



Daffodil International University
Faculty of Science & Information Technology
Department of Software Engineering
Midterm Examination, Fall 2026

Course Code: SE 232; Course Title: Operating System & System Programming

Sections & Teachers: 44(A-J), IS(A-C), FJT(D, E), KM(F,G), SMR(H, I), FMD(J)

Time: 1 Hour 30 Mins

Marks: 25

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.		A university computer laboratory has 40 computers connected through a network to a central server. Each computer has its own operating system and can run applications <u>independently</u> . Students can log in from any authorized computer to <u>access files stored on the server</u> and use shared printers. The laboratory administrator manages <u>user accounts</u> , shared folders, printers, and <u>access permissions from the server</u> . It has been structured in such a way that <u>network device drivers can run as separate processes</u> , improving reliability, but <u>communication overhead may increase</u> .		
	a)	Describe the system structure and Identify the characteristics of the operating system demonstrated in the given scenario.	[Marks-4 +4]	CLO-1 Level-1
	b)	State one of the system calls for creating a child process.	[Marks-2]	
2.	a)	Process Scheduler selects among the available processes where to go, One scheduler is used to control the degree of <u>multiprogramming</u>. To improve the execution process can be divided in threads. Consider the following pseudo-code program block: <pre>for (int i = 0; i<50; i++){ printf("Hello world"); }</pre> i) Demonstrate how you can run this program block in a thread. ii) Determine the <u>characteristics of the mentioned scheduler</u> from the scenario.	[Marks-3 +2]	CLO-2 Level-3

- b) Apply the preemptive version of the priority scheduling algorithm to schedule the process according to its priority value (Low value = High Priority).

[Marks-5
+1]

PID	Arrival Time	Burst Time	Priority
P1	4	6	2
P2	0	5	6
P3	5	5	0
P4	2	7	4
P5	6	3	1

- i) Consider the scenario and calculate the average waiting time. η .
ii) Determine the major problem of this algorithm.

c)

PID	Arrival Time	Burst Time
P1	4	6
P2	3	4
P3	1	1
P4	6	5
P5	3	4

[Marks-4]

Apply the round robin scheduling algorithm for the above scenario to find out the average waiting time, where each process gets a very high quantum value.