

```

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <conio.h>
#include <time.h>
#include <math.h>
#include <limits.h>
#include <ctype.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <sys/time.h>
#include <sys/resource.h>
#include <sys/mman.h>
#include <sys/wait.h>
#include <sys/sem.h>
#include <sys/shm.h>
#include <sys/msg.h>
#include <sys/ipc.h>
#include <sys/socket.h>
#include <netdb.h>
#include <netinet/in.h>
#include <arpa/inet.h>
#include <arpa/nameser.h>
#include <arpa/nameser3.h>
#include <arpa/nameser4.h>
#include <arpa/nameser5.h>
#include <arpa/nameser6.h>
#include <arpa/nameser7.h>
#include <arpa/nameser8.h>
#include <arpa/nameser9.h>
#include <arpa/nameser10.h>
#include <arpa/nameser11.h>
#include <arpa/nameser12.h>
#include <arpa/nameser13.h>
#include <arpa/nameser14.h>
#include <arpa/nameser15.h>
#include <arpa/nameser16.h>
#include <arpa/nameser17.h>
#include <arpa/nameser18.h>
#include <arpa/nameser19.h>
#include <arpa/nameser20.h>
#include <arpa/nameser21.h>
#include <arpa/nameser22.h>
#include <arpa/nameser23.h>
#include <arpa/nameser24.h>
#include <arpa/nameser25.h>
#include <arpa/nameser26.h>
#include <arpa/nameser27.h>
#include <arpa/nameser28.h>
#include <arpa/nameser29.h>
#include <arpa/nameser30.h>
#include <arpa/nameser31.h>
#include <arpa/nameser32.h>
#include <arpa/nameser33.h>
#include <arpa/nameser34.h>
#include <arpa/nameser35.h>
#include <arpa/nameser36.h>
#include <arpa/nameser37.h>
#include <arpa/nameser38.h>
#include <arpa/nameser39.h>
#include <arpa/nameser40.h>
#include <arpa/nameser41.h>
#include <arpa/nameser42.h>
#include <arpa/nameser43.h>
#include <arpa/nameser44.h>
#include <arpa/nameser45.h>
#include <arpa/nameser46.h>
#include <arpa/nameser47.h>
#include <arpa/nameser48.h>
#include <arpa/nameser49.h>
#include <arpa/nameser50.h>
#include <arpa/nameser51.h>
#include <arpa/nameser52.h>
#include <arpa/nameser53.h>
#include <arpa/nameser54.h>
#include <arpa/nameser55.h>
#include <arpa/nameser56.h>
#include <arpa/nameser57.h>
#include <arpa/nameser58.h>
#include <arpa/nameser59.h>
#include <arpa/nameser60.h>
#include <arpa/nameser61.h>
#include <arpa/nameser62.h>
#include <arpa/nameser63.h>
#include <arpa/nameser64.h>
#include <arpa/nameser65.h>
#include <arpa/nameser66.h>
#include <arpa/nameser67.h>
#include <arpa/nameser68.h>
#include <arpa/nameser69.h>
#include <arpa/nameser70.h>
#include <arpa/nameser71.h>
#include <arpa/nameser72.h>
#include <arpa/nameser73.h>
#include <arpa/nameser74.h>
#include <arpa/nameser75.h>
#include <arpa/nameser76.h>
#include <arpa/nameser77.h>
#include <arpa/nameser78.h>
#include <arpa/nameser79.h>
#include <arpa/nameser80.h>
#include <arpa/nameser81.h>
#include <arpa/nameser82.h>
#include <arpa/nameser83.h>
#include <arpa/nameser84.h>
#include <arpa/nameser85.h>
#include <arpa/nameser86.h>
#include <arpa/nameser87.h>
#include <arpa/nameser88.h>
#include <arpa/nameser89.h>
#include <arpa/nameser90.h>
#include <arpa/nameser91.h>
#include <arpa/nameser92.h>
#include <arpa/nameser93.h>
#include <arpa/nameser94.h>
#include <arpa/nameser95.h>
#include <arpa/nameser96.h>
#include <arpa/nameser97.h>
#include <arpa/nameser98.h>
#include <arpa/nameser99.h>
#include <arpa/nameser100.h>

```

Select "E:\7th semester\CSE - 309,310 Operating systems\499\fbwcpp.exe"

enter memory partition: 5

enter memory size for

partition 1 : 75

partition 2 : 270

partition 3 : 18

partition 4 : 39

partition 5 : 200

enter process: 5

enter memory size for

process 1 : 150

process 2 : 200

process 3 : 300

process 4 : 75

process 5 : 25

1.first fit

2.best fit

3.worst fit

enter choice: 1

process 1 whose memory size is 150KB allocated at memory partition: 2

process 2 whose memory size is 200KB allocated at memory partition: 5

process 3 whose memory size is 300KB can't be allocated

process 4 whose memory size is 75KB allocated at memory partition: 1

process 5 whose memory size is 25KB allocated at memory partition: 2

Process returned 0 (0x0) execution time : 20.878 s

Press any key to continue.

