

# Tutorial: Python for New Programmers on **ACES**

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High Performance  
Research Computing  
DIVISION OF RESEARCH



# Outline

- Overview of Python
- Getting Started
- Jupyter and Hello
- Elements of Code
- Control

# Overview of Python

# What Computers Do

- Comp
- Comp  
you sa

what



Disney's *Fantasia* (1940)

# Where to get Python

- Windows, Mac, and Linux all have it in their app stores (for free)
- Python is also **online** for free
  - <https://colab.research.google.com/>
  - <https://replit.com/>

*Note:* stay away from Python 2 because Python 3 is much better.

Today we will be using Python 3.10

# Learning Resources

- Slides on the course web page  
[https://hprc.tamu.edu/training/aces\\_intro\\_python.html](https://hprc.tamu.edu/training/aces_intro_python.html)
- HPRC's Knowledge Base  
<https://hprc.tamu.edu/kb/Software/Python/>
- HPRC on YouTube  
<https://www.youtube.com/c/TexasAMHPRC>
- ACCESS Links  
<https://support.access-ci.org/ci-links>

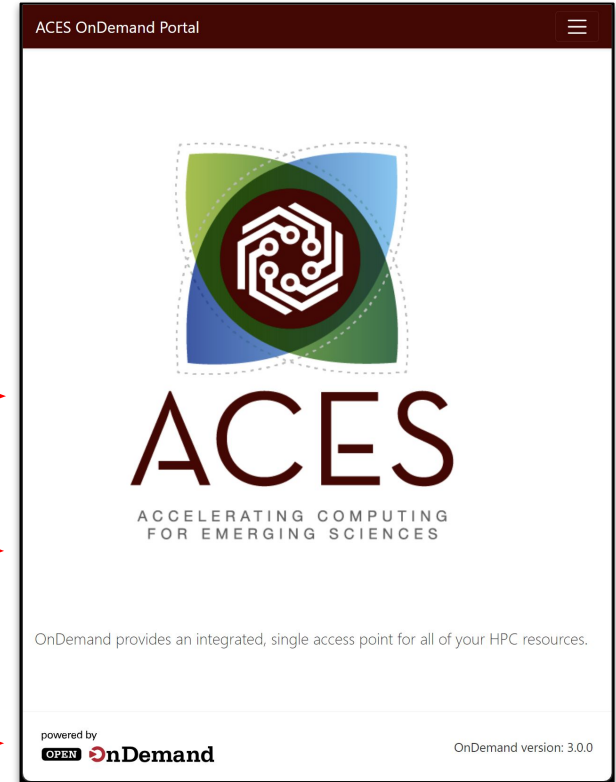
# Getting Started

# ACES Portal



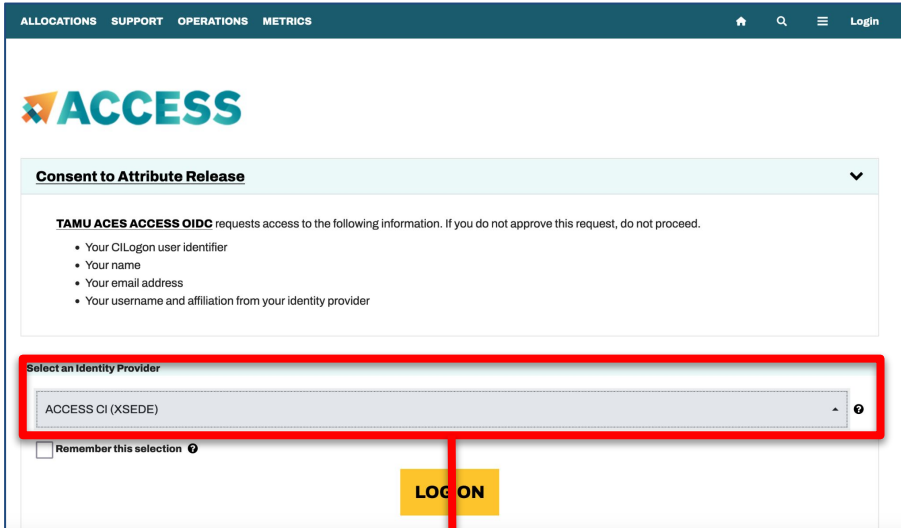
ACES Portal [portal-aces.hprc.tamu.edu](https://portal-aces.hprc.tamu.edu)  
is the web-based user interface for the ACES cluster

