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End Sem Description

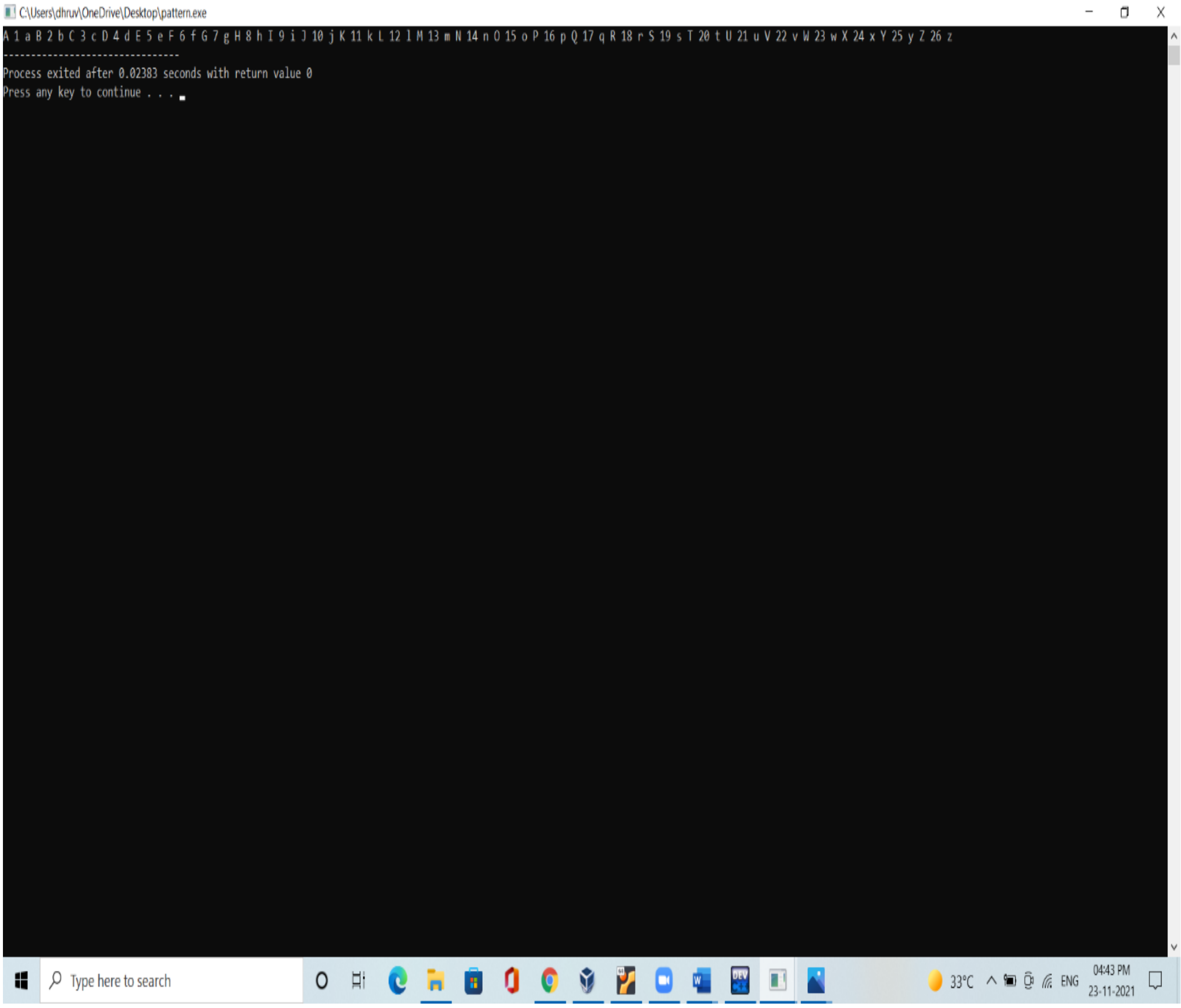
Q1(b)

In this question, firstly we define a semaphore which is a data type shared by different threads. Then we create three thread function for writing different characters in the pattern:

A 1 a B 2 b …………………………………………. Z 26 z

First thread will run and print A and it will wait and then 2nd thread will run and print 1 and wait and then 3rd thread will run and print a and then wait and the process goes on till all the alphabets are printed.

