

BlueHive Cheat Sheet

I. Connect to BlueHive via Terminal

To use **Terminal** on Windows, you will need to use PuTTY, on MacOS it is preinstalled (type 'terminal' in Launchpad -> Search). See details on <https://info.circ.rochester.edu>



To connect, type:

```
ssh YourNetID@bluehive.circ.rochester.edu
```

enter password (it won't be shown) and accept Duo verification.

Useful Terminal commands:

ls – list of files in the current directory (ls -al includes hidden files)

pwd – path to the current directory

cd – change directory

Ctrl+C – Interrupt a command

exit – close session

You have two sections in Bluehive:

```
/home/YourNetID 20 G
```

```
/sratch/YourNetID 200 G (to get there, you can type: cd /sratch/YourNetID)
```

The first one will be enough for the Conda environment, but the files for your HW5 is better to save on the second section.

After connecting BlueHive

II. Set your Conda environment

Some useful commands:

List of environments: conda env list

Create a new environment: conda create –name <EnvName>

Activate environment: source activate <EnvName>

Deactivate environment: source deactivate

Delete environment: `conda env remove --name <EnvName>`

1. Open conda, type:

```
module load miniconda3/4.9.2
```

2. Create new environment with name `pyt` (you can use other one):

```
conda create -n pyt python=3.9
```

(It will ask to update conda, ignore it. Wait for it ask you to proceed and answer 'y')

2a. You can see the list of environments to check that your environment was created:

```
conda env list
```

3. Activate your environment (you will need to do it every time you launch Terminal and want to use Python with your packages):

```
source /software/miniconda3/4.9.2/bin/activate pyt
```

4. Install the packages that you wish to use (line by line):

```
conda install pandas
```

```
conda install scipy
```

```
conda install scikit-learn
```

```
conda install matplotlib
```

```
conda install tqdm
```

```
conda install pytorch torchvision torchaudio cudatoolkit=11.1 -c pytorch -c nvidia
```

You can also follow these instructions to save the packages in the large folder:

The screenshot shows the Info.CIRC University of Rochester website. The main heading is "Installing Python Packages". The text explains that the recommended way to install Python packages is to create and activate a conda environment using miniconda. It provides the following steps:

- First, type `mk-condarc` which will create a `~/condarc` file that tells conda to store environments in your `/scratch` directory (this is good because).
- Then, create an environment using a particular `miniconda3` distribution, with the name and Python version of your choice:

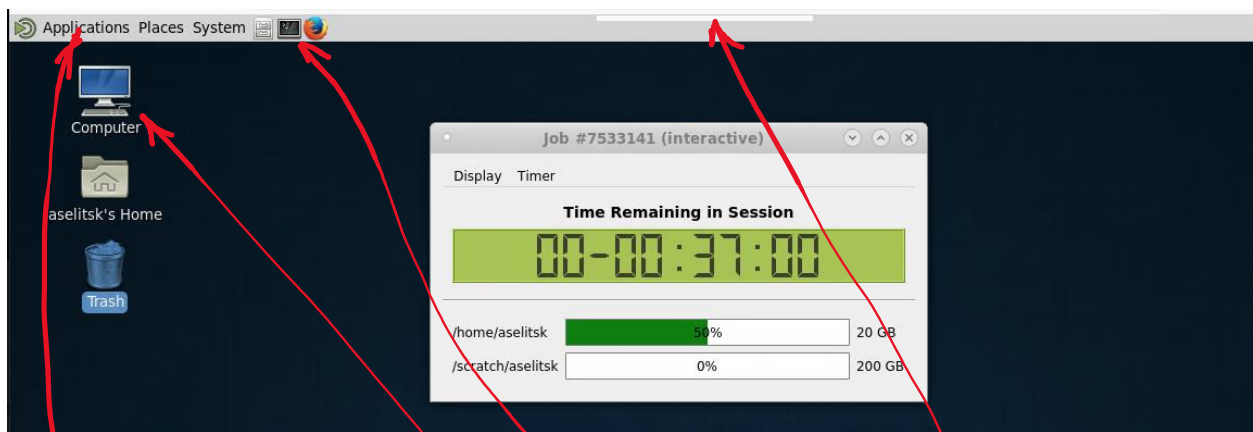
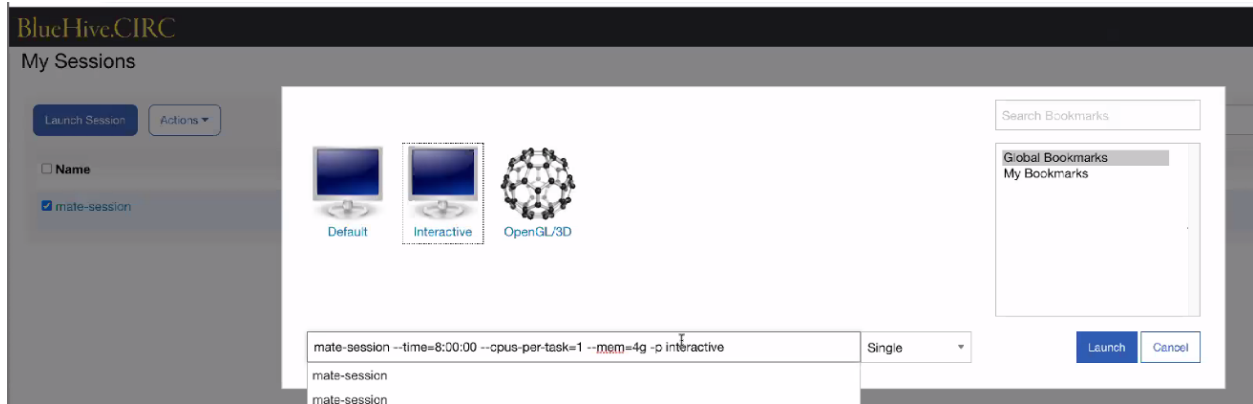
```
/software/miniconda3/4.12.0/bin/conda create -n MyEnvName python=3.9
```
- Now, you can activate the env (make sure you use the same `miniconda3` version and name that was used to create it):

```
source /software/miniconda3/4.12.0/bin/activate MyEnvName
```

