

Review on CPU Scheduling Algorithms

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Abstract:

CPU scheduling is an important conception in OS, after completion of one process which process will be schedule, scheduling algorithm can be named. While multiple processes are arrive in the system at the same time and CPU get allocated to one of them, depends on the situations. For CPU scheduling, we use colourful scheduling algorithms like, FCFS (first come first serve), RR (round robin), precedence scheduling, SJF (shortest job first). Which algorithm come stylish for scheduling, depends on the outturn, reversal time, staying time, response time. Understanding the CPU scheduling algorithms and their effect in OS. CPU scheduling come veritably important in OS, without scheduling process can't execute or complete their prosecutions. This paper presents the style processes are schedule and which algorithm is stylish according to particular situations.

Keywords — FCFS, SJF, CPU, RR, I/O, FIFO, OS

INTRODUCTION

In the operating system, at a time numerous processes are arrive in the system. but, CPU can execute one process at a time. So, after completion of one process which process get CPU and how numerous times process hold CPU and chooses process which is schedule next, this all process are done by CPU scheduling.

After completion of one process, a environment switch do and CPU switch to coming process which is scheduling next. when a job may have to stay for some I/O operations to be completed. In non-multiprogramming CPU would sit idle. but, in mutiprogramming CPU is switch from another and that jobs need to a stay also CPU is switch from another job and so on. Scheduling algorithms can be named to which process schedule next to get a CPU. Different algorithms has a different parcels. In choosing algorithms grounded on a particular situations. Which algorithm should be stylish

according to particular situations are describe using scheduling criteria.

Scheduling criteria includes:

1. CPU applications CPU application means how numerous time CPU remains busy. The main end of scheduling is ameliorate performance and keeping CPU busy all the time.
2. Throughput: Means no. of jobs or processes are executed in per unit of time.
If further no. of jobs are executed in per unit time also, throughput is increases.
3. Turnaround time: It means time between submission of jobs and completion it prosecution.
4. Waiting time: A process stay in ready line.
Sum of time spent in ready line is a staying line.
5. Response time: Submission of process till a first Response yield.
6. Fairness: Every process has a fair chance to get a CPU time.

Scheduling algorithms.

1. FCFS (First come first serve):

FCFS is a simplest and easiest algorithm as compare to other algorithms.

FCFS algorithm is a non preemptive means once the processes allocated the CPU is doesn't free till complete its prosecution. This algorithm refers allocated CPU to the process in the order of their appearance time. This algorithm fluently implements the ready line as FIFO line. Every time processes arrive and fitted into tail of line, CPU chooses the process from head of line. If larger jobs assigned to the CPU also numerous shorter jobs has to stay and if one process has a low burst time but, the process get a CPU at their regular interval.

So, FIFO algorithm isn't useful in similar situations. Consider the following the processes with the burst Time.

processes	Burst time
P0	10
P1	2
P2	1
P3	3

Table 1: processes with its ids and burst time.

processes	Turnaround time	Waiting time
P0	10	0
P1	12	10
P2	13	12
P3	16	13
Average of time	12.75	8.75

Table 2: Turnaround time and waiting time of process for FCFS.

2. SJF (Shortest job first):

SJF can be preemptive or non preemptive. SJF allocated process CPU according to their length. If the process has low burst time also the process go to the head of line and longest burst time go to the tail of line.

A scheduler arrange the process according to their burst time.

SJF minimize the average waiting time of processes. because, it gives the services to lower prosecution time processes, before it gives the services to further prosecution processes.

Processes	Burst time
P0	9
P1	3
P2	2
P3	1

Table 3: processes with it ids and burst time.

Processes	Turnaround time	Waiting time
P0	15	6
P1	6	3
P2	3	1
P3	1	0
Average of time	6.25	2.5

Table 4: Turnaround time and waiting time of SJF.

3.RR(Round robin):

RR algorithm is especially used for time participating zilches. Because, in time sharing system, each task given some time to execute so, all task work easily. In this algorithm, ready line treat as FIFO line. Lowest unit of time called as process called as a time amount. CPU allocated the process from this time amount period of time. The new process go to the tail of line and every time CPU chooses the processes from head of line. When time amount expires CPU switch other process which is cataloging next.

Processes	Burst time
P0	4
P1	2
P2	3

Table 5: processes with ids and burst time

processes	Turnaround time	Waiting time
P0	8	4
P1	4	2
P2	9	6
Average of time	5.25	3

Table 6: Turnaround time and waiting time of RR.

3. Priority scheduling:

Every process has a precedence, an integer value assign to it. A lowest integer value indicate a loftiest precedence and largest integer value indicates smallest precedence. Always loftiest precedence process will be executed.

processes	Burst time	Priority
P0	1	1
P1	8	3
P2	5	2
P3	2	4
P4	3	5

Table 7: processes with ids and burst time.

Processes	Turnaround time	Waiting time
P0	1	0
P1	14	6
P2	6	1
P3	16	14
P4	19	16
Average of time	11.2	5

Table 8: Turnaround time and waiting time of Priority scheduling.

CONCLUSION

We observe that, CPU scheduling is veritably important in OS. How the processes easily executed and schedule, according to their property. Where, FCFS is a simple but, numerous shorter jobs has to stay, SJF minimize average Waiting time but, have a proper knowledge of burst time, precedence show the essential process run first but, also Have an problem of starvation and RR is stylish for time participating system but, bear environment switch. thus, which algorithm act as stylish are depends on Situations, fairness, outturn, staying time and response time.

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