EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Mid Term I Examination, Spring 2022

Course: CSE325 – Operating Systems, Section-1
Instructor: Md. Nawab Yousuf Ali, PhD, Professor, CSE Department
Full Mark: 20
Time: 1 Hour and 20 Minutes

Note: There are FIVE questions, answer ALL of them. Course outcomes (CO), cognitive levels and marks of each question are mentioned at the right margin.

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1. Suppose in a computer system, various I/O devices generate 15 interrupt requests concurrently. Design a diagram and show how the system handles the multiple interrupts. [CO1, C3, Mark: 5]

2. There are four processes namely P0, P1, P2, and P3. Input, output, and the CPU burst time for each process (in milliseconds) are given in the following table. [CO1, C3, Mark: 5]

	P0	P1	P2	P3
Input	6	10	5	9
CPU burst time	12	13	14	12
Output	5	6	3	7

Illustrate the graphical representations and calculate the execution times of the processes in
   a) Multiprogrammed processing system and
   b) Time shared processing system (time quantum is 12)

3. Find the output for the following program. Determine the steps of the respective processes. [CO2, C3, Mark: 3]

```
#include <unistd.h>
#include <stdio.h>
int main()
{
 pid_t pid;
   pid_t pid1;
   pid_t pid2;
   pid = fork();
   if (pid > 0 )
   {
pid1=fork();
   printf("Hello\n");
   }
  else if (pid1==0)
   {
pid2=fork();
```

```
    printf("World\n");
    }
    else
    {
    printf("EWU");
    }
}
```

4. Suppose you are performing an arithmetic operation (e.g., 3+2-1*3) using a calculator software. You clicked the buttons for necessary operands and operators for this calculation. Then the software calculated and showed you the output on the screen. Briefly explain in which state/states the process was in given scenario. [CO2, C3, Mark: 2]

5. Suppose in a multiprocessing system, four threads namely T1, T2, T3, and T4 are running with four different processors namely CPU1, CPU2, CPU3, and CPU4 respectively. Design a diagram and show which of the following is suitable when multiple threads are waiting for I/O operations. [CO1, C3, Mark: 5]

   Implementing threads:
   a) User level
   b) Kernel level