MONASH University

FIT2100 - OPERATING SYSTEMS

WEEK 6 - WORKSHOP 05

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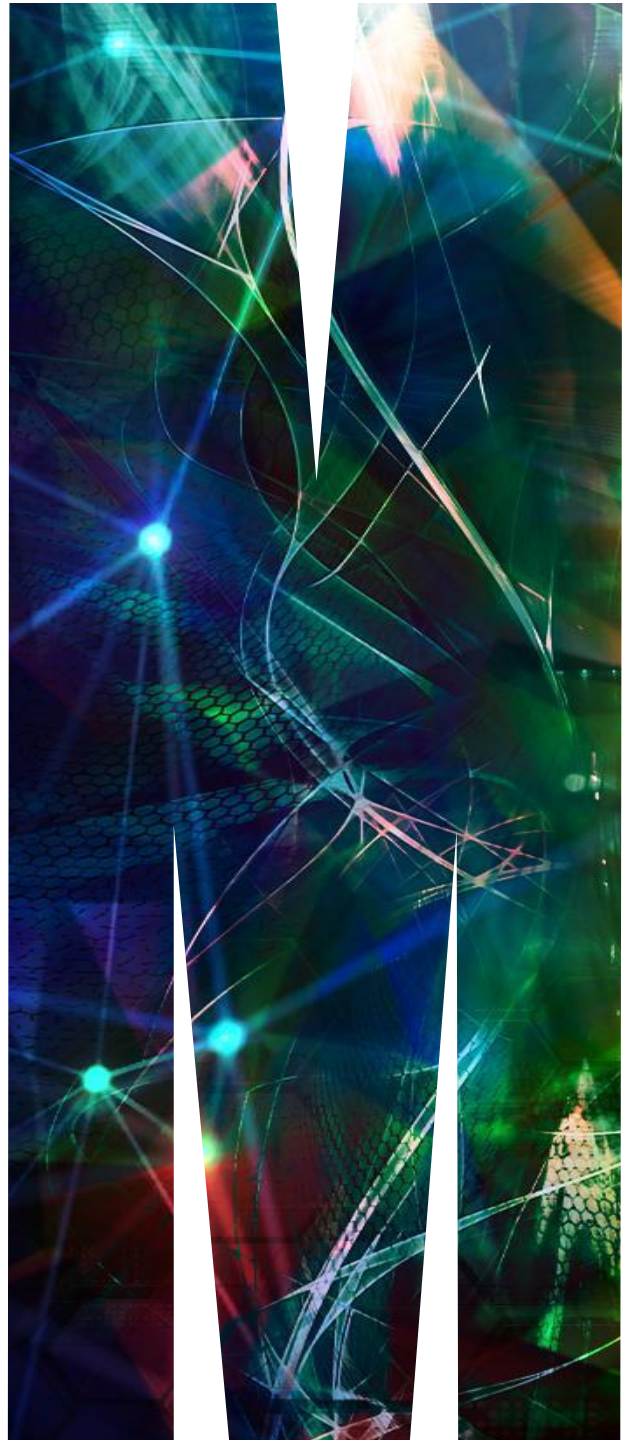

CONTENT

WORKSHOP TOPICS

- The Process Model
- Process Creation, Termination, Hierarchies, States and Implementation.
- Modelling Multiprogramming.
- Process Scheduling

Week 5 & 6 Learning Objectives

Processes

- Define the concept of process
- Understand the relationship between processes and process control blocks
- Discuss the concepts of process states and state transitions
- Describe the process states in Unix systems

Uniprocessor Scheduling

- Discuss the differences among long-, medium-, and short-term scheduling
- Assess the performance of different scheduling policies
- Understand the scheduling technique used in Unix

RECAP TIME

MULTIPLE CHOICE / DISCUSSION QUESTIONS (20 mins)

PollEV Time - Engage and Interact

PROCESS SCHEDULING - NON PRE-EMPTIVE

FIRST COME FIRST SERVED (FCFS) - 10 mins

Complete the following Gantt chart and the table using the details of the processes given below

PROCESS	ARRIVAL TIME	SERVICE TIME
A	0	4
B	3	5
C	4	3
D	6	6
E	8	2

PROCESS	ARRIVAL TIME (Ta)	SERVICE TIME (Ts)	COMPLETION TIME (Tc)	TURNAROUND TIME (Tr)	Tr/Ts
A	0	4			
B	3	5			
C	4	3			
D	6	6			
E	8	2			
Mean		4			

0					5					10					15				

PROCESS SCHEDULING - NON PRE-EMPTIVE

SHORTEST JOB FIRST (SJF) - 10 mins

Complete the following Gantt chart and the table using the details of the processes given below

PROCESS	ARRIVAL TIME	SERVICE TIME
A	0	4
B	3	5
C	4	3
D	6	6
E	8	2

PROCESS	ARRIVAL TIME (Ta)	SERVICE TIME (Ts)	COMPLETION TIME (Tc)	TURNAROUND TIME (Tr)	Tr/Ts
A	0	4			
B	3	5			
C	4	3			
D	6	6			
E	8	2			
Mean		4			

0					5					10					15				

PROCESS SCHEDULING - PRE-EMPTIVE

ROUND ROBIN (RR WITH Q=2) - 15 mins

Complete the following Gantt chart and the table using the details of the processes given below

PROCESS	ARRIVAL TIME	SERVICE TIME
A	0	4
B	3	5
C	4	3
D	6	6
E	8	2

PROCESS	ARRIVAL TIME (Ta)	SERVICE TIME (Ts)	COMPLETION TIME (Tc)	TURNAROUND TIME (Tr)	Tr/Ts
A	0	4			
B	3	5			
C	4	3			
D	6	6			
E	8	2			
Mean		4			

0					5					10					15				

PROCESS SCHEDULING - PRE-EMPTIVE

SHORTEST REMAINING TIME NEXT (SRTN WITH Q=2) - 10 mins

Complete the following Gantt chart and the table using the details of the processes given below

PROCESS	ARRIVAL TIME	SERVICE TIME
A	0	4
B	3	5
C	4	3
D	6	6
E	8	2

PROCESS	ARRIVAL TIME (Ta)	SERVICE TIME (Ts)	COMPLETION TIME (Tc)	TURNAROUND TIME (Tr)	Tr/Ts
A	0	4			
B	3	5			
C	4	3			
D	6	6			
E	8	2			
Mean		4			

0					5					10					15				

REAL-TIME SCHEDULING

EARLIEST DEADLINE FIRST - 10 mins

Complete the following Gantt chart and the table using the details of the processes given below

PROCESS	ARRIVAL TIME	SERVICE TIME	DEADLINE
A	0	2	4
B	1	3	11
C	4	4	10
D	7	8	24
E	12	5	18

PROCESS	ARRIVAL TIME (Ta)	SERVICE TIME (Ts)	DEADLINE (Td)	COMPLETION TIME (Tc)	TURNAROUND TIME (Tr)	Tr/Ts
A	0	2	4			
B	1	3	11			
C	4	4	10			
D	7	8	24			
E	12	5	18			
Mean		4.4				

0					5					10					15					20				

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Summary

- Topics covered
  - The Process Model
  - Process Creation, Termination, Hierarchies, States and Implementation.
  - Modelling Multiprogramming.
  - Process Scheduling

- Next week
  - Threads and concurrency