

## OS ASSIGNMENT 1

1. Write a C/C++ code to demonstrate round-robin algorithm.

### ***#Program***

```
#include<iostream>
#include<iomanip>
#include<cstring>
using namespace std;
int main()
{
    int n,q;
    cout<<"C++ Program to implement ROUND ROBIN Algorithm."<<endl;
    cout<<"Enter number of processes : ";
    cin>>n;
    int arr[n],bur[n],ord[n];
    for(int i=0;i<n;i++)
    {
        cout<<endl<<"Enter following details for process "<<(i+1)<<endl;
        cout<<"Arrival time : ";
        cin>>arr[i];
        cout<<"Burst time : ";
        cin>>bur[i];
        ord[i]=(i+1);
    }
    cout<<endl<<"Enter quantum time : ";
    cin>>q;
    cout<<endl<<"_____ "<<endl;
```

```

cout<<"| Process | Arrival Time | Burst Time |"<<endl;

cout<<"|_____|_____|_____|"<<endl;

for(int i=0;i<n;i++)

cout<<"|P"<<left<<setw(8)<<ord[i]<<"|"<<left<<setw(14)<<arr[i]<<"|"<<left<<setw(12)<<
bur[i]<<"|"<<endl;

cout<<"|_____|_____|_____|"<<endl;

for(int i=0;i<n-1;i++)

{

    for(int j=0;j<n-1-i;j++)

    {

        if(arr[j]>arr[j+1])

        {

            swap(ord[j],ord[j+1]);

            swap(arr[j],arr[j+1]);

            swap(bur[j],bur[j+1]);

        }

    }

}

int wt[n],te[n],rt[n];

cout<<endl<<"The order in which the processes are executes is : "<<endl;

int j=0;

int ts=0;

for(int i=0;i<n;i++)

{

    rt[i]=bur[i];

    wt[i]=0;

    te[i]=0;

}

while(j<=n)

```

```

{
    j++;
    for(int i=0;i<n;i++)
    {
        if(rt[i]==0)
            continue;
        if(rt[i]>q)
        {
            cout<<"P"<<i+1<<" ";

            ts=ts+q;

            rt[i]=rt[i]-q;
            te[i]=te[i]+1;
        }
        else
        {
            cout<<"P"<<i+1<<" ";

            wt[i]=ts-te[i]*q;

            ts=ts+rt[i];

            rt[i]=rt[i]-rt[i];
        }
    }
}

cout<<endl;

int total_wt=0,total_tat=0;

for(int i=0;i<n;i++)
{
    wt[i]=wt[i]-arr[i];

    total_wt=total_wt+wt[i];
}

```

```

int tat[n];

for (int i=0;i<n;i++)
{
    tat[i]=bur[i]+wt[i];
    total_tat = total_tat + tat[i];
}

cout<<endl<<"Average waiting time = "<< (float)total_wt / (float)n<<endl;
cout<<"Average turn around time = "<< (float)total_tat / (float)n<<endl;
cout<<endl<<endl;

return 0;
}

```

### Output

```

C:\Users\Admin\Desktop\Arun\OS_Assignment\Assignment\bin\Debug\Assignment.exe
C++ Program to implement ROUND ROBIN Algorithm.
Enter number of processes : 3

Enter following details for process 1
Arrival time : 0
Burst time : 10

Enter following details for process 2
Arrival time : 1
Burst time : 4

Enter following details for process 3
Arrival time : 2
Burst time : 4

Enter quantum time : 4

| Process | Arrival Time | Burst Time |
| P1      | 0            | 10         |
| P2      | 1            | 4          |
| P3      | 2            | 4          |

The order in which the processes are executes is :
P1 P2 P3 P1 P1

Average waiting time = 5.6667
Average turn around time = 11.6667

Process returned 0 (0x0)   execution time : 8.270 s
Press any key to continue.

```

2. Write a C/C++ code to demonstrate FCFS algorithm.

**#Program**

```
#include<iostream>
#include<iomanip>
#include<cstring>
using namespace std;
int main()
{
    cout<<"C++ Program to implement FIRST COME FIRST SERVE Algorithm."<<endl;
    int n;
    cout<<"Enter number of processes : ";
    cin>>n;
    int arr[n],bur[n],ord[n];
    for(int i=0;i<n;i++)
    {
        cout<<endl<<"Enter following details for process "<<(i+1)<<endl;
        cout<<"Arrival time : ";
        cin>>arr[i];
        cout<<"Burst time : ";
        cin>>bur[i];
        ord[i]=(i+1);
    }
    cout<<endl<<"_____ "<<endl;
    cout<<"| Process | Arrival Time | Burst Time |"<<endl;
    cout<<"|_____|_|_|_|_|"<<endl;
    for(int i=0;i<n;i++)
```

```

cout<<"P"<<left<<setw(8)<<ord[i]<<"|"<<left<<setw(14)<<arr[i]<<"|"<<left<<setw(12)<<
bur[i]<<"|"<<endl;

    cout<<"|_____|_____|_____|"<<endl;

    cout<<endl<<"The order in which the processes are executes is : "<<endl;

    for(int i=0;i<n;i++)

        cout<<"P"<<ord[i]<<" ";

    cout<<endl;

    int wt[n], tat[n], total_wt = 0, total_tat = 0;

    wt[0]=0;

    for(int i=1;i<n;i++ )

        wt[i]=bur[i-1]+wt[i-1] ;

    for (int i=0; i<n; i++)

    {

        tat[i]=bur[i]+wt[i];

        total_wt = total_wt + wt[i];

        total_tat = total_tat + tat[i];

    }

    cout<<endl<<"Average waiting time = "<< (float)total_wt / (float)n<<endl;

    cout<< "Average turn around time = "<< (float)total_tat / (float)n<<endl;

    cout<<endl<<endl;

    return 0;

}

```

## Output

```
C:\Users\Admin\Desktop\Arun\OS_Assignment\Assignment\bin\Debug\Assignment.exe
C++ Program to implement FIRST COME FIRST SERVE Algorithm.
Enter number of processes : 3

Enter following details for process 1
Arrival time : 0
Burst time : 10

Enter following details for process 2
Arrival time : 1
Burst time : 6

Enter following details for process 3
Arrival time : 2
Burst time : 8
```

Process	Arrival Time	Burst Time
P1	0	10
P2	1	6
P3	2	8

```
The order in which the processes are executes is :
P1 P2 P3

Average waiting time = 8.66667
Average turn around time = 16.6667

Process returned 0 (0x0)   execution time : 103.765 s
Press any key to continue.
```

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