



Daffodil International University
Department of Software Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall 2025

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

Sections & Teachers: 42, IS(A-C), FJT(D,E,K), SBM(F,G), RBG(H,I), PS(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.		You are listening to music, downloading a file and editing a document all at once and none of these tasks interface with each other. Each Program seems to get its own fair share of CPU time. Behind the scenes, when the system boots only a very small portion of operating system loads into the kernel space, interestingly failure in one part doesn't crash the whole system, yet all these tasks seem to run smoothly.																							
	a)	Describe the system structure and the mechanism type of the above operating system mentioning the scenarios.	[Marks-3+3]	CLO-1 Level-1																					
	b)	State the scheduling queues of the process.	[Marks-4]																						
2.	a)	Demonstrate the concept of a model where the multiple user thread mapped to fewer kernel threads.	[Marks-3]	CLO-2 Level-3																					
	b)	<table border="1"><thead><tr><th>PID</th><th>Arrival Time</th><th>Burst Time</th></tr></thead><tbody><tr><td>P1</td><td>0</td><td>4</td></tr><tr><td>P2</td><td>3</td><td>1</td></tr><tr><td>P3</td><td>2</td><td>2</td></tr><tr><td>P4</td><td>1</td><td>5</td></tr><tr><td>P5</td><td>6</td><td>3</td></tr><tr><td>P6</td><td>4</td><td>6</td></tr></tbody></table> Apply the Round Robin algorithm to find the average waiting time where quantum value, $Q=2$.	PID		Arrival Time	Burst Time	P1	0	4	P2	3	1	P3	2	2	P4	1	5	P5	6	3	P6	4	6	[Marks-6]
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	c)	Suppose the quantum value Q is set very large, Apply the scheduling algorithm to find the average waiting time which it begins to resemble under this condition mentioning its effect on the short processes. Compare the performance of these two algorithms.	[Marks-6]																						