Al-Hamdaniya University

College of Education

Computer Science

Stage: 4th

Prediction of CPU Burst Time for a process in SJF

The SJF algorithm is one of the best scheduling algorithms since it provides the maximum throughput and minimal waiting time but the problem with the algorithm is, the CPU burst time can't be known in advance.

We can approximate the CPU burst time for a process. There are various techniques which can be used to assume the CPU Burst time for a process. Our Assumption needs to be accurate in order to utilize the algorithm optimally.

Process Size

We can predict the Burst Time of the process from its size. If we have two processes T_OLD and T_New and the actual burst time of the old process is known as 20 secs and the size of the process is 20 KB. the size of P_NEW is 19 KB. Then the probability of P_New having the similar burst time as 20 secs is maximum.

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If , P_old  = 20 KB
P_new = 19 KB
BT (P_old) = 20 sec
Then,
BT(P_new) = 20 sec
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Lower BT	A bit higher BT	Higher BT
3 – 5 units	6 – 8 units	8 – 10 units

Process Type

We can also predict the burst time of the process according to its type. A Process can be of various types defined as follows.

1- OS Process

A Process can be an Operating system process like schedulers, compilers, program managers and many more system processes. Their burst time is generally lower for example, 3 to 5 units of time.

2- User Process

The Processes initiated by the users are called user processes. There can be three types of processes as follows:

- **Interactive Process**

  The Interactive processes are the one which interact with the user time to time or Execution of which totally depends upon the User inputs for example various games are such processes. There burst time needs to be lower since they don't need CPU for a large amount of time, they mainly depend upon the user's interactivity with the process.

- **Foreground process**

  Foreground processes are the processes which are used by the user to perform their needs such as MS office, Editors, utility software etc. These types of processes have a bit higher burst time.

- **Background process**

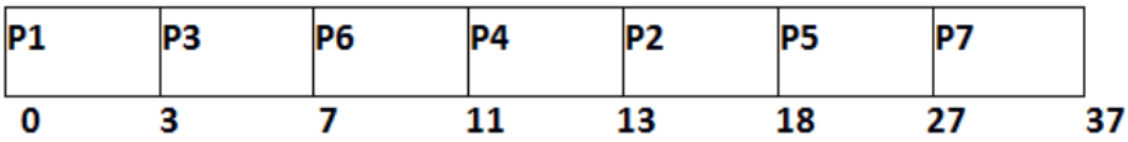
  Background processes supports the execution of other processes. They work in hidden mode. For example, key logger is the process which records the keys pressed by the user and activities of the user on the system. They are mainly need CPU for a higher amount of time.

Priority Scheduling Algorithm in OS

In Priority scheduling, there is a priority number assigned to each process. The Process with the higher priority among the available processes is given the CPU.

Example

In the Example, there are 7 processes P1, P2, P3, P4, P5, P6 and P7. Their priorities, Arrival Time and burst time are given in the table.



Process Id	Priority	Arrival Time	Burst Time	Completion Time	Turnaround Time	Waiting Time
1	2	0	3	3	3	0
2	6	2	5	18	16	11
3	3	1	4	7	6	2
4	5	4	2	13	9	7
5	7	6	9	27	21	12
6	4	5	4	11	6	2
7	10	7	10	37	30	18