

BEAR Challenge

CHALLENGE 1 | DAY 1

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Overview

🚀 What is Baskerville Portal?

🚀 Connect and Configure Baskerville Portal

🚀 Launching JupyterLab

🚀 Module loading

🚀 Challenge 1



What is Baskerville Portal?



The Baskerville portal provides web-based access to the Baskerville Tier 2 system

This service is operated by Advanced Research Computing at the University of Birmingham and is funded by EPSRC Grant EP/T022221/1

portal.baskerville.ac.uk

Connect and Configure Baskerville Portal



BASKERVILLE

Sign in to your account

Username or email

Password

[New User / Forgot Password?](#)

Sign In

Or sign in with (do not use for first time login)

University of Birmingham

CILogon Federated Identity

Alan Turing Institute

ORCID

Open a Terminal

🚀 Click **Clusters > Baskerville Tier 2 HPC Shell Access**, then enter your Password and OTP to access a Terminal

🚀 Enter **my_baskerville** in the terminal to see information about your Baskerville projects and available QoS

🚀 Note that we will use project **edmondac-bc23-teamX** and QoS **bham**

🚀 This information is also available at admin.baskerville.ac.uk

Your home folder

20 GB storage

🚀 Use `pwd` to print your current working directory

🚀 Use `my_quota` to print how much storage is used in your home folder

Your project folder

1 TB storage

🚀 Change to the project folder with

```
cd /bask/projects/e/edmondac-bc23-teamX
```

where X is your team number

🚀 Use **df -h** to print how much storage is used in your project folder

Symlink your home and project folder

Access project folder from your home folder

- 🚀 For JupyterLab, only your home folder is visible from the file tree in the GUI
- 🚀 Access data in your project folder from your home folder via a symbolic link
- 🚀 Configure this by changing directory back to your home folder with `cd`
- 🚀 And create a symlink with `ln -s /bask/projects/e/edmondac-bc23-teamX`
- 🚀 Use `ls` to list the contents of your home folder and check the symlink appears as a folder called `edmondac-bc23-teamX`

Launching JupyterLab



Launch a JupyterLab server

- 🚀 From the Baskerville Portal Dashboard, click **Interactive Apps > JupyterLab**
- 🚀 Select the **Python 3.9.5 (2021a / GCCore-10.3.0)** kernel to load
- 🚀 Request resources
 - 🚀 Leave as default values of **4 hours** and **1 GPU** for now
- 🚀 Select project **edmondac-bc23-teamX**
- 🚀 Select Queue **bham**
- 🚀 Click **Launch**

Launch a JupyterLab server

- 🚀 Normally your job would enter a queue and the wait time depends on resources requested and how busy Baskerville is
- 🚀 Each node has 4 GPUs available, with 36 vCPU cores per GPU
- 🚀 Once loaded, click **Connect to Jupyter**

Filter files by name

/

Name	Last Modified
myproject	5 months ago
ondemand	9 months ago

Symlink to project folder

Launcher

Notebook

Python

Console

Python

Other

Terminal

Text File

Markdown File

Python File

Show Contextual Help


Filter files by name

/


Name	Last Modified
myproject	5 months ago
ondemand	9 months ago

Launcher

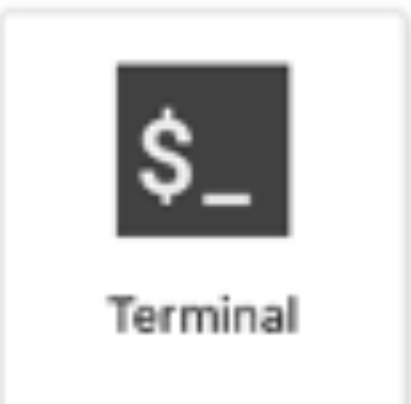
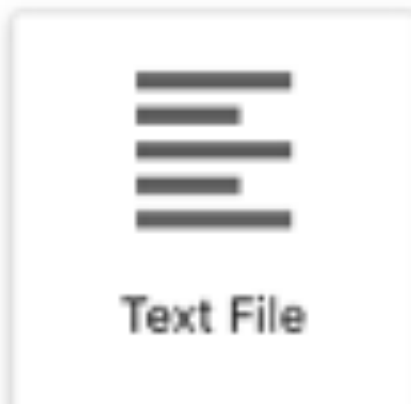


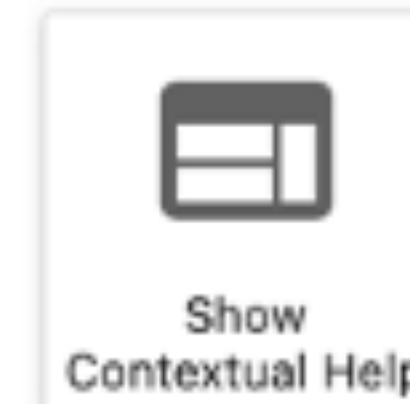
Notebook

 New Jupyter Notebook

Console



Other

-  Terminal
-  Text File
-  Markdown File
-  Python File
-  Show Contextual Help

Filter files by name

/ myproject /

Name	Last Modified
myfolder1	21 days ago
myfolder2	21 days ago
other	7 hours ago
Untitled.ip...	seconds ago

