**"Optimize Round Robin with SJF Scheduling Algorithm for CPU Scheduling” (SJf+RR)**

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**Abstract: CPU schedulers are responsible for executing the programs by allocating them to C.P.U. The scheduler must be efficient enough to provide maximum CPU utilization within minimal time. The objective of Research paper is to introduce new CPU...Scheduling Algorithm known as Optimized. Round, Robin using shortest job first Scheduling based .algorithm. In this algorithm .turnaround time and waiting time is decreased. The algorithm helps to identify the average waiting time of round robin and in this we will decrease the average response time, turn-around time. There are many algorithms available for a multi programmed operating system like, ROUND.ROBIN SJF, PRIORITY. And, FCFS. The proposed algorithm is based on round robin algorithm in which we combine SJF with RR .In this paper we will introduce a new algorithm which helps to improve the efficiency .of a CPU and the result of existing round robin algorithm is.compared with the proposed algorithm. . Our aim is to combine the best parts of both algorithms, resolve their pitfalls and have a better form of SJF + RR.** "

**KEY WORDS:**

Round. .robin algorithm, waiting time, .Turn-around. Time, Response time, average waiting time, average turnaround time, SJF and RR.

1. .**Introduction:** . . . .

A process in a program in execution. Which has five states i.e. new, ready, running, waiting, and terminated. A CPU .scheduler performs the job of selecting a process from ready queue to allocate them to CPU for their execution. .The .Operating. System is considered as the most important part of the computer it performs a lot of important functions such as scheduling. Schedulers can be long term, short term or medium term. The CPU scheduling occurs when a process switches from one of the following states. 1. Running to "Waiting 2.Running to Ready 3.Waiting to Ready 4.Terminate. . . . ." "

"The criteria for good scheduling algorithm include.maximum CPU .utilization, maximum throughput, and minimum turnaround time, minimum waiting time and minimum response time. If these following condition then you have excellent algorithm"

Here we combine two algorithm RR+SJF. . . . . . .v

**1.** "**SJF (shortest**. **job first)** "

In.SJF. CPU picked shortest process from ready queue. Which has minimum burst-time

Among the process which are present in ready queue.

**2.** "**Round robin**"

In RR each process is provided a fixed quantum time (QT). Once a process is executed in given time period it is terminated.

**2. RELATED WORK**

"In recent years, a number of expected CPU scheduling mechanisms have been developed for the allocation of processor. An improved round robin scheduling Algorithm for CPU scheduling [1] is IRR CPU scheduling algorithm that is always giving better performance than RR. After improvement in RR the waiting time and turnaround time also reduced. Another improved algorithm is max-min fare share algorithm weighted time slice [2]. It assigns a fixed time slice to every process in the ready queue and the process which has least burst time is assigned the largest weight. The time quantum is calculated dynamically, by using the weighted time slice method and then the process is executed. Another improved round robin algorithm for CPU scheduling is (IRRVQ) with varying time quantum [3]. The processes are arranged in the ready queue in ascending order with their remaining burst time then set the quantum equal to the burst time of first process then allocate the CPU to the to the process having time interval of up to 1 quantum. Another algorithm (RMRR) revamped mean round robin algorithm [4].In this technique the two queues one is PREREADY QUEUE (PRQ) and READYQUEUE (RQ)) then new process will put into pre ready queue then move all processes to RQ from PRQ and allocate the CPU to the first process in the ready queue and if remaining burst time is less than time quantum then again allocate the CPU to the currently running process for remaining CPU burst time. The work done in the field of cloud computing [5] is basically reducing the response time and average waiting which is actually done by this designed weighted algorithm. We use these techniques to make an improvement in the existing round robin and to make its working efficient, to reduce the waiting time and response time of the algorithm. "

**3. PROPOSED**. **METHODOLOGY**. .

"In our algorithm we combine two algorithm gather first is SJF and Round Robin.

To minimize the response time and turned around time. Our algorithm is different

From typical RR and SJF or any other algorithm. We combine two algorithm to

Get the advantage of both .by doing this reduce the response time and turnaround time. "

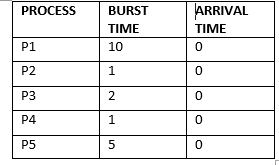
1. **SCHEDULNG CRITERIA**

"In this algorithm we combine RR and SJF .So all process are available ready pool

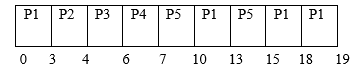
We choose that process which minimum burst time .Also time slice is set. If process its execution is time slice it’s really good. If not then put this process this ready queue Again this algorithm is apply .pick the shortest job from the ready queue. And so on. "

"**4. EXPERIMENTS AND RESULTS**

Now let’s see the algorithm we’ve suggested in our research paper.



**Round robin:**



.Quantum Time. = 3

TAT

P1: 19-0 =9

P2: 4-0 =4

P3: 6-0=6

P4: 7-0 =7

P5: 15-0=15

ATAT: 19+4+6+7+15 =10.2

5

**Average waiting time:**

P1: 19-10 =9

P2: 4-1 =3

P3: 6-2 =4

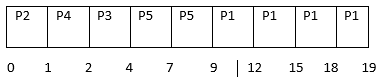
P4: 7-1 =6

P5: 15-5=10

AWT: (9+3+4+6+10) /5 =6.4

**Proposed Algorithm**

**SJF+RR**



TAT

P1: 19-0 =19

P2: 1-0=1

P3: 4-0 =4

P4: 2-0 =2

P5: 9-0=9

**AvgTAT:** 19+1+4+2+9 =7

5

Waiting T

P1: 19-10 =9

P2: 1-1 =0

P3: 4-2 =2

P4: 2-1 =1

P5: 12-7=4

AWT: 9+0+2+1+4 =3.2"

5

**5. CONCLUSION**. . . .

" This proposed Round Robin Algorithm gives the less average waiting time then old algorithms. After doing some changes in process scheduling, process waits less for their completion which give less average waiting time for all process then the CPU gets free early and it can do another task in the saving time. Hence our algorithm has shown results in between SJF and RR. Which clearly proves that through our algorithm we can get waiting time way smaller than that of RR, moreover, both small and large jobs will be accommodated in good way

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