III. Using PyCharm in FastX

You can continue to work in Terminal, but a more convenient way is to use PyCharm as IDE in your browser (Terminal is available there as well). To do that you should connect to BlueHive via **FastX**. The link below will open FastX

<https://bluehive.circ.rochester.edu>



Some Apps
Files
enlarge the view
Terminal

In the **Launch Session 'Interactive'**, you can choose different nodes and time. It is important to indicate smaller time, because it will reduce the queuing time in the system.

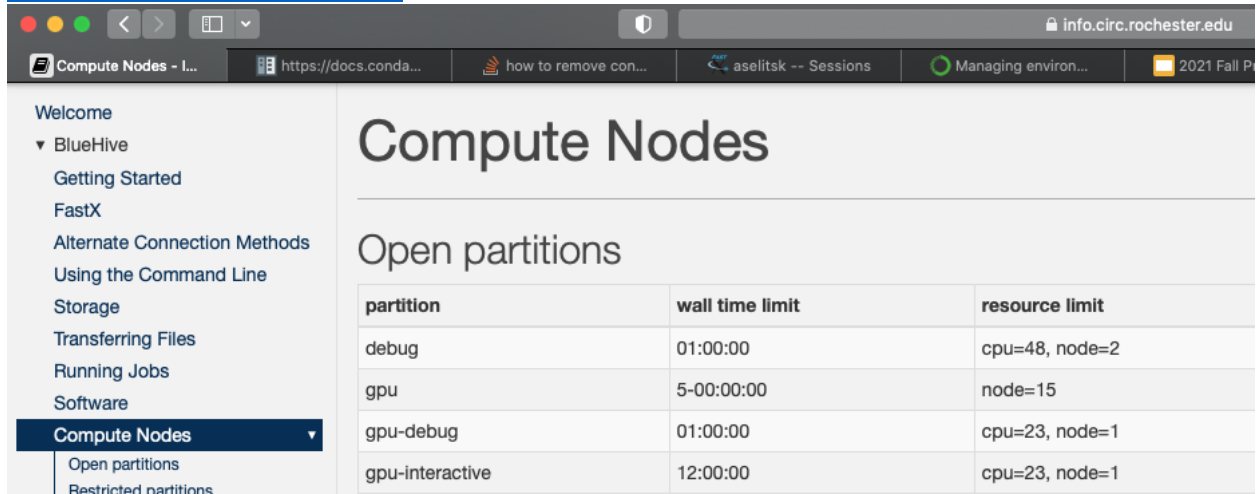
Later, when you will need gpu, instead of
`mate-session --time=8:00:00 --cpus-per-task=1 --mem=4g -p interactive`
you can type
`mate-session --time=0:15:00 --cpus-per-task=1 --mem=4g -p gpu-debug --gres=gpu`