Open OnDemand (OOD) is an advanced web-based  
graphical interface framework for HPC users



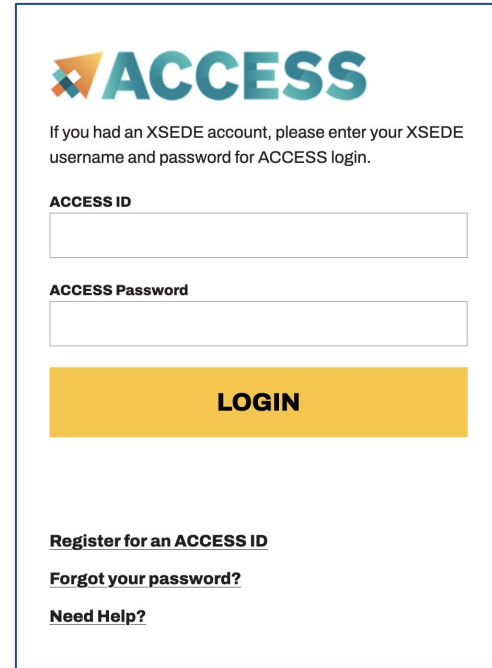


# Accessing ACES via the Portal (ACCESS)



The screenshot shows the ACCESS portal interface. At the top is a navigation bar with links: ALLOCATIONS, SUPPORT, OPERATIONS, METRICS, and a Login link. Below the navigation bar is the ACCESS logo. A section titled "Consent to Attribute Release" is expanded, showing a list of attributes requested by TAMU ACES ACCESS OIDC: Your CILogon user identifier, Your name, Your email address, and Your username and affiliation from your identity provider. Below this is a "Select an Identity Provider" dropdown menu with "ACCESS CI (XSEDE)" selected. A red box highlights this dropdown menu. Below the dropdown is a checkbox labeled "Remember this selection". A yellow "LOG ON" button is positioned below the dropdown menu, with a red line pointing from the text "Select the Identity Provider appropriate for your account." below the screenshot to the button.

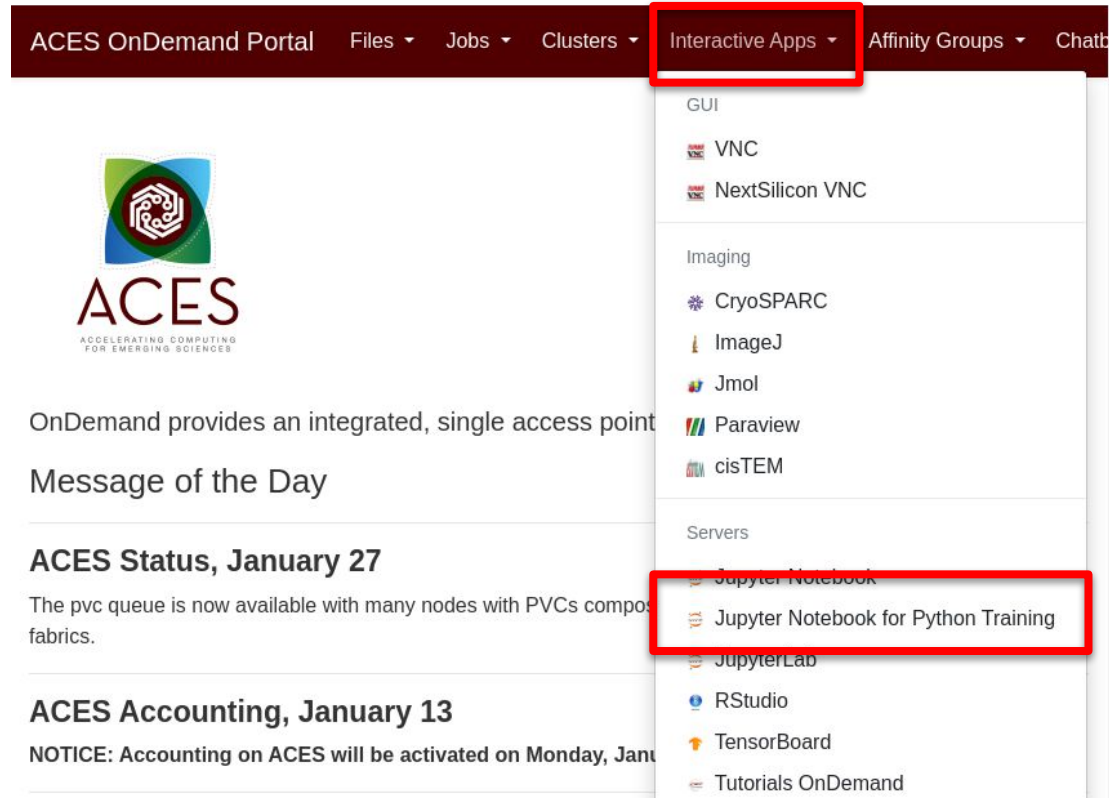
Select the Identity Provider appropriate for your account.



