Walchand College of Engineering, Sangli
Department of Computer Science and Engineering

Class: Final Year (Computer Science and Engineering)

Year: 2021-22 **Semester:** 1

Course: High Performance Computing lab

ESE Exam

22/11/2021 01.00 PM – 04.00 PM

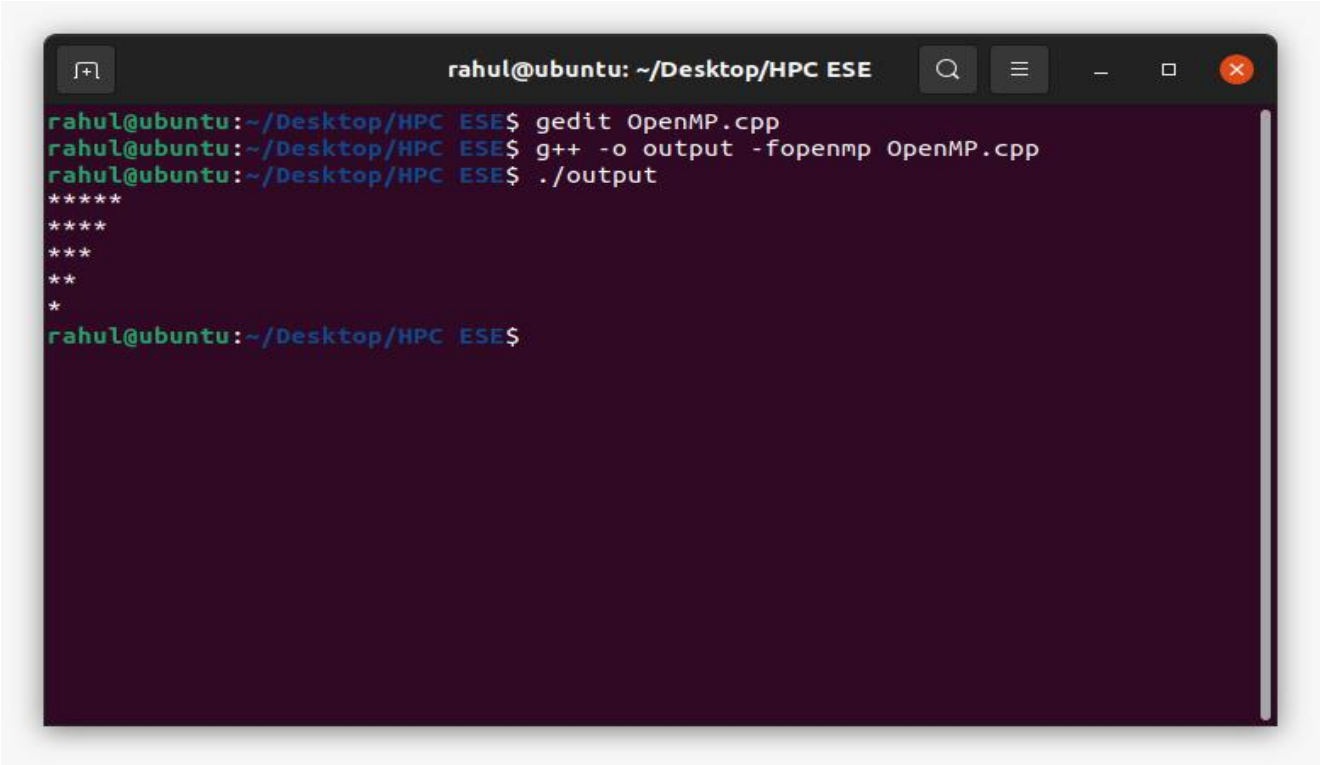
Exam Seat No:

Name: Rahul Sanjay Naravadkar
Exam Seat Number: 2018BTECS00005

Problem Statement 1

Statement: Write an OpenMP program to print inverted pyramid using *.