Select "E:\7th semester\CSE - 309,310 Operating systems\499\bankers_algorithm

Enter the current resources: 1 2 3

```

Process P2 Details
Enter Allocation : 2 4 5
Enter Max :6 4 1

```

```

Process P4 Details
Enter Allocation : 6 4 8
Enter Max :1 5 4

```

Process	Max	Allocation	Need
P1	2 1 3	1 2 3	1 -1 0
P2	6 4 1	2 4 5	4 0 -4
P3	2 5 4	1 8 9	1 -3 -5
P4	1 5 4	6 4 8	-5 1 -4

```
Process executed without deadlock
Process P3
Current: 3 12 15
```

```
Process executed without deadlock
Process P4
Current: 9 16 23
```

```
Process executed without deadlock
Process P2
Current: 11 20 28
```

```
Process executed without deadlock
Select Below operations:
```

```
Select Below oprations:
1.Change Max of process:
2.Change Allocation of process
3.Change Initial Resources
4.Exit
```

```

1 #include<iostream>
2 using namespace std;
3
4 struct process_struct
5 {
6     int process_id;
7     int arrival_time;
8     int cpu_burst_time;
9     int completion_time, waiting_time, turn_around_time, response_time, starting_time;
10 } process[100];
11
12 bool comparatorAT(struct process_struct a, struct process_struct b)
13 {
14     int x=a.arrival_time;
15     int y=b.arrival_time;
16     if(x<y)
17         return false;
18     return true;
19 }
20 bool comparatorBT(struct process_struct a, struct process_struct b)
21 {
22     int x=a.process_id;
23     int y=b.process_id;
24     return x<y;
25 }
26
27 int main()
28 {
29     int n;
30     cout<<"Enter Total Number of Process: ";
31     cin>>n;
32     float sum_turn_around_time=0;
33     float sum_waiting_time=0;
34     float sum_response_time=0;
35     int length_cycle;
36     int total_ideal_time=0;
37     float cpu_utilization;
38
39     cout<<fixed<<setprecision(2);
40
41     for(int i=0; i<n; i++)
42     {
43         cout<<"\nEnter Process "<<i<<"Arrival Time: ";
44         cin>>process[i].arrival_time;
45         process[i].process_id=i;
46     }
47
48     for(int i=0; i<n; i++)
49     {
50         cout<<"\nEnter Process "<<i<<"Burst Time: ";
51         cin>>process[i].cpu_burst_time;
52     }
53
54     sort(process, process+n, comparatorAT);
55
56     for(int i=0; i<n; i++)
57     {
58         process[i].starting_time = (i==0) ? process[i].arrival_time : max(process[i].arrival_time, process[i-1].completion_time);
59         process[i].completion_time = process[i].starting_time + process[i].cpu_burst_time;
60         process[i].turn_around_time = process[i].completion_time - process[i].arrival_time;
61         process[i].waiting_time = process[i].turn_around_time - process[i].cpu_burst_time;
62         process[i].response_time = process[i].waiting_time;
63
64         sum_turn_around_time += process[i].turn_around_time;
65         sum_waiting_time += process[i].waiting_time;
66         sum_response_time += process[i].response_time;
67         total_ideal_time += (i==0) ? 0 : (process[i].starting_time - process[i-1].completion_time);
68     }
69
70     length_cycle = process[n-1].completion_time - process[0].starting_time;
71     sort(process, process+n, comparatorBT);
72
73     cout<<"\nProcess no. \tAT\tCPU Burst Time\tCT\tTAT\tWT\tRT\n";
74     for(int i=0; i<n; i++)
75     {
76         cout<<"\t"<<process[i].arrival_time<<"\t"<<process[i].cpu_burst_time<<"\t"<<process[i].completion_time<<"\t"<<process[i].turn_around_time<<"\t"<<process[i].waiting_time<<"\t"<<process[i].response_time<<endl;
77     }
78
79     cpu_utilization = (float)(length_cycle - total_ideal_time) / length_cycle;
80
81     cout<<"\nAverage Turn Around time= "<<sum_turn_around_time/n;
82     cout<<"\nAverage Waiting Time= "<<sum_waiting_time/n;
83     cout<<"\nAverage Response Time= "<<sum_response_time/n;
84     cout<<"\nThroughput= "<<n/(float)length_cycle;
85     cout<<"\nCPU Utilization (Percentage)= "<<cpu_utilization*100;
86
87 }
88
89
90
91

```

E:\7th semester\CSE - 309.310 Operating systems\499\firstcomefirstserve.exe

Enter Total Number of Process: 3

Enter Process 0Arrival Time: 24

Enter Process 1Arrival Time: 3

Enter Process 2Arrival Time: 3

Enter Process 0Burst Time: 1

Enter Process 1Burst Time: 1

Enter Process 2Burst Time: 2

Process no.	AT	CPU Burst Time	CT	TAT	WT	RT
0	24	1	25	1 0	0	
1	3	1	6	3 2	2	
2	3	2	5	2 0	0	

