**PALESTINE POLYTECHNIC UNIVERSITY**
**COLLEGE OF INFORMATION TECHNOLOGY AND COMPUTER ENGINEERING**
**OPERATING SYSTEMS 7505**
**PROJECT DESCRIPTION**

1- Students should start working on the implementation of this project as soon as possible so as finish the requirements on time and with no delays.
2- You can use C/C++ , Java or python programming languages.
3- The project is out of 100.
4- You cannot work as group, each student should submit his own work, however you may discuss the ideas with your collogues.
5- The program code must be written in good manner and must be fully documented. An execution file also with source code should be attached in your project files.
6- **Deadline is 10-12-2022. No late submission is allowed after this date.**
7- **Any copy or plagiarism will yield to the failure in the whole course of all students participating in this illegal action.**

**You will write a synchronization simulator to show the different results of concurrent processes / threads accessing shared data variables with and without using synchronization tools.**

**Assume a critical section that changes the values of 2 or 3 shared variables by adding or subtracting values from these variables from n processes or threads.**

**Your simulator should define the used processes (n1 adders and n2 subtractors) or threads and run these processes random number of times. (n1 and n2 are also random and not necessarily equal)**

**The simulator should show the *expected* correct values of the shared variables (by calculating the number of times each adder process accesses a variable and the same for subtractors) and compare it to the real resultant values of these variables assuming *no synchronization* tools were used.**

**The simulator should show the *expected* correct values of the shared variables (by calculating the number of times each adder process accesses a variable and the same for subtractors) and compare it to the real resultant values of these variables assuming *synchronization* tools were used.**

**You should be able to demonstrate your results in clear and scientific way and submitting your discussion report as part of your step 5 above.**