If you are using **Terminal**, to change partition you can type
interactive -p gpu-debug -t 15 -gres=gpu

For a specific node, say 'bhp0001', you can use
interactive -p debug -t 00:05:00 -w bhp0001

The list of partitions can be found here

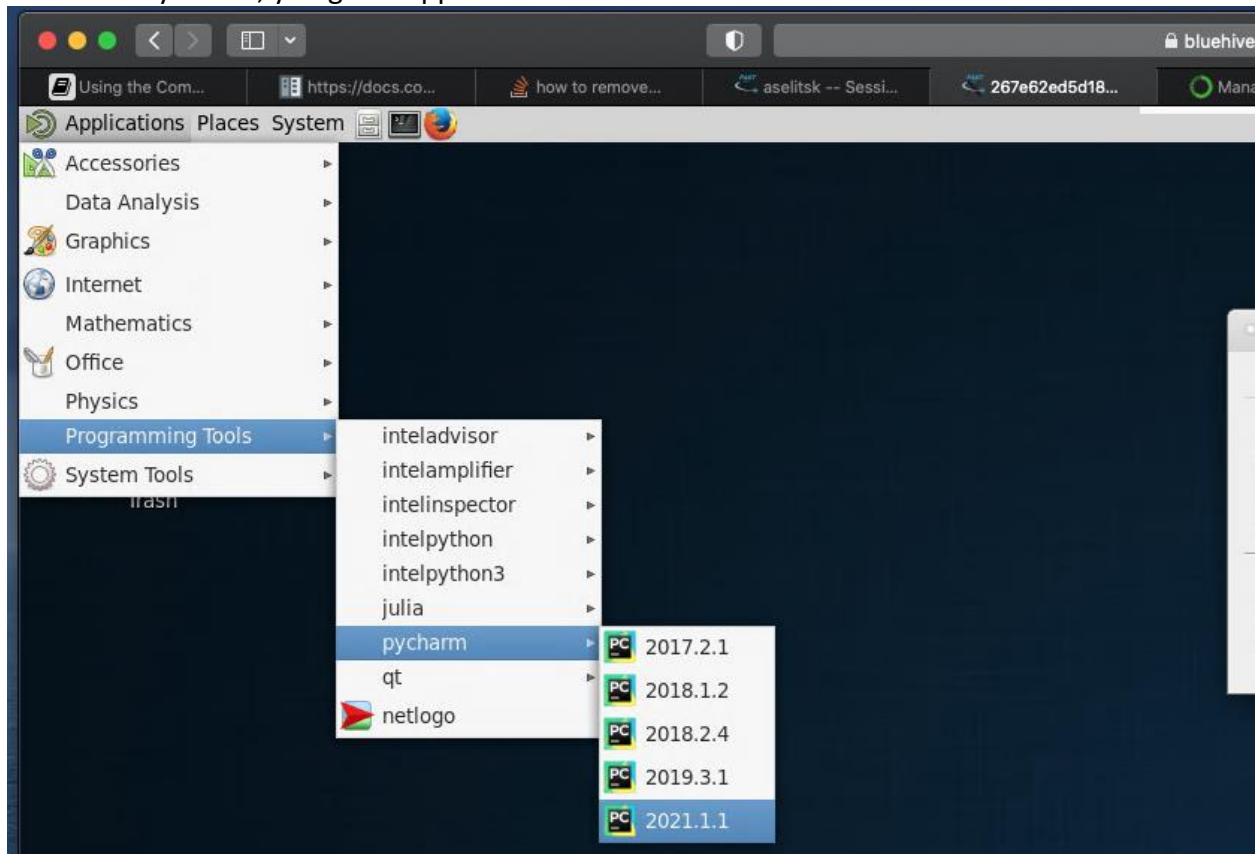
<https://info.circ.rochester.edu>



The screenshot shows a web browser window with the URL <https://info.circ.rochester.edu>. The page title is "Compute Nodes" and the main heading is "Open partitions". A table lists the following partitions:

partition	wall time limit	resource limit
debug	01:00:00	cpu=48, node=2
gpu	5-00:00:00	node=15
gpu-debug	01:00:00	cpu=23, node=1
gpu-interactive	12:00:00	cpu=23, node=1