The screenshot shows the ACCESS portal login form. At the top is the ACCESS logo. Below the logo is a message: "If you had an XSEDE account, please enter your XSEDE username and password for ACCESS login." Below this message are two input fields: "ACCESS ID" and "ACCESS Password". Below the input fields is a yellow "LOGIN" button. At the bottom of the form are three links: "Register for an ACCESS ID", "Forgot your password?", and "Need Help?".

Log-in using your ACCESS or institutional credentials.

# Jupyter Notebook for Python Training



The screenshot displays the ACES OnDemand Portal interface. The top navigation bar includes links for 'Files', 'Jobs', 'Clusters', 'Interactive Apps', 'Affinity Groups', and 'Chat'. The 'Interactive Apps' menu is open, showing a list of applications: GUI, VNC, NextSilicon VNC, Imaging, CryoSPARC, ImageJ, Jmol, Paraview, cisTEM, Servers, Jupyter Notebook, Jupyter Notebook for Python Training, JupyterLab, RStudio, TensorBoard, and Tutorials OnDemand. The 'Jupyter Notebook for Python Training' option is highlighted with a red box. The main content area features the ACES logo, a message about the OnDemand portal, and status updates for January 27 and January 13.

ACES OnDemand Portal Files Jobs Clusters **Interactive Apps** Affinity Groups Chat

**ACES**  
ACCELERATING COMPUTING  
FOR EMERGING SCIENCES

OnDemand provides an integrated, single access point

Message of the Day

**ACES Status, January 27**  
The pvc queue is now available with many nodes with PVCs composed of fabrics.

**ACES Accounting, January 13**  
NOTICE: Accounting on ACES will be activated on Monday, January 13, 2025.

GUI  
VNC  
NextSilicon VNC  
Imaging  
CryoSPARC  
ImageJ  
Jmol  
Paraview  
cisTEM  
Servers  
Jupyter Notebook  
**Jupyter Notebook for Python Training**  
JupyterLab  
RStudio  
TensorBoard  
Tutorials OnDemand

# Jupyter Notebook for Python Training

## Jupyter Notebook for Python Training

This app will launch a Jupyter Notebook server on the ACES cluster.

Email

This field is optional.

Launch

\* The Jupyter Notebook for Python Training session data for this session can be accessed under the [data root directory](#).

Jupyter Notebook for Python Training (636884)

1 node | 1 core | Starting

Create

Time

Session

Your session

take a

Jupyter Notebook for Python Training (636884)