Screenshot 1:

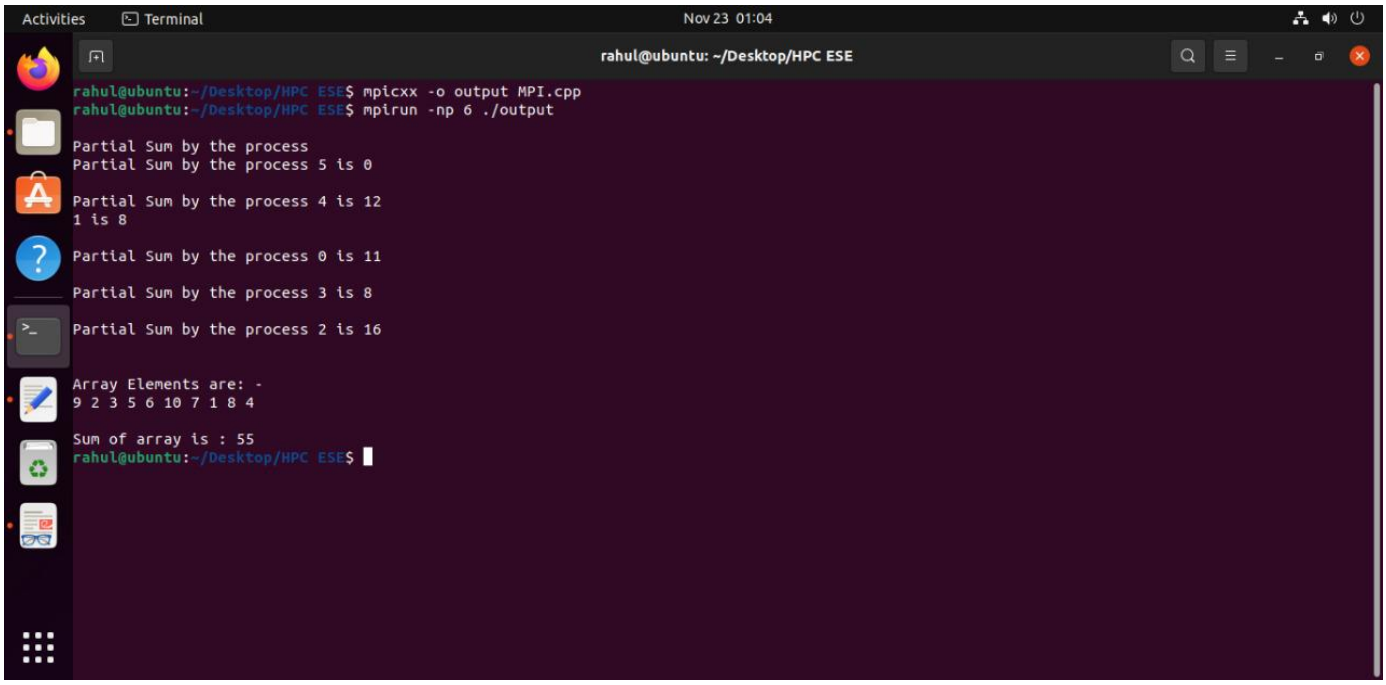


Information:
Compilation command: - gcc -o output -fopenmp Question1.cpp
Execution command: - ./output
This OpenMP code prints the reverse half pyramid.

Problem Statement 2

Statement: Implement MPI program to reduce the data from n processes to root process.

Screenshot #1:



Information:

Compilation command: - mpicxx -o output MPI.cpp
Execution command: - mpirun -np 6 ./output

Here the MPI code runs with reduce clause that reduces the partial sum of elements of array in the root process.

Problem Statement 3

Statement: Implement Matrix-Vector multiplication using CUDA.

Screenshot 1:

```
<<<<<<<<<< initial data:
Vector
4.000000  3.000000  2.000000

Matrix:
4.0000  2.0000  4.0000  3.0000
1.0000  2.0000  2.0000  3.0000
4.0000  3.0000  4.0000  4.0000

Running Kernel...



>>>>>>>>>> final data:
Vector
27.000000  20.000000  30.000000  29.000000
```

Information:
Compiled and ran the code on Google Colab.
CUDA program multiplies the randomly created vector and matrix with the help of 1 block and M number of threads in it.

Technologies Used:
OpenMp, MPI, CUDA, Google Colab

GitHub Link:
Github.com/rahulnaravadkar/HPC_ESE