Untitled.ipynb

Code Python

```
[ ]:
```


/ myproject /

Name	Last Modified
myfolder1	21 days ago
myfolder2	21 days ago
other	7 hours ago
• Untitled.ip...	2 minutes ago

Untitled.ipynb
 Python

```

[1]: print("Hello world!")
      Hello world!
[ ]:
  
```


Filter files by name

/ myproject /

Name	Last Modified
myfolder1	21 days ago
myfolder2	21 days ago
other	7 hours ago
mynotebo...	seconds ago

↑
Right-click > Rename

mynotebook.ipynb

Code Python

```
[1]: print("Hello world!")  
Hello world!
```

[]:

Remember to save and rename your notebooks

Module Loading

A composite image of space. The bottom portion shows the curved horizon of the Earth with a thin layer of white clouds and a bright, glowing horizon line. The upper portion is a deep space view featuring the Milky Way galaxy, which appears as a dense, multi-colored band of stars and dust stretching across the sky. Several bright, individual stars are visible, each with a four-pointed diffraction pattern.

Module loading

Access software

- 🚀 Accessing software on HPC is not the same as on your laptop
- 🚀 Load your software environment on Baskerville with module loading
- 🚀 See apps.baskerville.ac.uk/applications for a complete list of modules available
- 🚀 Packages are loaded and unloaded cleanly
 - 🚀 e.g. making necessary changes to \$PATH
- 🚀 Alternatively, you can self-install using Conda for use in JupyterLab
- 🚀 Module loading is preferred in the first-instance

Search available modules...

LOADED MODULES

- bask-apps/live/live
- bask-container-conf/live
- bask-licences/live
- bask-variables/live
- baskdefault
- baskerville/live
- openmpi-env/live

← Lmod extension

AVAILABLE MODULES

- ASE/3.22.0-foss-2021a
- ATK/2.36.0-GCCcore-10...
- AlphaFold/2.2.2-foss-202...
- Arm-Forge/22.0.3-foss-2...
- Autoconf/2.69-GCCcore-...
- Autoconf/2.71-GCCcore-1...
- Automake/1.16.2-GCCcor...
- Automake/1.16.3-GCCcor...
- Autotools/20200321-GC...
- Autotools/20210128-GCC...
- BLIS/0.8.1-GCC-10.3.0
- Bazel/3.7.2-GCCcore-10...
- Bazel/3.7.2-GCCcore-10.3...
- Biopython/1.79-foss-2021a
- Bison/3.5.3
- Bison/3.7.1-GCCcore-10.2.0

mynotebook.ipynb

Code Python

```
[2]: print("Hello world!")
      Hello world!
```

[]:

Loaded modules appear at the top of the menu
 Default environment is currently loaded
 Available modules appear below

Example

🚀 Module load Tensorflow

🚀 Restart 🔄 your notebook kernel to access the new module

🚀 `import tensorflow as tf`

🚀 Check the software version with `tf.__version__`

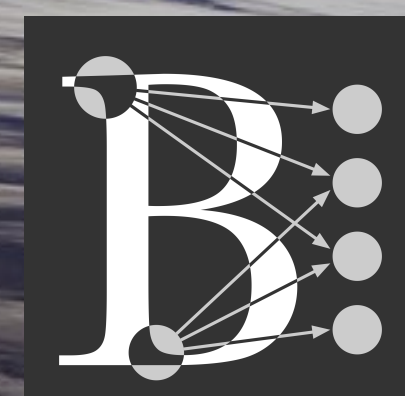
🚀 Query visible GPU devices with the command

```
tf.config.list_physical_devices(device_type='GPU')
```


Challenge 1

The image is a composite of two astronomical scenes. The lower portion shows a view of Earth from space, with the planet's horizon and atmosphere visible. The upper portion shows the Milky Way galaxy, with its characteristic spiral arms and bright central core, set against a dark background of stars.

Welcome Aboard!
On the Good Ship Baskerville



Your Mission

Procure a Space Shuttle from the ImageNet-1k Dataset

- 🚀 ImageNet-1k contains 1,281,167 images to train deep learning models for image classification
- 🚀 There are 1,000 (1k) image classes
- 🚀 Your mission is to find all space shuttles from this dataset for our interstellar voyage
- 🚀 Points
 - 🚀 **10 points** for determining the number of space shuttles available from the dataset
 - 🚀 **7 points** for loading and displaying 1 image of a space shuttle from the dataset
 - 🚀 **4 points** for module loading your environment

Your Mission

Procure a Space Shuttle from the ImageNet-1k Dataset

- 🚀 You will need to module load
 - 🚀 Pillow and Mesa (for image visualisation)
 - 🚀 datasets (for manipulating the HuggingFace ImageNet-1k dataset)
- 🚀 Challenge 1 information and notebook available at

[/bask/projects/edmondac-bc23-teamX/CHALLENGE_INFO/
challenge_1_participant_info](/bask/projects/edmondac-bc23-teamX/CHALLENGE_INFO/challenge_1_participant_info)

- 🚀 Place your final submission in the **results** folder by the deadline!



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