



EAST WEST UNIVERSITY BANGLADESH
Department of Computer Science & Engineering

CSE325: Operating Systems (3)

Midterm I

Fall 2016

Total Marks: 25=5x5

Instructor: Dr. Md. Shamim Akhter

Time: 80 minutes

1. A **context-switch** is when the processor (CPU) stops executing one process and begins executing another. What needs to be saved and restored on a context switch between two threads in the same process? What if two are in different processes? (2.5+2.5)
2. Which scheduler is responsible for the degree of multiprogramming and how does he control it? When a process is scheduled, what state is it in? When a running process blocks, what state does it transition to? When a time interrupt is taken, what state does a running process transition to? (2+3)
3.
 - a) Write two different activities of **thread-join** operation. (2)
 - b) How many times the program will print **“hello”**? (3)

```
main( )
{
    int i=0;
    while (i<2)
    {
        printf("hello\n");
        fork();
        printf("hello\n");
        i++;
    }
}
```

Hint: fork () system call copies the exact address space of parent to child.

4. A process has two threads (T1, T2) and each of which needs ten (10) units of CPU time. In addition, T1 needs five (5) units of time for input. How long will it take to complete the threads: (5)
 - a) if they run @ uniprocessor system and T2 schedules before T1, and one to one mapping between user-level and kernel-level threads?
 - b) if they run @ uniprocessor system, and T1 schedules before T2, and many to one mapping between user-level and kernel-level threads?
 - c) if they run @ uniprocessor system, and T1 schedules before T2, and one to one mapping between user-level and kernel-level threads?
 - d) if they run @ multiprocessor system, and one-to-one mapping between user-level and kernel-level threads?
 - e) if they run @ multiprocessor system, and many-to-one mapping between user-level and kernel-level threads?
5. Explain- why process table is needed in a time sharing system. Does it also require in a batch processing system- where a single process taking over the entire machine until it is finished? (3+2)