Tutorial Week 3 – FROM 2012 FINAL EXAM.

Question 1. (15 marks)

We wish to calculate some performance metrics for a scheduler and a set of tasks.
In the following tables, times are all in milliseconds.
Assume tasks do not stall for I/O. Ignore scheduler delays. Tasks run once.
Deadline is the absolute time of the deadline (i.e., it is NOT relative to start time).
Note that in the following examples, the first 4 columns are the same for all the tables.

Here is an example table completed for a "First In First Out" scheduler.

Task Number	Arrival Time	Execution Time	Deadline	Completion Time	Turnaround Time	Waiting Time	Deadline Miss?
1	0	20	33	*20*	*20*	*0*	*no*
2	1	5	6	*25*	*24*	*19*	*yes*
3	2	2	8	*27*	*25*	*23*	*yes*
4	3	4	29	*31*	*28*	*24*	*yes*
5	4	3	35	*34*	*30*	*27*	*no*

Average Waiting Time	*18.6*	ms
Average Turnaround Time	*25.4*	ms
Throughput (Jobs/second)	*147*	jobs/s

(a) Complete the following table for a Shortest Job First scheduler (5 marks)

Task Number	Arrival Time	Execution Time	Deadline	Completion Time	Turnaround Time	Waiting Time	Deadline Miss?
1	0	20	33				
2	1	5	6				
3	2	2	8				
4	3	4	29				
5	4	3	35				

Average Waiting Time	ms
Average Turnaround Time	ms
Throughput (Jobs/second)	jobs/s

(b) Complete the following table for a Round Robin scheduler with a quantum of 1 millisecond. (5 marks)

Task Number	Arrival Time	Execution Time	Deadline	Completion Time	Turnaround Time	Waiting Time	Deadline Miss?
1	0	20	33				
2	1	5	6				
3	2	2	8				
4	3	4	29				
5	4	3	35				

Average Waiting Time	ms
Average Turnaround Time	ms
Throughput (Jobs/second)	jobs/s

(c) Complete the following table for an Earliest Deadline First scheduler. (5 marks)

Task Number	Arrival Time	Execution Time	Deadline	Completion Time	Turnaround Time	Waiting Time	Deadline Miss?
1	0	20	33				
2	1	5	6				
3	2	2	8				
4	3	4	29				
5	4	3	35				

Average Waiting Time	ms
Average Turnaround Time	ms
Throughput (Jobs/second)	jobs/s