Assignment 5

Operating System Lab (CS342)

Department of CSE, IIT Patna

Date:- 16-Feb-2021 Deadline:- 16-Feb, 11.59 PM

Instructions:

1. All the assignments should be completed and uploaded before the deadline. Marks will be deducted for the submissions made after the deadline.
2. Markings will be based on the correctness and soundness of the outputs. Marks will be deducted in case of plagiarism.
3. Proper indentation & appropriate comments (if necessary) are mandatory. [2+2marks]
4. You should zip all the required files and name the zip file as roll_no .zip , eg. 1501cs11.zip. 5. Provide a **readme** file with all the execution details (commands to execute) of the codes and outputs/observations (if necessary).
6. Upload your assignment (the zip file) in the following link:

https://www.dropbox.com/request/JwYyKWcyqQtPXPcwYbGI

Questions:

1. Write a C program to create N (MAX_THREADS 50) threads specified by user in the command line, each of which prints out a message "I am groot" and its own thread ID. To see how the execution of the threads interleaves, make the main thread sleep 1 second for every 5 threads it creates. The output of your code should be similar to:

```
I am groot 1. Created new groot (4) in iteration 0...
Hello from groot 4 - I was created in iteration 0
I am groot 1. Created new groot (6) in iteration 1...
I am groot 1. Created new groot (7) in iteration 2...
I am groot 1. Created new groot (8) in iteration 3...
I am groot 1. Created new groot (9) in iteration 4...
I am groot 1. Created new groot (10) in iteration 5...
Hello from groot 6 - I was created in iteration 1
Hello from groot 7 - I was created in iteration 2
Hello from groot 8 - I was created in iteration 3
Hello from groot 9 - I was created in iteration 4
Hello from groot 10 - I was created in iteration 5
I am groot 1. Created new groot (11) in iteration 6...
I am groot 1. Created new groot (12) in iteration 7...
Hello from groot 11 - I was created in iteration 6
Hello from groot 12 - I was created in iteration 7
```

2. Write a simple C program to creates 10 threads (each thread increments the variable by one). Define two variables, global (shared among all threads) and local static and wait for all threads to complete its execution, then show the final value of each variable.

3. Write a program that computes the cube roots of the integers from 0 to 999 in a separate thread and returns an array of doubles containing the results. In the meantime, the main thread should display a short message "Computation under process. Please wait …" to the user and then display the results of the computation when they are ready. For example: cbrt (0) = 0.000000