Screenshot:



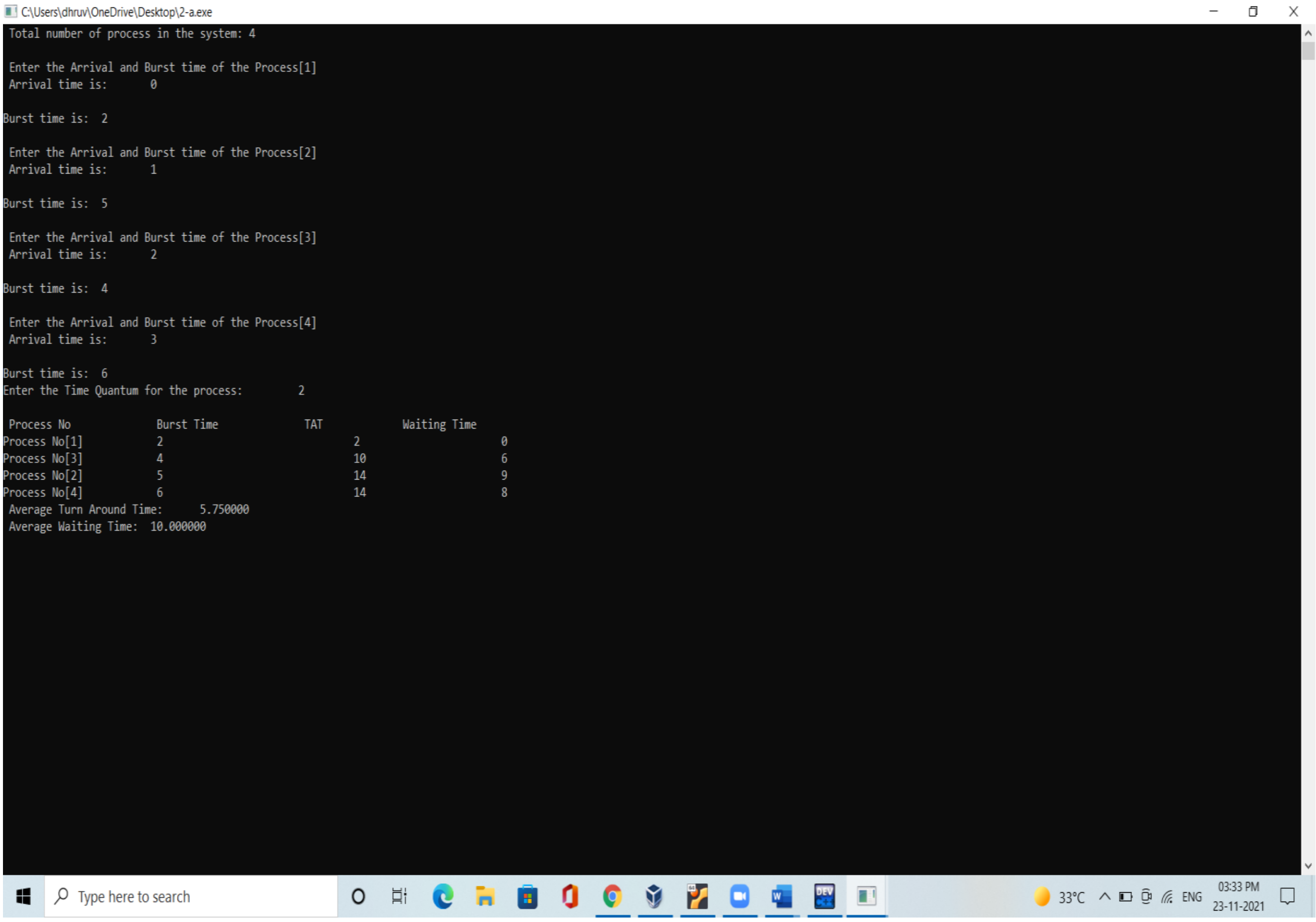
```
A 1 a B 2 b C 3 c D 4 d E 5 e F 6 f G 7 g H 8 h I 9 i J 10 j K 11 k L 12 l M 13 m N 14 n O 15 o P 16 p Q 17 q R 18 r S 19 s T 20 t U 21 u V 22 v W 23 w X 24 x Y 25 y Z 26 z
--------------------------------
Process exited after 0.02383 seconds with return value 0
Press any key to continue . . .
```

Q2 (a)

ROUND ROBIN SCHEDULING ALGORITHM

1. Firstly, all the process which are ready are in queue and enter the running state on basis of first come first serve.
2. Each process executes according to the given quantum value.
3. For instance, the first process runs for given quantum value and then its state is saved.
4. Then next process runs for given quantum value and this way it is done for all the process until each and every process is executed.

