**Student Name: Waris Ali**

**Student ID: 11804212**

**Email Address: warissid41@gmail.com**

**GitHub Link:**

**Code: Question 7:**

Researchers designed one system that classified interactive and noninteractive processes automatically by looking at the amount of terminal I/O. If a process did not input or output to the terminal in a 1-second interval, the process was classified as noninteractive and was moved to a lower-priority queue. In response to this policy, one programmer modified his programs to write an arbitrary character to the terminal at regular intervals of less than 1 second. The system gave his programs a high priority, even though the terminal output was completely meaningless.

**Question 20:**

There are 3 student processes and 1 teacher process. Students are supposed to do their assignments and they need 3 things for that pen, paper and question paper. The teacher has an infinite supply of all the three things. One student has pen, another has paper and another has question paper. The teacher places two things on a shared table and the student having the third complementary thing makes the assignment and tells the teacher on completion. The teacher then places another two things out of the three and again the student having the third thing makes the assignment and tells the teacher on completion. This cycle continues. WAP to synchronize the teacher and the students.

1. Explain the problem in terms of operating system concept? (Max 200 word)

**Description: Question 7 :** System is designed to classified between interactive and noninteractive process automatically by looking at the amount of terminal I/O in this we use the Round Robin and then priority then we will give Quantum time 1 second as a interval if process is classified noninteractive we will decrease the priority of that process.

**Question 20 :** In this problem we apply the rule of primitive and nonprimive rule .

2. Write the algorithm for proposed solution of the assigned problem.

**Algorithm: for Question 7 ->**

**1.** initialize the number of process we want.

2. Enter the response time (in milisecod).

3. condition if response time < 1000 set type =1 else 0.

4.for loop and

5. if type = 1

Print "Interactive High"

Else

Print “Non-Interactive”

Algorithm for Question 20 ->

1. Structure for requirements

Initializing pen paper paper , Question\_paper ,all\_three;

2.initializing they having paper or pencil or pen or not with true and false;

3.While Loop checking conditions[0].all\_three==false||s[1].all\_three==false||s[2].all\_three==false

Print all three = true;

print"Third Student has completed the task;

If ch1==2 && ch2==3 && s[0].all\_three ==false;

Print "Third Student has completed the task;

IF (ch1==2 && ch2==3 && s[0].all\_three ==false

4. PRINT All the students now have completed their respective tasks successfully

3. Calculate complexity of implemented algorithm. (Student must specify complexity of each line of code along with overall complexity)

**Description (purpose of use):**

4. Explain all the constraints given in the problem. Attach the code snippet of the implemented constraint.

**Code snippet: if(ch1==1 && ch2==2 && s[2].all\_three==false)**

**{**

**s[2].all\_three=true ;**

**printf("Third Student has completed the task\n");**

**}**

**if(ch1==2 && ch2==3 && s[0].all\_three==false)**

**{**

**s[0].all\_three=true;**

**printf("First Student has completed the task\n");**

**}**

**if(ch1==1 && ch2==3 && s[1].all\_three==false)**

**{**

**s[1].all\_three=true;**

**printf("Second Student has completed the task\n");**

**}**

**Here we are verifying the condition with all the three students**

5. If you have implemented any additional algorithm to support the solution, explain the need and usage of the same.

**Description: No it does not need any additional algo .**

6. Explain the boundary conditions of the implemented code.

**Description:** In Question 20 every students must have one thing may be pen or paper these are the boundary condition

**In question 07**

If a process did not input or output to the terminal in a 1-second interval, the process was classified as noninteractive and was moved to a lower-priority queue these are the boundary conditions

7. Explain all the test cases applied on the solution of assigned problem**.**

**Description:**

**Question 07:**

We are giving two inputs First Number of process second Enter the data

And outputs are Response time and Process is Interactive or Non-Interactive .

Question 20 : In this I am using Structure in C for defining that how many students get the pen paper or both and assigned with Boolean values of true or false and then we are checking the conditions if they are having Pen Paper or both all three.

**8. Have you made minimum 5 revisions of solution on GitHub?**

**YES**

**GitHub Link:** <https://github.com/WarisAli-source/OS-CA3-Simulation>