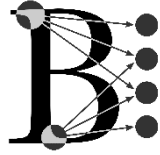




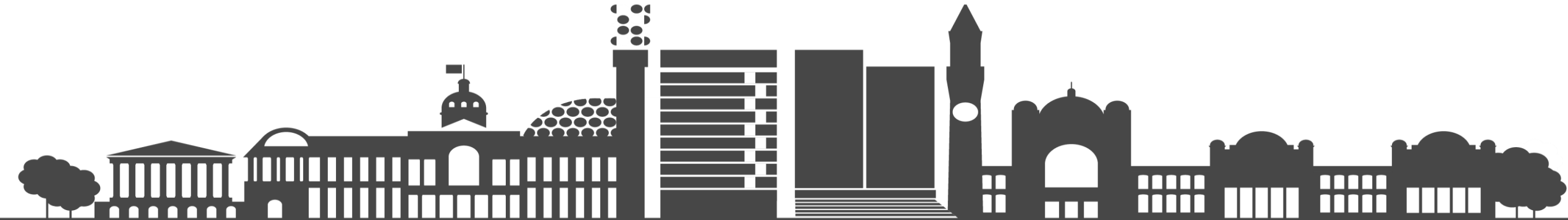
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# Baskerville

Interactive Jobs



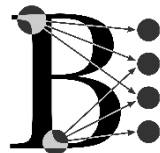
# Session Objectives

- Following information and examples found here:  
[https://github.com/baskerville-hpc/2024-02-14-Turing-Training/tree/main/Interactive\\_jobs](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



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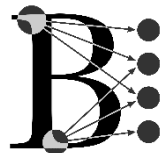
# Why Interactive jobs

- 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



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# Tmux

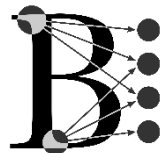
- Tmux = terminal multiplexer
- Can create and resume tmux sessions
- Ideal to be used with an interactive session
- List of useful commands found <https://tmuxcheatsheet.com/>
- There are other options like GNU screen

Sessions	
\$ tmux	\$ tmux ls
\$ tmux new	\$ tmux list-sessions
\$ tmux new-session	Ctrl + b s
: new	Show all sessions
Start a new session	\$ tmux a
\$ tmux new-session -A -s mysession	\$ tmux at
Start a new session or attach to an existing session named mysession	\$ tmux attach
\$ tmux new -s mysession	\$ tmux attach-session
: new -s mysession	Attach to last session
Start a new session with the name mysession	\$ tmux a -t mysession
\$ tmux kill-ses -t mysession	\$ tmux at -t mysession
\$ tmux kill-session -t mysession	\$ tmux attach -t mysession
kill/delete session mysession	\$ tmux attach-session -t mysession
\$ tmux kill-session -a	Attach to a session with the name mysession
kill/delete all sessions but the current	Ctrl + b w
\$ tmux kill-session -a -t mysession	Session and Window Preview
kill/delete all sessions but mysession	Ctrl + b (
Ctrl + b \$	Move to previous session
Rename session	Ctrl + b )
Ctrl + b d	Move to next session
Detach from session	
: attach -d	
Detach others on the session (Maximize window by detach other clients)	



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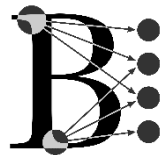
# Tmux and login nodes

- 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



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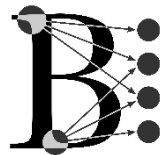


# Tmux navigation



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# Interactive Jobs and Srun

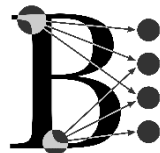
- Main way to start an interactive job is with a srun command:  
<https://docs.baskerville.ac.uk/interactive-jobs/>
- Various srun options
- Can turn it into a script for ease of use

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	<b>Optional</b> X11 forwarding and GUI options



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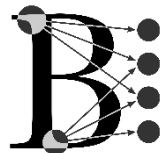
# General Warnings

- 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



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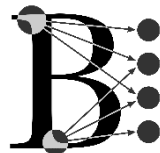
# Srun – CUDA task

- 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](https://github.com/baskerville-hpc/2024-02-14-Turing-Training/tree/main/Interactive_jobs)



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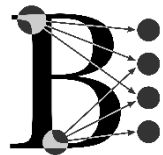


# Srun – CUDA task



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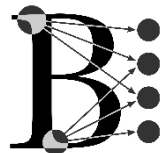
# Srun PyTorch Task

- 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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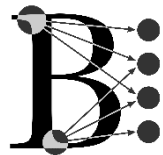


# Srun PyTorch Task



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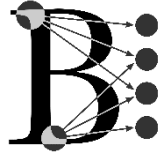
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# Thank You

## Any Questions

