**Micro-project Report**

***Multiprogramming Operating System***

**1.0 Brief introduction**

In multiprogramming operating system consists of various processes. On multiprogramming OS the processes run simultaneously for specific time. In the same way, process scheduler consists of various processes which will run for given time and when they are exited they are inserted on Queue and removed when the process is started. The algorithm used for this is named as round robin algorithm. The program consists of implementation of this round robin algorithm. The another concept used is the priority queue. The priority is set to the processes.

**2.0 Aim of the project**

This micro-project aims were

1. To analyze the concepts of data structures.
2. To analyze the real world applications of data structures.
3. To implement Queue using Linked List.
4. To implement the round robin algorithm.
5. To implement the process scheduler.

We have achieved all the aims which were decided at the start of the project. We have completed the project with achieving all the aims at the completion.

**3.0 Course Outcomes Integrated**

1. Implement basic operations on queue using linked list representation.
2. Implement basic operations on linked list.

**4.0 Actual procedure followed**

Actual procedure followed during the project is mentioned in the table below with the planned start date and completed finish date.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sr.no. | Details of activity | Planned  Start date | Completed  Finish date | Name of responsible Team members |
| 1. | Collecting the information of Process Scheduler and Priority Queue | 10/07/2018 | 18/07/2018 | 1.Patil Pratik Kumar  2.Nalavade Shivtej Rajendrakumar  3.Kare Abhilash Sudam  4.Pawar Vivek Appaso |
| 2. | Collecting information of multi programming operating system | 19/07/2018 | 30/07/2018 | 1.Mane Sai Vijay  2.Pandit Shubham Dattatray  3.Jadhav Rohan Hanmant |
| 3. | Collecting Information about round robin algorithm | 31/07/2018 | 05/08/2018 | 1.Mane Sai Vijay  2.Pandit Shubham Dattatray  3.Kare Abhilash Sudam  4.Pawar Vivek Appaso |
| 4. | Designing the logic of the round robin algorithm | 07/08/2018 | 20/08/2018 | 1.Patil Pratik Kumar  2.Jadhav Rohan Hanmant  3.Nalawade Shivtej Rajendrakumar |
| 5. | Actual Coding of the project | 21/08/2018 | 30/08/2018 | 1.Patil Pratik Kumar  2.Pandit Shubham Dattatray  3.Jadhav Rohan Hanmant |
| 6. | Observing Output | 31/08/2018 | 10/09/2018 | 1.Mane Sai Vijay  2.Kare Abhilash  3.Nalawade Shivtej Rajendrakumar |
| 7. | Making Report | 11/09/2018 | 20/09/2018 | 1.Patil Pratik Kumar  2.Mane Sai Vijay  3.Pawar Vivek Appaso |

**4.1 Specialty:**

In multiprogramming operating system consists of various processes. On multiprogramming OS the processes run simultaneously for specific time. In the same way, process scheduler consists of various processes which will run for given time and when they are exited they are inserted on Queue and removed when the process is started. The algorithm used for this is named as round robin algorithm. The program consists of implementation of this round robin algorithm. The another concept used is the priority queue. The priority is set to the processes.

Round robin scheduling is simple, easy to implement, and starvation free. Round robin scheduling can also be applied to other scheduling problems, such as data packet scheduling problems, such as data packet scheduling in computer networks. It is an operating system concept.

**4.2 Proposed Logic:**

The program consists of the implementation of round robin algorithm. The user to enter the no. of processes, name of the respective process, arrival time, service time. Each process will run for given time. Every process is allowed to execute only for a limited time this is called time quantum. User has to enter the time quantum.

If process A is executing when it will stop and will be inserted on the Queue on rear end. When the process is to be executed it is removed from the Queue at the front end. The program consists of various functions. The functions are within each other. The program will output the arrival time, service time, completion time, turn-around time, waiting time and net turn-around time for each and every process. The priority queue is used to set priority to the processes.

**4.3 Data Structures used? Why?**

The Data structure used are the Queue and linked list. The working of queue is from two endsfirst is rear and second is front. The elements are inserted in the queue from the rear end and removed from front end. In round robin algorithm it is essential to insert elements from one side and remove from other side, this is possible only in queue. In stack elements are inserted and removed from same end, this not the requirement of round robin algorithm. Since, the queue works on principle of FIFO the data structure used is queue. The queue used is the priority queue. The priority is set to the processes. The processes are executed in priority which is set to the processes.

Queue cannot be directly implemented in C, so we have used the linked list for implementing the queue for round robin algorithm. Each element in linked list is called as node. This node has three parts information(INFO), Priority number(PRNO) and Link next(NEXT).

**5.0 Actual Resources Required**

The resources used during the completion of project are mentioned in the below table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sr.no | Name of resources material | Specifications | Quantity | Remarks |
| 1. | Internet | Network of Networks | 1 |  |
| 2. | YouTube | MP4-file format, 640 x 360 pixels | 1 |  |
| 3. | Microsoft Word | 2007 version | 1 |  |
| 4. | Turbo C7 | TURBO C++ compatible with Windows 7,8 and vista | 1 |  |

**6.0 Skill Developed/ learning out of this Micro-Project**

Various skills got developed in us by doing this project. This skills are

1. Implementing Round Robin Algorithm.
2. Implementing the linked list.
3. Implementing the priority queue.
4. Debugging the errors.
5. Using the concept of Data Structures.
6. Implement scheduler for multiprogramming operating system.

This were skills developed by us during the project.

Learning’s were about the errors. The errors minor but it effects whole program. Some errors are difficult to debug. So, the code should be properly typed with proper syntax to avoid errors. We understood that, we need to improve our Debugging skills. We are lacking in some amount in it.

**Submitted By:**

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5. **Nalawade Shivtej Rajendrakumar** **869**
6. **Jadhav Rohan Hanmant 872**
7. **Pawar Vivek Appaso 874** **Subject teacher**

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