Assignment for 3rd Year 1stSemester Students
IT/PC/B/S/313

GUIDELINES

- Try to write a clean program with enough comments.
- At the beginning of the file, use block comments to write details about name, roll no, assignment details, input required and output generated.
- Also put the compilation [should be WARNING free] and execution sequence under the block comment.
- The name of the file should be as per the following format.

  <Two Digit Team Number>_<Assignment Number>.c
- The type of the file should be .c.
- The assignment files should be uploaded using google form which I will mail you later.
- While coding, always use indentation of 4 spaces.
- Blocks of code should be separated by a newline.
- Always use command line argument handling to take inputs.
- Duplicate assignments will incur penalties.
  [Marks will be allocated proportionally]
- Not adhering to any of these guidelines will incur penalties.
- For the description of any system/library call use man command.
- Always use ‘perror’ routine to check the return status of the system/library call.

ASSIGNMENT – 8
Total Marks - 15
Thread Programming Using Queue

Consider a process with three threads A, B, and C. The default thread of the process receives two inputs (X, Y) and places them in a queue that is accessible by all the three threads A, B and C. For each pair of input (X,Y), we require that the request must first be processed by thread A (Multiplication (X*Y)),then B(Division (X*Y)/2), then C (Addition (X+Y)), then B again ((X*Y) /(X+Y)), and finally by A((X+Y)* (X+Y)) before the pair (X,Y) can be removed and discarded from the queue.

Thread A must read the next request from the queue only after it is finished with all the above steps of the previous one. Write down code for the functions run by the threads A, B, and C, to enable this synchronization. You may use any synchronization primitive of your choice to solve this question.

Example:—

Input: N, *number of random pairs*

Output Format:

Initial Queue —

Pairs	A	B	C	B	A
(1, 2)	2	1	3	-1	3