



## COMSATS University Islamabad, Lahore Campus

### Assignment # 2 – FALL 2020

|                    |                           |  |          |                 |        |               |        |
|--------------------|---------------------------|--|----------|-----------------|--------|---------------|--------|
| Course Title:      | Operating Systems         |  |          | Course Code:    | CSC322 | Credit Hours: | 3(2,1) |
| Course Instructor: | Dr. Hasan Jamal           |  |          | Programme Name: | BCS    |               |        |
| Semester:          | Batch:                    |  | Section: |                 | Date:  | 23/11/2020    |        |
| Deadline:          | 26/11/2020 before 2:30 PM |  |          | Maximum Marks:  |        | 10            |        |
| Name               |                           |  |          | Student ID      |        |               |        |

#### Important Instructions / Guidelines:

- Submit the assignment on Google Classroom
- No late submission allowed
- Any solution found to be copied would strictly result in zero marks
- Maximum three persons per group is allowed for submission.

#### Question:

Write a pseudo code to synchronize processes A, B, C, D, and E by using semaphores so that process B must finish executing before A and C starts, process C must finish executing before E starts, and process A and E must finish before D starts. Show your solution. You should assume three semaphores **X, Y and Z** and all **initialized to zero**.

#### Solution:

| Process A                              | Process B                                | Process C                              | Process D                            | Process E                              |
|--|--|--|--------------------------------------|--|
| wait(X)<br>Do works of A;<br>signal(Z) | Do works of B;<br>signal(X)<br>signal(X) | wait(X)<br>Do works of C;<br>signal(Y) | wait(Z)<br>wait(Z)<br>Do works of D; | wait(Y)<br>Do works of E;<br>signal(Z) |