Average Turn Around time= 2.00

Average Waiting Time= 0.67

Average Response Time= 0.67

Throughput= 0.14

CPU Utilization(Percentage)= 18.18

Process returned 0 (0x0) execution time : 46.356 s

Press any key to continue.

```

#include <iostream>
using namespace std;

const int N=100005;

struct process
{
    int priority;
    int id;
    int burst_time;
    int arrival_time;
    int waiting_time;
    int finishing_time;
    int turn_around_time;
};

int n;
process P[N];

bool operator<(process A, process B)
{
    if(A.priority < B.priority)
    {
        return true;
    }
    if(A.priority == B.priority)
    {
        return A.arrival_time < B.arrival_time;
    }
    return false;
}

void Priority(void)
{
    sort(P, P+n);
    double total_waiting_time = 0.0;
    double total_turn_around_time = 0.0;

    for(int i=0; i<n; i++)
    {
        P[i].finishing_time = P[i-1].finishing_time + P[i].burst_time;
        P[i].turn_around_time = P[i].finishing_time - P[i].arrival_time;
        P[i].waiting_time = P[i].turn_around_time - P[i].burst_time;

        total_waiting_time += P[i].waiting_time;
        total_turn_around_time += P[i].turn_around_time;
    }
    cout<<fixed<<setprecision(2);
    cout<<"Average Waiting Time: "<<(total_waiting_time/n)<<"\n";
    cout<<"Average Turn Around Time: "<<(total_turn_around_time/n)<<"\n";
    return;
}

int main()
{
    cout<<"Number of P: ";
    cin>>n;

    cout<<"Process Ids:\n";
    for(int i=0; i<n; i++) cin>>P[i].id;

    cout<<"Process Burst Times:\n";
    for(int i=0; i<n; i++) cin>>P[i].burst_time;

    cout<<"Process Arrival Times:\n";
    for(int i=0; i<n; i++) cin>>P[i].arrival_time;

    cout<<"Process Priorities:\n";
    for(int i=0; i<n; i++) cin>>P[i].priority;

    Priority();

    return 0;
}

```

■ "E:\7th semester\CSE - 309.310 Operating systems\499\priority scheduling.exe"

```

Number of P: 5
Process Ids:
1 2 3 4 5
Process Burst Times:
10 1 2 1 5
Process Arrival Times:
0 0 0 0 0
Process Priorities:
3 1 4 5 2
Average Waiting Time: 8.20
Average Turn Around Time: 12.00

Process returned 0 (0x0)   execution time : 4.679 s
Press any key to continue.

```

```
Parrot Terminal
File Edit View Search Terminal Help

done

echo "Sorted array:" ${my_array[*]}
[sorry@sorry]~[~/Desktop/coding]
$ ./array.sh
bash: ./array.sh: Permission denied
[sorry@sorry]~[~/Desktop/coding]
$ chmod +x array.sh
[sorry@sorry]~[~/Desktop/coding]
$ ./array.sh
Unsorted array: 2 3 1 5 4
"Sorted array:" 1 2 3 4 5
[sorry@sorry]~[~/Desktop/coding]
$ nano array.sh
[sorry@sorry]~[~/Desktop/coding]
$ cat array.sh
my_array=(2 3 1 5 4)
echo "Unsorted array:" ${my_array[*]}
for ((x=0; x<5; x++))
do
for ((y=0; y<5-i-1; y++))
do
if [ ${my_array[y]} -gt ${my_array[${(y+1)}]} ]
then
temp=${my_array[y]}
my_array[y]=${my_array[${(y+1)}]}
my_array[${(y+1)}]=$temp
fi
done
done
echo "Sorted array:" ${my_array[*]}
[sorry@sorry]~[~/Desktop/coding]
$ chmod +x array.sh
[sorry@sorry]~[~/Desktop/coding]
$ ./array.sh
Unsorted array: 2 3 1 5 4
"Sorted array:" 1 2 3 4 5
[sorry@sorry]~[~/Desktop/coding]
$
```

```
Parrot Terminal
File Edit View Search Terminal Help

[sorry@sorry]~[~/Desktop/coding]
$ touch file.sh
[sorry@sorry]~[~/Desktop/coding]
$ ls
file.sh file.txt first first.cpp first.o practive practive.cpp practive.o
[sorry@sorry]~[~/Desktop/coding]
$ cat file.sh
[sorry@sorry]~[~/Desktop/coding]
$ nano file.sh
[sorry@sorry]~[~/Desktop/coding]
$ ls
file.sh file.txt first first.cpp first.o practive practive.cpp practive.o
[sorry@sorry]~[~/Desktop/coding]
$ cat file.sh
echo "For loop problem"

for a in 1 2 3 4 5 6 7 8 9 10
do
    if [ $a == 5 ]
    then
        continue
    fi
    echo "Iteration no $a"
done
[sorry@sorry]~[~/Desktop/coding]
$ bash -f file.sh
For loop problem
Iteration no 1
Iteration no 2
Iteration no 3
Iteration no 4
Iteration no 6
Iteration no 7
Iteration no 8
Iteration no 9
Iteration no 10
[sorry@sorry]~[~/Desktop/coding]
$
```