University of Calgary

CPSC 457: Principles of Operating System, Winter 2018

Assignment 3

For
Coskun Sahin, Dr.Pavol Federl

By
BenKun Chen
30005337
benkun.chen@ucalgary.ca
Tutorial Section: T02

Q1 - Written question (2 marks)

$CPU\ utilization = 1 - 0.9^5 \approx 40.95\%$

Q2 – Written question (4 marks)

Assuming there are no I/O operations

Process	Arrival Time	Burst Time	Start Time	Finish Time	Turnaround Time	Waiting Time
P1	0	10	0	14	14	4
P2	1	1	1	2	1	0
P3	3	2	3	5	2	0
P4	5	1	5	6	1	0
P5	9	5	14	19	10	5

Gantt chart:

1	**2**	**1**	**3**	**3**	**4**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**5**	**5**	**5**	**5**	**5**

0 1 2 3 5 6 14 19

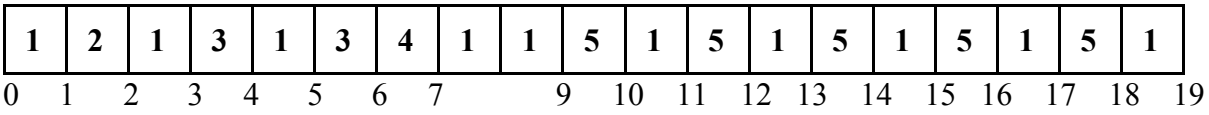
Average wait time = (4 + 0 + 0 + 0 + 5) / 5 = 1.8 unit

Q3 – Written question (4 marks)

Assuming there are no I/O operations

Process	Arrival Time	Burst Time	Start Time	Finish Time	Turnaround Time	Waiting Time
P1	0	10	0	19	19	9
P2	1	1	1	2	1	0
P3	3	2	3	6	3	1
P4	5	1	6	7	2	1
P5	9	5	9	18	9	4

Gantt chart (with 1 sec quantum):



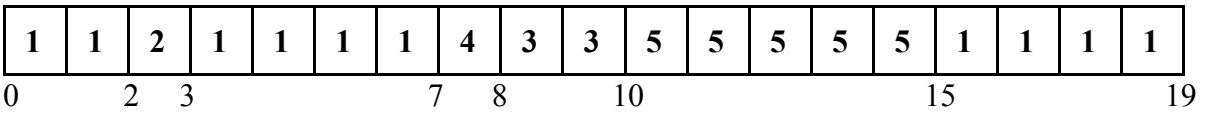
Number of context switches = 18

Q4 – Written question (4 marks)

Assuming there are no I/O operations

Process	Arrival Time	Burst Time	Start Time	Finish Time	Turnaround Time	Waiting Time
P1	0	10	0	19	19	9
P2	1	1	2	3	2	1
P3	3	2	8	10	7	5
P4	5	1	7	8	3	2
P5	9	5	10	15	6	1

Gantt chart (with 1 sec quantum):



Q5 - Programming question – multithreaded (30 marks)

Q6 – Written question (5 marks)

Q7 – Programming question – single threaded (20 marks)

Check the scheduler.cpp