AMRITA VISHWA VIDYAPEETHAM | Center for Wireless Networks & Applications

15CSE360 – Parallel and Distributed Computing
2020-2021 Even Semester

Programming Assignment 1

Q1. Given two arrays of numbers. Write a parallel program using pthreads to compute the following in parallel:

a) Sum of the two arrays
b) The difference between the two arrays
c) The maximum value in an array

Submit the following of this question:

1. A .c file with the code
2. Screenshot of results in your system

Q2. Write the following programs to compute the **addition of two matrices**:
Part a) Matrix addition with a sequential algorithm
Part b) Divide the task between two threads using the pthreads library
Part c) Create as many threads as the number of cores in your system and divide the task accordingly.
Test your program with matrices of various sizes: 250x250; 500x500, 1000x1000, 2000x2000, 10000x10000 etc.
Note: specify the matrix size as a macro

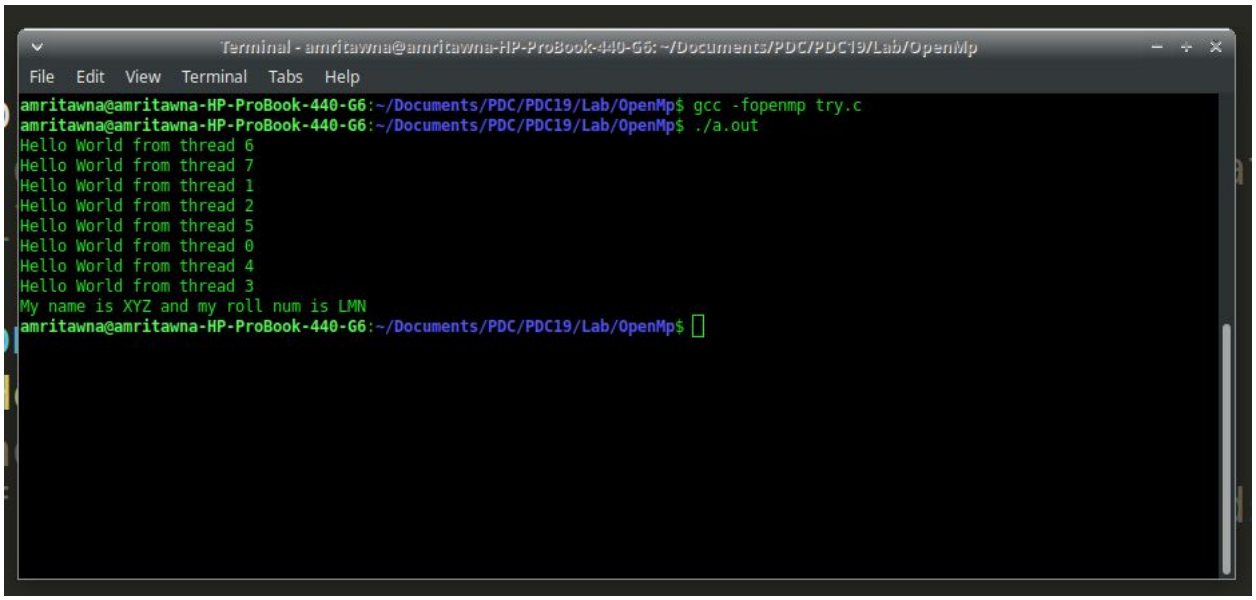
Submit the following for this question:

1. Three .c files - one for each part of the question
2. A screenshot highlighting the number of cores in your system (Eg, the result of "htop")
3. Screenshot of results in your system

Take care of the following when submitting

1. In all the programs, add the printf statement to **print you name and roll number**:
   printf("My name is XYZ and my roll num is LMN\n");

2. Screenshot should be a complete image of your terminal window and should show the command you executed along with the result ; Eg:



3. All the screenshots can be put in one document.

4. Upload all files as individual attachments and avoid uploading .zip, .tar.gz etc