Mawlana Bhashani Science and Technology University

Lab-Report

Report No: 08

Course code: ICT-3110

Course title: Operating System Lab

Date of Performance:

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Experiment No :- 08

Experiment Name: Implementation of SJF scheduling algorithm.

Objectives:

i What is SJF Scheduling algorithm.
ii How to implementation in C

Theory:

Shortest-Job-First (SJF) is a **non-preemptive** discipline in which waiting job (or process) with the smallest estimated run-time-to-completion is run next. In other words, when CPU is available, it is assigned to the process that has smallest next CPU burst. The SJF scheduling is especially appropriate for batch jobs for which the run times are known in advance. Since the SJF scheduling algorithm gives the minimum average time for a given set of processes, it is probably optimal. The SJF algorithm favors short jobs (or processors) at the expense of longer ones.

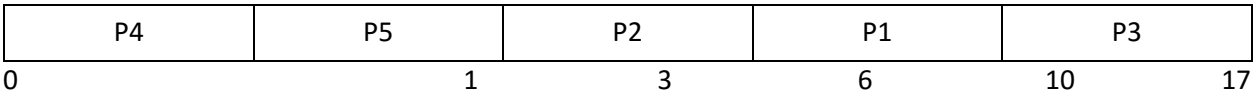
The obvious problem with SJF scheme is that it requires precise knowledge of how long a job or process will run, and this information is not usually available. The best SJF algorithm can do is to rely on user estimates of run times.

Implementation:

1. Take input number of process, burst time and processes.
2. Sort the process according to burst time.
3. Calculate waiting time = starting time – arrival time.
4. Calculate turnaround time = burst time + waiting time.

Process	Arrival time	Burst time
P1	0	4
P2	0	3
P3	0	7
P4	0	1
P5	0	2

Grant chart:



Process	Arrival time(At)	Burst time(Bt)	Waiting time Wt=st-at	Total turnaround time Tat=wt+bt
P4	0	1	0	1
P5	0	2	1	3
P2	0	3	3	6
P1	0	4	6	10
P3	0	7	10	17

Source code:

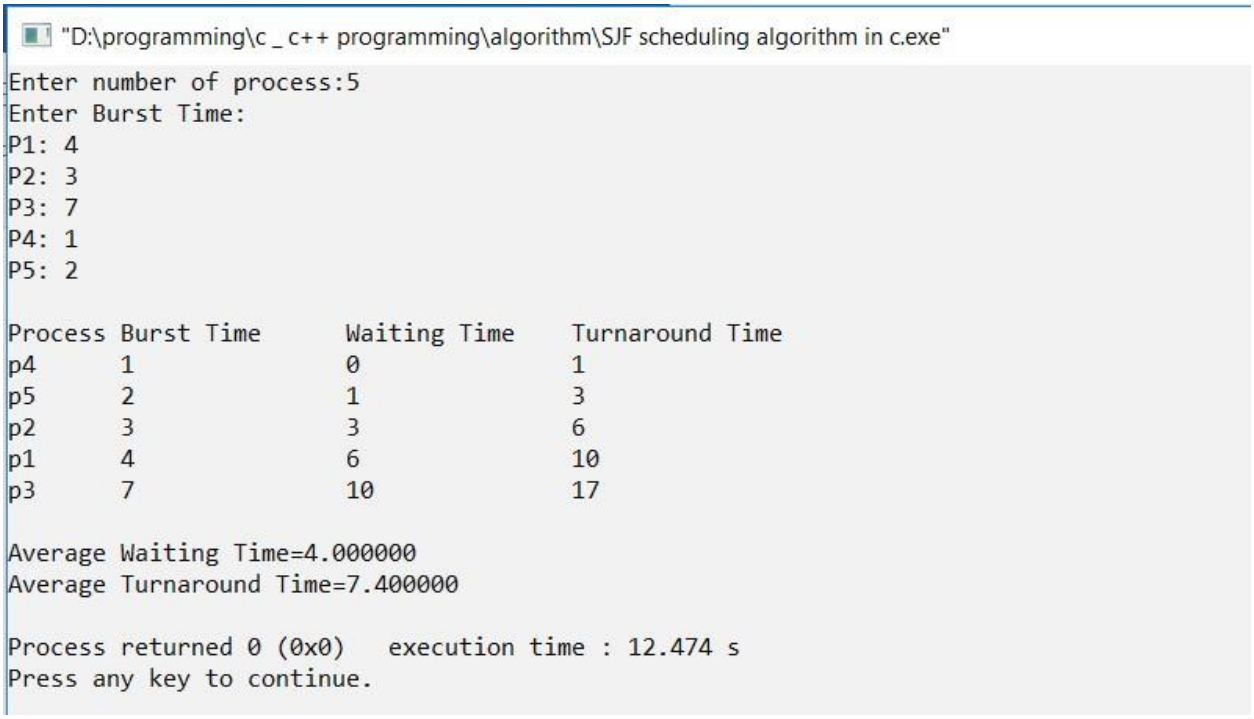
```
#include<stdio.h>
int main()
{
	int bt[100],p[100],wt[100],tat[100],i,j,n,total=0,pos,temp;
double avg_wt,avg_tat;
	printf("Enter number of process:");
scanf("%d",&n);
	printf("Enter Burst Time:\n");
	for(i=0; i<n; i++)
	{
		printf("P%d: ",i+1);
scanf("%d",&bt[i]);
		p[i]=i+1;
	}
	for(i=0; i<n; i++)
	{
		pos=i;
		for(j=i+1; j<n; j++)
		{
		   if(bt[j]<bt[pos])
pos=j;
		}

		temp=bt[i];
bt[i]=bt[pos];
bt[pos]=temp;
```

```
            temp=p[i];
p[i]=p[pos];
            p[pos]=temp;
      }
      wt[0]=0;
      for(i=1; i<n; i++)
      {
            wt[i]=0;
for(j=0; j<i; j++)
wt[i]+=bt[j];
            total+=wt[i];
      }
      avg_wt=(double)total/n;
total=0;
      printf("\nProcess\tBurst Time\tWaiting Time\tTurnaround Time");
for(i=0; i<n; i++)
      {
            tat[i]=bt[i]+wt[i];
total+=tat[i];
            printf("\np%d\t%d\t\t%d\t\t%d",p[i],bt[i],wt[i],tat[i]);
      }

      avg_tat=(double)total/n;        printf("\n\nAverage
Waiting Time=%lf",avg_wt);        printf("\nAverage
Turnaround Time=%lf\n",avg_tat);
}
```

Output:



Conclusion:

In this lab I learn how to implement SJF scheduling algorithm and also run the code and shows the output and output is expected.