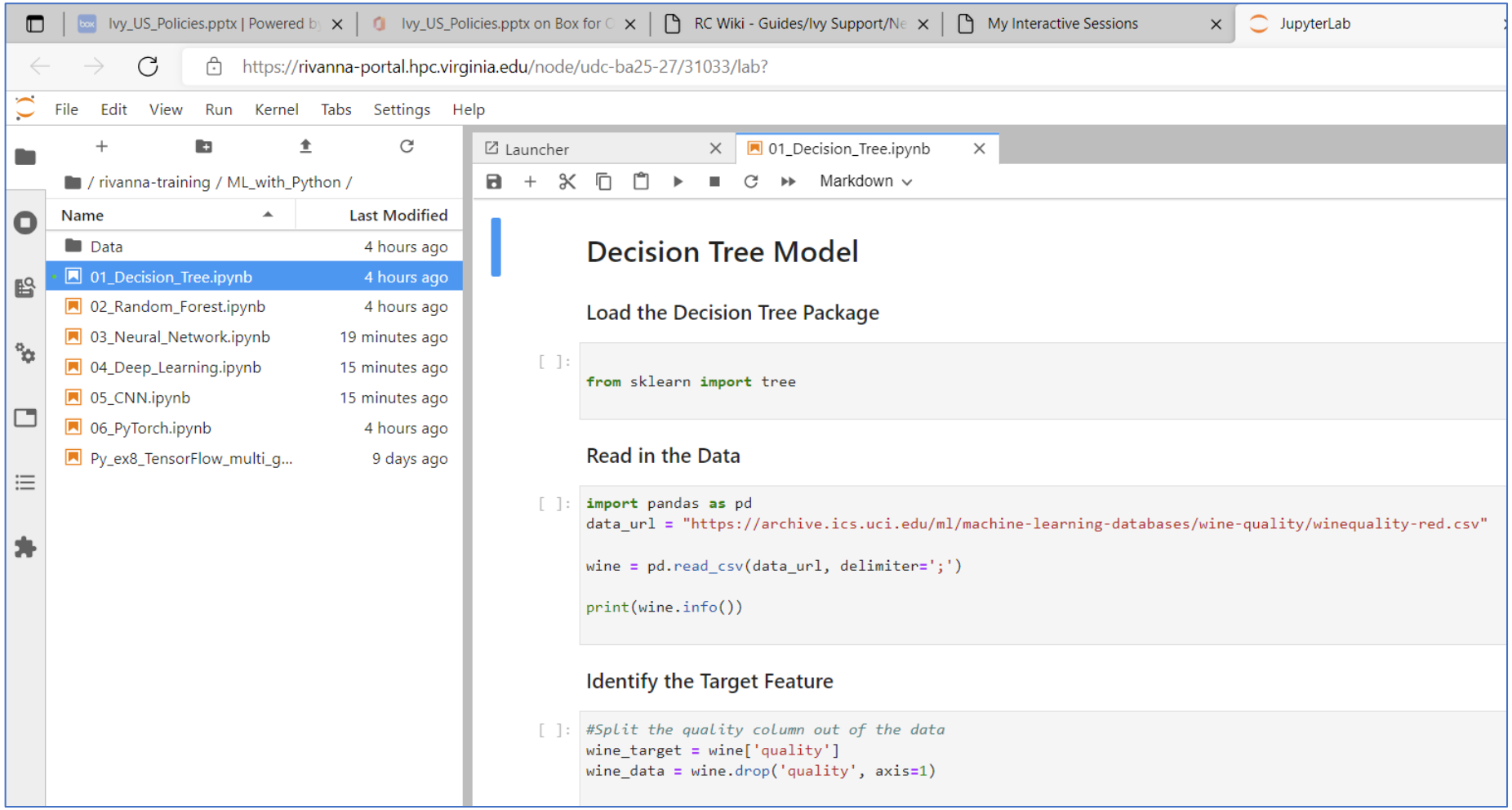
JupyterLab



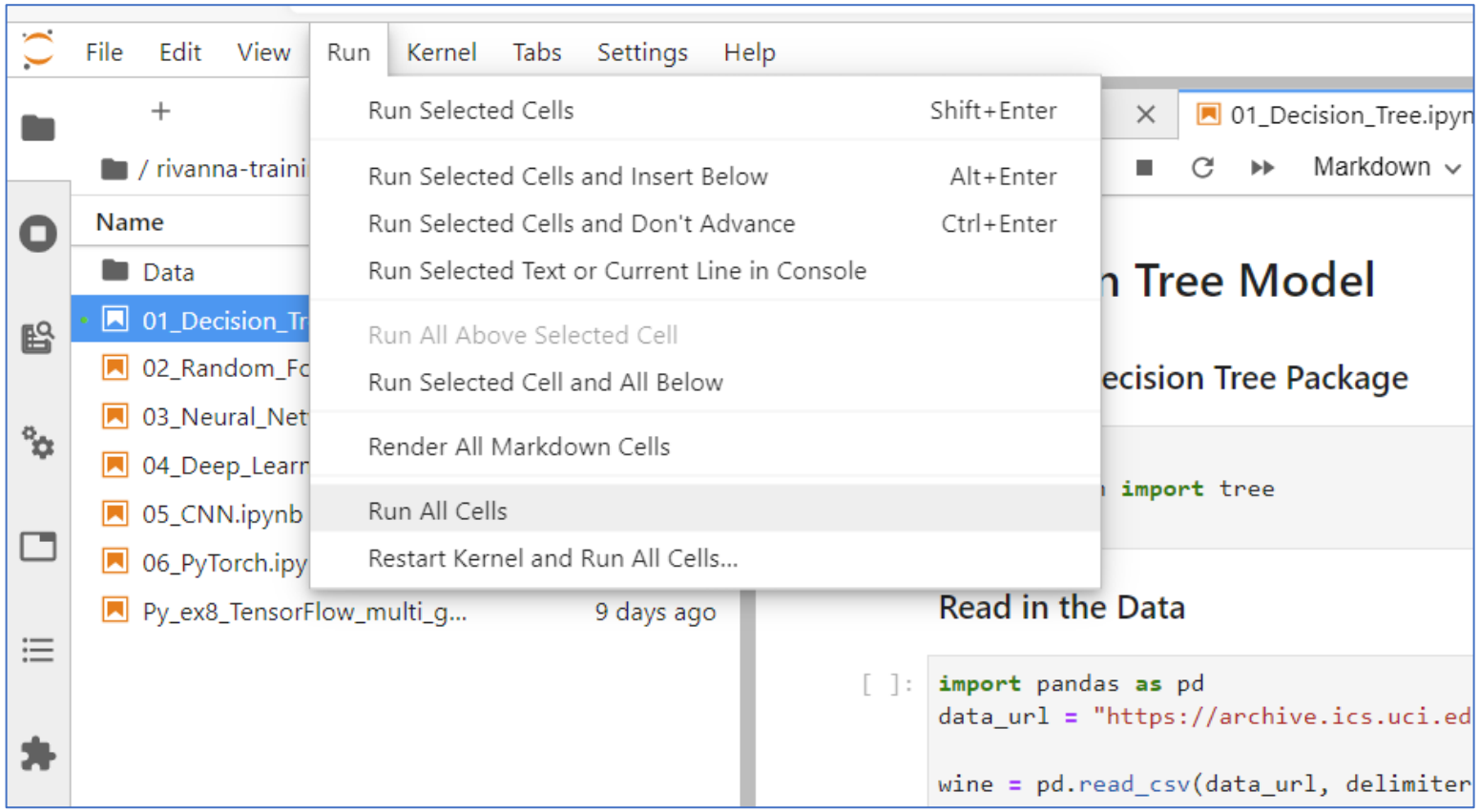
Use the File Explorer to find the folder "ML_with_Python" and double-click on it.

Then, double-click on the notebook file (e.g., 01_Decision_Tree.ipynb) to open it.

Viewing the Notebook



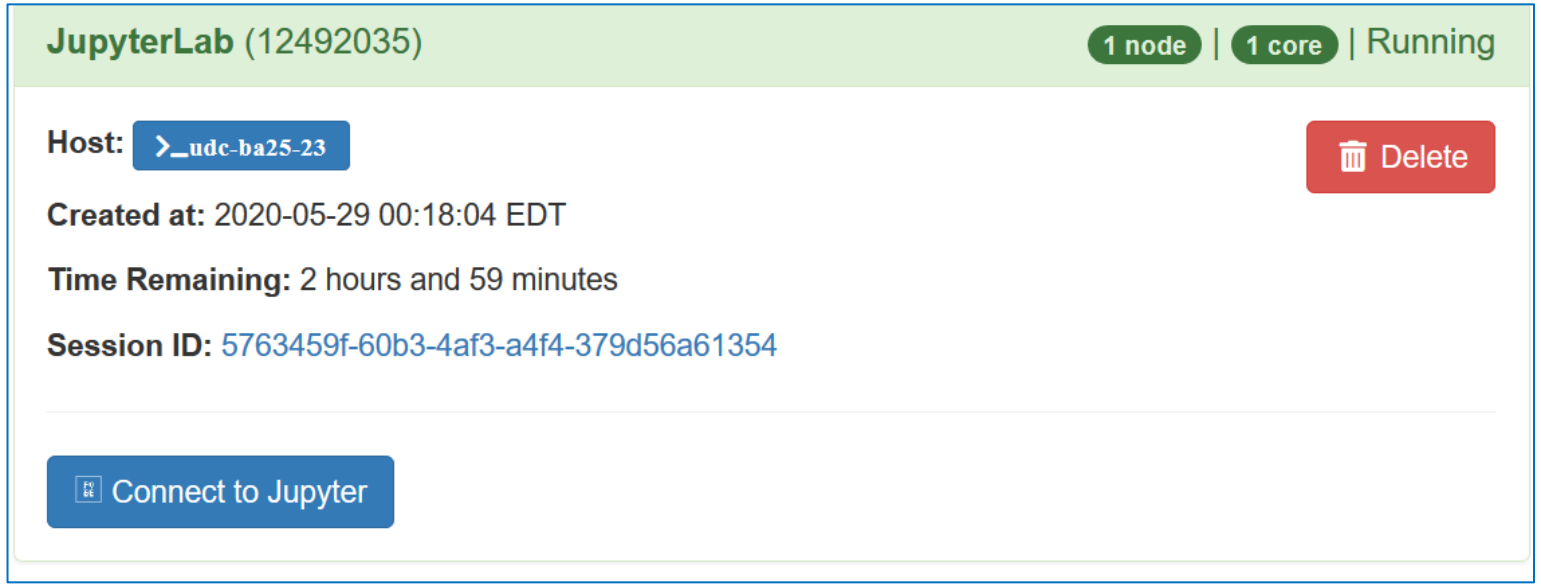
Running the Notebook



To run the Notebook, select *Run > Run All Cells.*

You will need to scroll through the Notebook to see all the results.

Ending the Session



When you are done with your Notebook, go back to the tab labeled "My Interactive Sessions" and click on the Delete button.

In the dialogue box that appears, click on the "Confirm" button.

Questions?

Questions about Rivanna or running JupyterLab sessions can be sent to

hpc-support@virginia.edu