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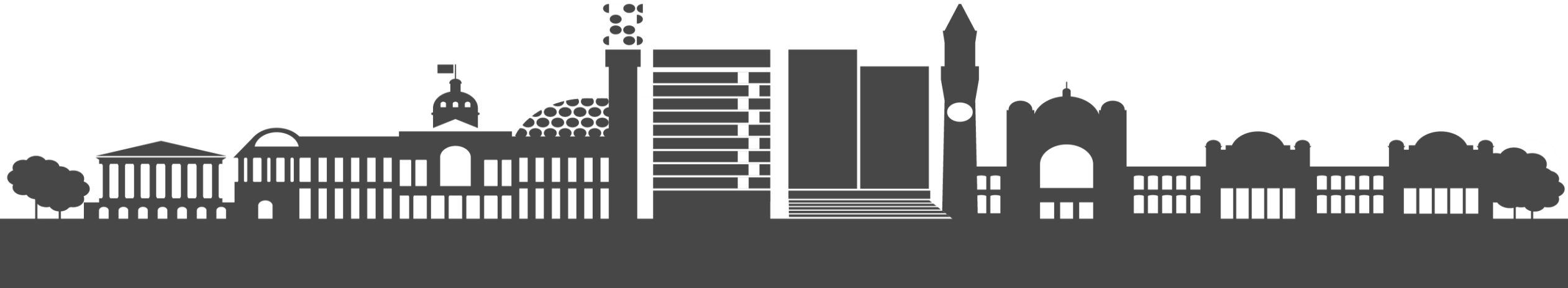
Baskerville

Interactive Jobs



Session Objectives

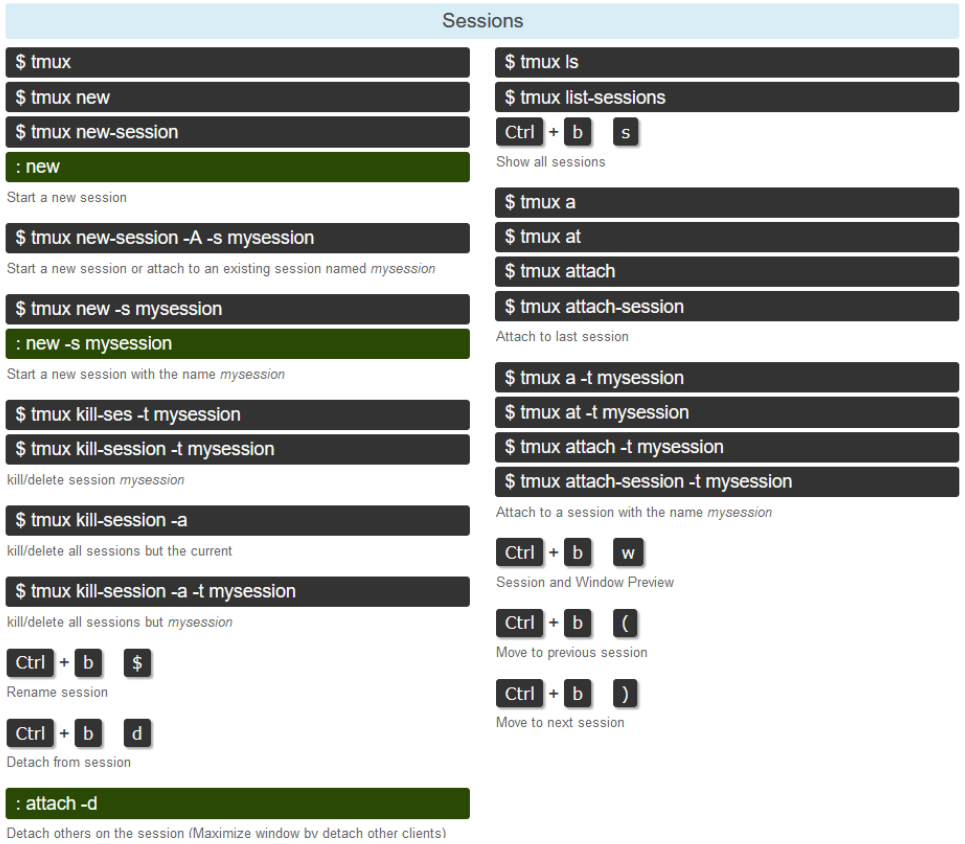
- Following information and examples found here: https://github.com/baskerville-hpc/2024-02-14-Turing-Training/tree/main/Interactive_jobs
- Gain an understanding of Interactive jobs through:
  - Tmux
  - srun
  - nvidia-smi

Why Interactive jobs

- Batch jobs submit and leave interactive are attend and act
- Interactive jobs allow you to work on a compute node great for:
  - Monitoring running jobs
  - GUI applications
  - Building software
  - Debugging:
    - Power usage
    - Memory usage
    - General code testing and analysis

Tmux

- Tmux = terminal multiplexer
- Can create and resume tmux sessions
- Ideal to be used with an interactive session
- List of useful commands found https://tmuxcheatsheet.com/
- There are other options like GNU screen



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Tmux and login nodes

- Tmux session will be recorded on a particular login node: `bask-pg-login01`, `bask-pg-login02` and `bask-pg-login03`
- Must therefore keep a record of which login node the tmux session is on
- Methods:
  - Do not recommend editing your `.bashrc`
  - Can use a script

Tmux navigation

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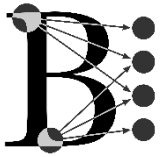

Interactive Jobs and Srun

- Main way to start an interactive job is with a srun command: https://docs.baskerville.ac.uk/interactive-jobs/
- Various srun options
- Can turn it into a script for ease of use

Option	Descriptions
`--pty /bin/bash`	Requests a `bash` shell on the compute node. The `--pty` option must be given at the end of the command
`--export=`	This exports a required subset of environment variables
`--time=`	Time request of interactive job
`--qos=`	The QoS for the job
`--account=`	Project account under which you run this job
`--gres=gpu:n`	GPUs for this session
`--x11`	**Optional** X11 forwarding and GUI options

General Warnings

- Try not to leave interactive jobs idle
  - If job will take a long time detach tmux session and resume later
- Try to keep tmux sessions, session specific close and start a new one for a new session
- Tmux is not infallible and sessions can end unexpectedly especially if there is a problem with a login node

Srun – CUDA task

- We will cover the examination and running of a CUDA example as an interactive job
- Obtaining the CUDA samples with the `wget` command
- Loading the correct modules
- Compiling our example using `make`
- Running the example and examining the GPU with `nvidia-smi` (tmux needed)
- Example scripts found https://github.com/baskerville-hpc/2024-02-14-Turing-Training/tree/main/Interactive_jobs

Srun – CUDA task

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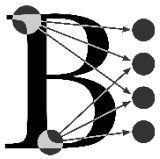

Srun PyTorch Task

- Examine and run script to install via pip test-pytorch-gpu https://pypi.org/project/test-pytorch-gpu/ via a python virtual environment
- This can be used to test user installed versions of PyTorch, we will be checking our modules
- Runs against the cifar dataset for 10 epochs, we will modify this code to run longer so we can examine the effects with `nvidia-smi`

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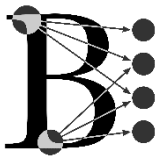

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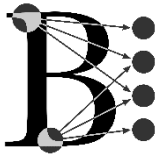

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Thank You

Any Questions