Screenshot:



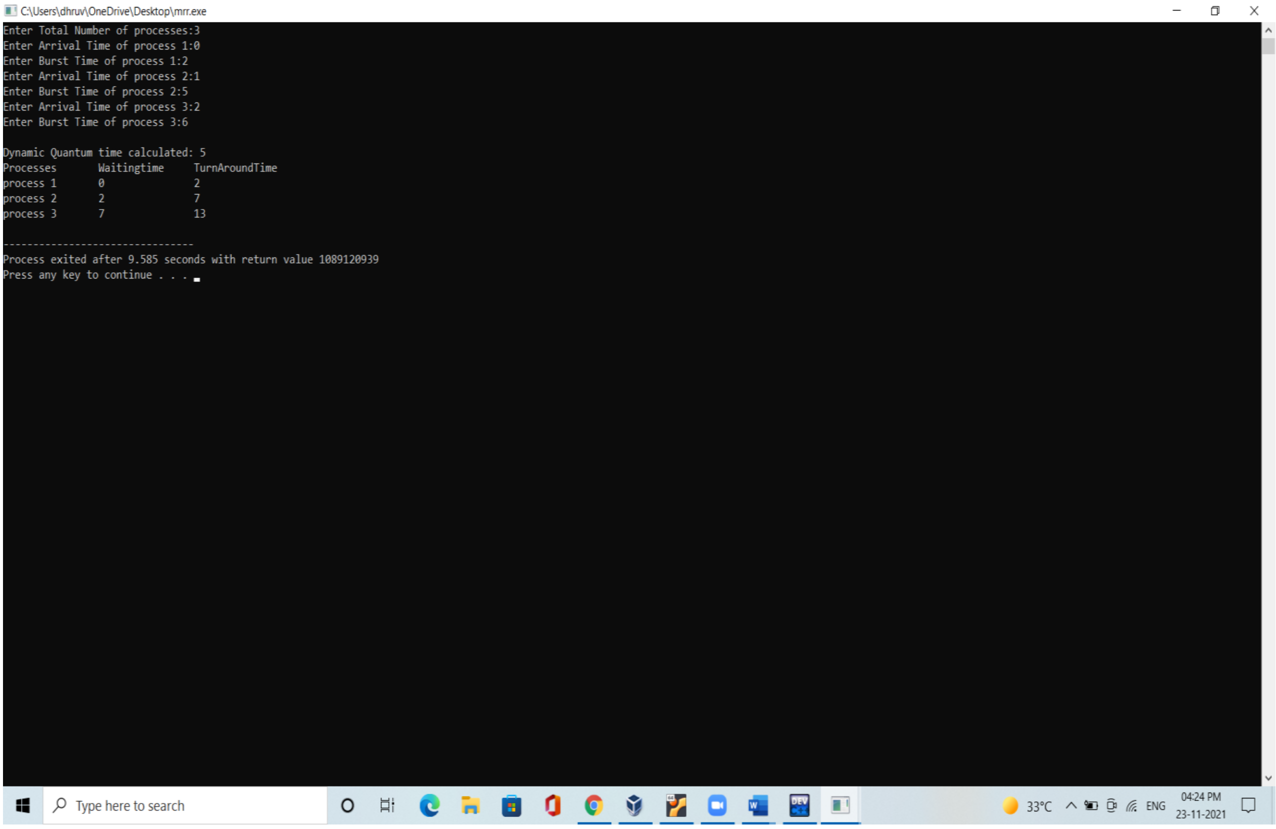
```
 Total number of process in the system: 4

 Enter the Arrival and Burst time of the Process[1]
 Arrival time is:       0

Burst time is:  2

 Enter the Arrival and Burst time of the Process[2]
 Arrival time is:       1

Burst time is:  5

 Enter the Arrival and Burst time of the Process[3]
 Arrival time is:       2

Burst time is:  4

 Enter the Arrival and Burst time of the Process[4]
 Arrival time is:       3

Burst time is:  6
Enter the Time Quantum for the process:         2

 Process No             Burst Time              TAT             Waiting Time
Process No[1]           2                               2                       0
Process No[3]           4                               10                      6
Process No[2]           5                               14                      9
Process No[4]           6                               14                      8
 Average Turn Around Time:      5.750000
 Average Waiting Time:  10.000000
```

MODIFIED ROUND ROBIN SCHEDULING ALGORITHM

1. Firstly, all processes are sorted according to their arrival time.
2. Then the process with arrival time less than current time is selected.
3. Then score is given to each process and all the processes are sorted according to their score.

4. The quantum number is automatically calculated from the mean and median of the burst time.
5. In this way it runs until all the processes are executed.

Screenshot:



```
Enter Total Number of processes:3
Enter Arrival Time of process 1:0
Enter Burst Time of process 1:2
Enter Arrival Time of process 2:1
Enter Burst Time of process 2:5
Enter Arrival Time of process 3:2
Enter Burst Time of process 3:6

Dynamic Quantum time calculated: 5
Processes       Waitingtime     TurnAroundTime
process 1       0               2
process 2       2               7
process 3       7               13

--------------------------------
Process exited after 9.585 seconds with return value 1089120939
Press any key to continue . . .
```

It can noted that MRR performs better with respect to RR. Also, MRR shows less Average TAT and less Average WT than the Round Robin Algorithm.

Q3

The producer and consumer share a fixed-size buffer used as a queue. The producer’s job is to generate data and put this in the buffer. The consumer’s job is to consume the data from this buffer, one at a time.