To launch PyCharm, you go to Applications



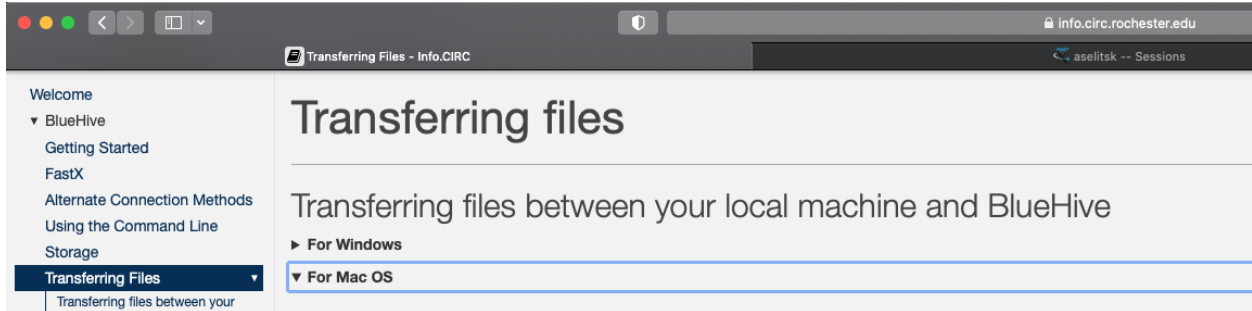
In File menu, create new project. Choose the location (File system of BlueHive could be slow) and use your environment (the path will be /home/YourNetID/.conda/envs/pyt/bin/python) and the conda module (the path is /software/miniconda3/4.9.2/bin/conda)

You can choose to create an empty project or with a "Hello World" main.py file.

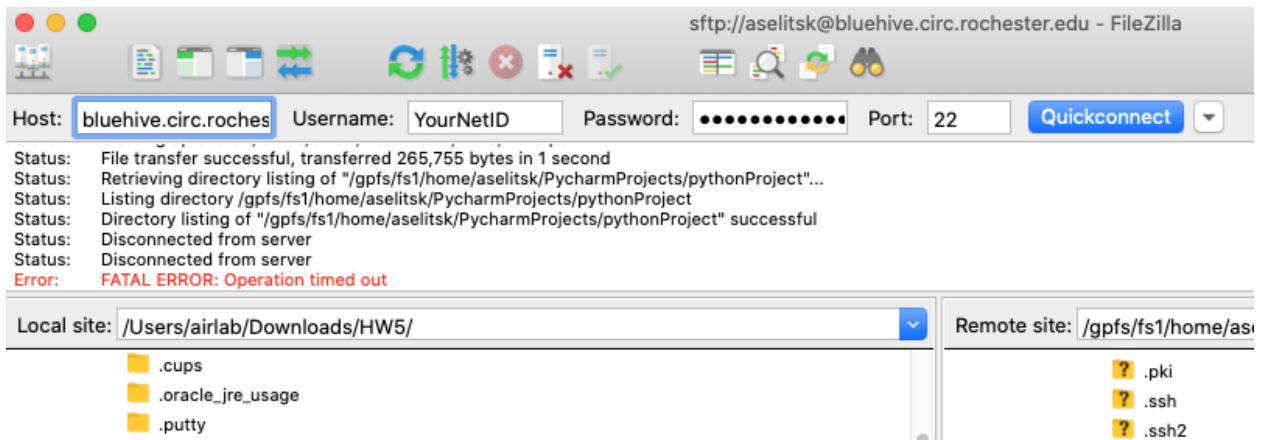
Then you need to transfer the files of HW5 to the folder of the PyCharm's project

IV. Transfer files from your computer to BlueHive and vice versa

There is information on <https://info.circ.rochester.edu> Including using the command line



But for graphical interface I would recommend FileZilla (see fig. below). You can transfer files from your PC to BlueHive as usual, but you'll be asked to confirm by Duo every transaction.



V. Submitting job on BlueHive

If you want to run your code for a long time or need to wait for a free gpu, you can submit your job and switch off your computer.

Example of submitting job (file 'a.py', environment 'pyt'): you need to write a bash-file, for example my.sh

```
#!/bin/bash
#SBATCH --partition=debug --output=out.log
date
hostname
echo Hi there
source /software/miniconda3/4.9.2/bin/activate pyt
python a.py
```

To submit the job, you should run in Terminal

```
bash my.sh
```

To see the job, use the command

```
squeue -u <YourNetID>
```

To terminate the job, write

```
cancel <JobID>
```

To create/edit file in Terminal you can use command

```
nano <FileName>      (Ctrl+X to close)
```

To delete

```
rm <FileName>
```

to create a folder

```
mkdir <FolderName>
```

to delete a folder

```
rm -r <FolderName>
```

If you use Jupiter <https://jupyter.circ.rochester.edu/> use PyTorch environment there