Compile and Run CUDA: Interactive

- Source file name: `Vector_Sum.cu`
  - A CUDA source program which calculates the sum of two vectors.

- Source file directory: `~/GPU_test/Vector_Sum.cu`

- Submit a interactive job for GPU in CCR

```
[user@u2:~]$ qsub -I -q gpu -lnodes=1:GPU:ppn=12 -lwalltime=00:30:00 -M user@buffalo.edu
```

- Compile CUDA source file on GPU node

```
[user@d06n40a:~]$ cd ~/GPU_test/
[user@d06n40a:~/GPU_test]$ nvcc Vector_Sum.cu -o Vector_Sum
```

- Run the program

```
[user@d06n40a:~/GPU_test]$ ./Vector_Sum
```

Compile and Run CUDA: PBS Script

- PBS Script file name: `PBS_GPU_VectorSum.sh`

- PBS Script file directory: `~/GPU_test/PBS_GPU_VectorSum.sh`

- Compile CUDA source file on CCR front end:

```
[user@u2:~]$ cd ~/GPU_test/
[user@u2:~/GPU_test]$ module avail cuda
[user@u2:~/GPU_test]$ module load cuda/4.0.17
[user@u2:~/GPU_test]$ module list
[user@u2:~/GPU_test]$ which nvcc
[user@u2:~/GPU_test]$ nvcc Vector_Sum.cu -o Vector_Sum
```

- Submit a PBS scrpit:

```
[username@u2:~/GPU_test]$ qsub PBS_GPU_VectorSum.sh
```

Compile and Run CUDA: PBS Script

- The content of PBS script:

```bash
#!/bin/bash
#PBS -q gpu
#PBS -l nodes=1:GPU:ppn=12
#PBS -l walltime=00:30:00
#PBS -M username@buffalo.edu
#PBS -m bea
#PBS -N Vector_Sum
#PBS -o Result_Vector_Sum.out
#PBS -j oe
#
#
cd $PBS_O_WORKDIR
echo "working directory = "$PBS_O_WORKDIR
ulimit -s unlimited
#
./Vector_Sum

#
echo "All Done!"
```