1 node | 1 core | Running

Host: >\_ ac058

Delete

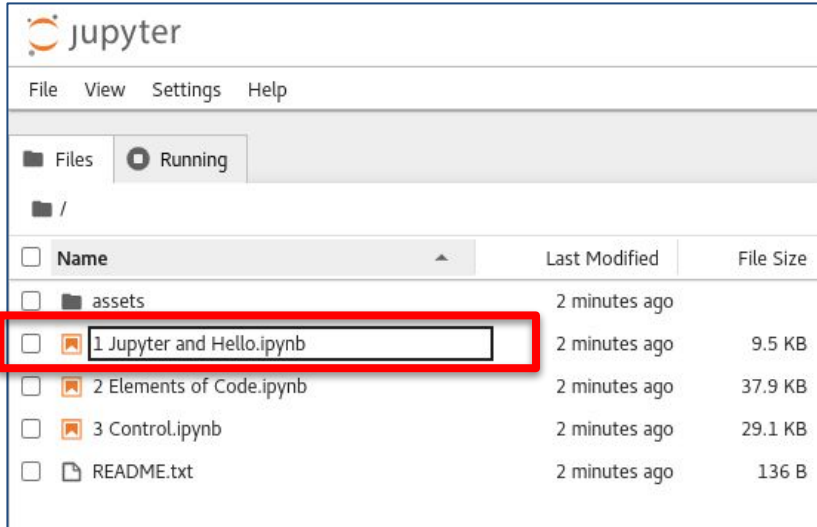
Created at: 2025-01-28 09:19:34 CST

Time Remaining: 7 hours and 9 minutes

Session ID: 428342db-6782-4d59-8bf8-2537d8ee857d

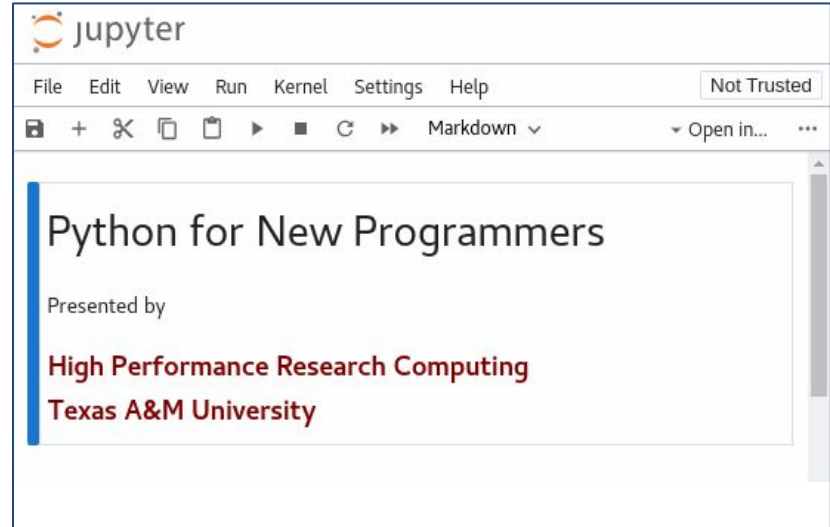
Connect to Jupyter

# Jupyter Notebook for Python Training



The Jupyter File Browser interface shows a list of files in the current directory. The file "1 Jupyter and Hello.ipynb" is highlighted with a red rectangle.

<input type="checkbox"/>	Name	Last Modified	File Size
<input type="checkbox"/>	assets	2 minutes ago	
<input type="checkbox"/>	1 Jupyter and Hello.ipynb	2 minutes ago	9.5 KB
<input type="checkbox"/>	2 Elements of Code.ipynb	2 minutes ago	37.9 KB
<input type="checkbox"/>	3 Control.ipynb	2 minutes ago	29.1 KB
<input type="checkbox"/>	README.txt	2 minutes ago	136 B



The Jupyter Notebook Editor interface shows a notebook titled "Python for New Programmers". The notebook content includes the text "Presented by" followed by "High Performance Research Computing" and "Texas A&M University".

Python for New Programmers

Presented by

**High Performance Research Computing**  
**Texas A&M University**



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

<https://hprc.tamu.edu>

HPRC Helpdesk:

[help@hprc.tamu.edu](mailto:help@hprc.tamu.edu)

Phone: 979-845-0219

*Take our short course survey!*



HPRC Survey

[https://u.tamu.edu/hprc\\_shortcourse\\_survey](https://u.tamu.edu/hprc_shortcourse_survey)

Help us help you. Please include details in your request for support, such as, Cluster (ACES, FASTER, Grace, Launch), NetID (UserID), Job information (JobID(s), Location of your jobfile, input/output files, Application, Module(s) loaded, Error messages, etc), and Steps you have taken, so we can reproduce the problem.



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