Github Link:

https://github.com/hemanth-nakshatri/repo759/tree/main/HW01

- **Parent Repo:** https://github.com/hemanth-nakshatri/repo759

Question 1

- I went through Questions (a) through (c)and understand how to time code, how to submit my assignments with git, and what the recommended workflow is when it comes to working on my assignment.

Question 2

(a) Change the current directory to a subdirectory called somedir

```
cd somedir
```

(b) Print out to the terminal the contents of a file called sometext.txt. The file exists in the current directory.

```
cat sometext.txt
```

(c) Print out to the terminal the last 5 lines of a plain text file called sometext.txt. The file exists in the current directory.

```
tail -n 5 sometext.txt
```

(d) Print out to the terminal the last 5 lines of each file that ends in the extension .txt and lives in the current directory

```
tail -n 5 *.txt
```

(e) Write a for loop which prints each integer from 0 to 6 (including 0 and 6).

```
for i in {0..6}; do echo $i; done
```

Question 3

The purpose of this task is to get you familiar using Euler. On Euler, using the module command, answer the following questions.

(a) Are there any modules loaded (`module list`) when you log in on Euler?

Answer: `no modules loaded`

(b) What version (version number) of `gcc` is available to you without loading any modules?

Answer: `gcc --version` give the output `gcc (GCC) 14.1.1 20240522 (Red Hat 14.1.1-4)`

(c) List all `cuda` modules available on Euler.

Answer: `module avail cuda` give the output

```
gromacs/cuda-12.2-mpich/2023.3    nvidia/cuda/11.6.0    nvidia/cuda/12.5.0
(D)
gromacs/cuda-12.2/2023.3          nvidia/cuda/11.8.0    nvidia/nvhpc-hpcx-
cuda11/24.5
nvidia/cuda/10.2.2                nvidia/cuda/12.0.0    nvidia/nvhpc-hpcx-
cuda12/23.11
nvidia/cuda/11.0.3                nvidia/cuda/12.1.0    nvidia/nvhpc-hpcx-
cuda12/24.5  (D)
nvidia/cuda/11.3.1                nvidia/cuda/12.2.0
```

(d) List one other piece of software that has a module on Euler and write one sentence about what it does. (If you aren't familiar with any of the other software, google one up and write a sentence about it.)

Answer: `module avail` command:

1. **Anaconda**: Popular software for python and R. Useful for environment management and package management. Most widely used in Data science and Machine Learning.
2. **Blender**: Popular 3D modeling software for creating 3D graphics and animations.

Question 4

Refer to the Github repository https://github.com/hemanth-nakshatri/repo759/tree/main/HW01

Question 5

Research some useful Slurm tools (one sentence responses):

(a) In what directory does a Slurm job on Euler begin execution? You may run some jobs in different directories to check this.

Answer: Slurm job begins execution from where `sbatch` command is executed. It means that the output of the job will be stored in the directory where `sbatch` command is executed and not where the the script file exists. Verified it by running the `sbatch` command from different directories.

(b) Explain what SLURM_JOB_ID is in the environment of a running Slurm job.

Answer: SLURM_JOB_ID is a unique identifier assigned to a Slurm job. It is used to track the status of the job. We can also use this to cancel the job etc.

(c) How would you track the status of job(s) run by yourself? Assume that the job(s) have not been completed yet.

Answer: We can use `squeue` command to track the status of the job.
Example usage: `squeue -u nakshtari`, where *nakshatri* is the username.

(d) How would you cancel a job submitted by yourself? Assume that the job is still in the queue.

Answer: We can use `scancel` command to cancel the job.
Example usage: `scancel <jobid>`, where *jobid* is the job id.

(e) Explain what the following script header line specifies: #SBATCH --gres=gpu:1

Answer: This line specifies that the job requires 1 GPU. `gres` refers to generic resource.
Source: https://slurm.schedmd.com/gres.html

(f) ***(Optional)*** Explain what the following script header line specifies: #SBATCH --array=0-9

Answer: This line specifies that the job requires 10 tasks. `array` refers to array.
All the tasks are executed with identical parameters.
Source: https://slurm.schedmd.com/sbatch.html

Question 6

Refer to the Github repository https://github.com/hemanth-nakshatri/repo759/tree/main/HW01.