Assignment 5

1 Exercise with scheduling

For a given operating systems the processes are executed with preemptive scheduling and using a cyclic (round-robin) policy.

The following table shows, for each process, its related arrival time and execution time.

All the processes only perform compute (cpu-intensive) operations.

Process Arrival time Execution time

P1	0	500
P2	100	300
P3	300	400
P4	600	1000
P5	700	600

We want to evaluate the effect in the scheduling when the time slice length is changed.

The considered time slice values are 200 and 500 miliseconds.

For each considered value, complete the following tasks:

1. Determine at what time ends each process.

2. Determine the time that each process was running (turnaround time).

3. Determine the service and wait time for each process of each process.

4. Determine the normalized turnaround time.

5. Determine the average waiting time.

6. Determine the average turnaround time.

T (slice 200)	CPU	Queue
0	P1<500>	
100	P1<400>	P2<300>
200		
300		
400		
600		
800		
900 - P2 ends		
1100		
1200		
1400		
1600		
1800		
2000		
2200		
2400		
2800		

Process	Tarrive	Tend	Tturnarround	Trun	Twait	Tturn(norm)
P1	0	1200	1200	500	700	1200/500=2.4
P2						
P3						
P4						
P5						
Average						

Same for T (slice 500)

2   Exercise with Threads

Given a text file that contains a list of integers. The first value of the list is the number of entries (numbers) of the rest of the file.

Write a program that reads the file in an array (located in the main memory) and

obtains the maximum value using several threads. For obtaining the maximum value the array has to be divided in as many blocks as number of threads. Then, each block will be assigned to a different thread. In this way, each thread computes the maximum value of its assigned array portion. Then, the main program computes the global maximum from the partial values provided by the threads.