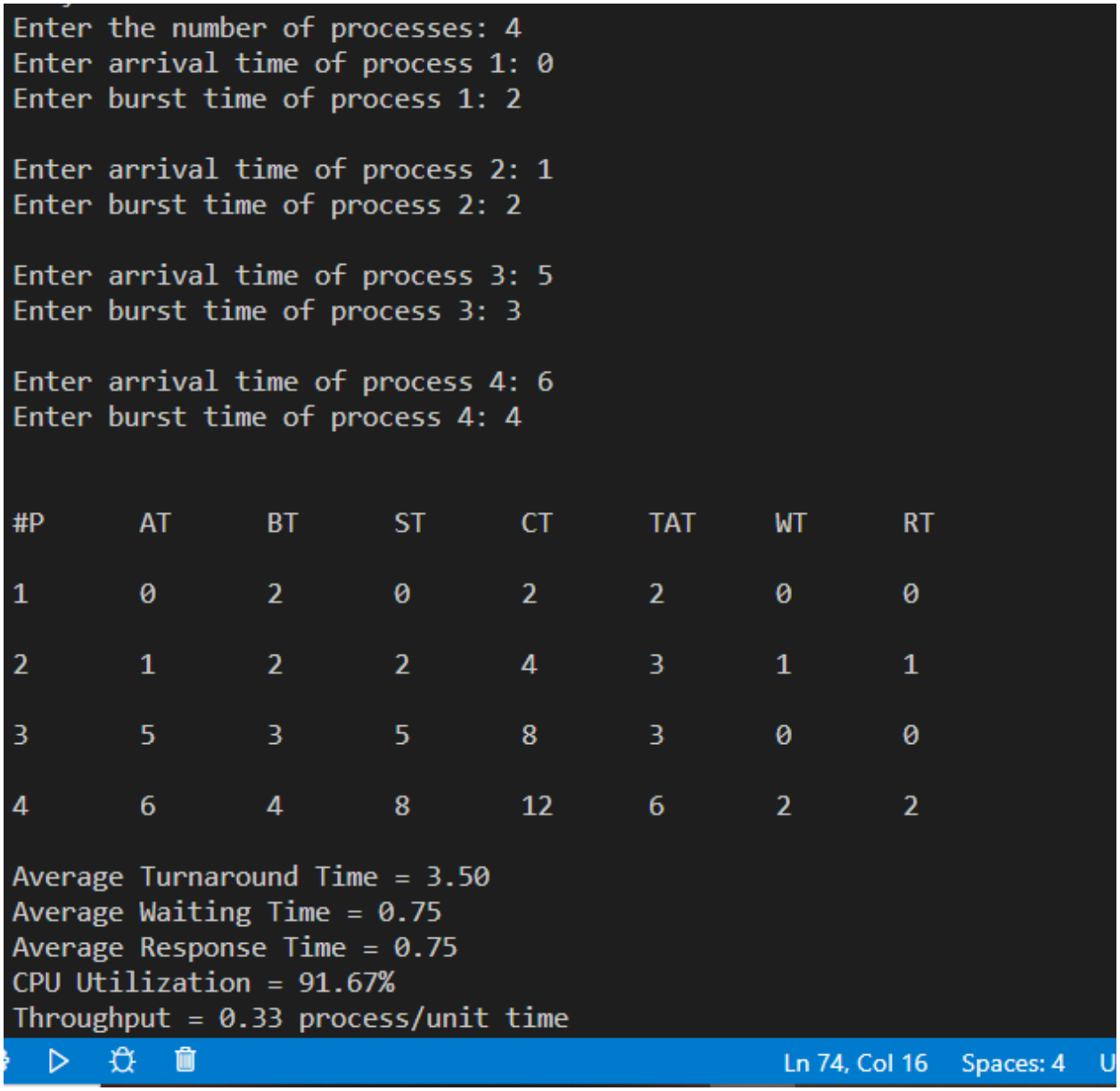
```cpp
#include <iostream>
#include <algorithm>
#include <iomanip>
using namespace std;
struct process {
    int pid;
    int arrival_time;
    int burst_time;
    int start_time;
    int completion_time;
    int turnaround_time;
    int waiting_time;
    int response_time;
};
bool compareArrival(process p1, process p2)
{
    return p1.arrival_time < p2.arrival_time;
}
bool compareID(process p1, process p2)
{
    return p1.pid < p2.pid;
}
int main() {

    int n;
    struct process p[100];
    float avg_turnaround_time;
    float avg_waiting_time;
    float avg_response_time;
    float cpu_utilisation;
    int total_turnaround_time = 0;
    int total_waiting_time = 0;
    int total_response_time = 0;
    int total_idle_time = 0;
    float throughput;

    cout << setprecision(2) << fixed;

    cout<<"Enter the number of processes: ";
    cin>>n;

    for(int i = 0; i < n; i++) {
        cout<<"Enter arrival time of process "<<i+1<<": ";
        cin>>p[i].arrival_time;
        cout<<"Enter burst time of process "<<i+1<<": ";
        cin>>p[i].burst_time;
        p[i].pid = i+1;
        cout<<endl;
```

```
    }

    sort(p,p+n,compareArrival);

    for(int i = 0; i < n; i++) {
        p[i].start_time = (i == 0)?p[i].arrival_time:max(p[i-
1].completion_time,p[i].arrival_time);
        p[i].completion_time = p[i].start_time + p[i].burst_time;
        p[i].turnaround_time = p[i].completion_time -
p[i].arrival_time;
        p[i].waiting_time = p[i].turnaround_time - p[i].burst_time;
        p[i].response_time = p[i].start_time - p[i].arrival_time;

        total_turnaround_time += p[i].turnaround_time;
        total_waiting_time += p[i].waiting_time;
        total_response_time += p[i].response_time;
        total_idle_time += (i ==
0)?(p[i].arrival_time):(p[i].start_time - p[i-1].completion_time);
    }

    avg_turnaround_time = (float) total_turnaround_time / n;
    avg_waiting_time = (float) total_waiting_time / n;
    avg_response_time = (float) total_response_time / n;
    cpu_utilisation = ((p[n-1].completion_time - total_idle_time) /
(float) p[n-1].completion_time)*100;
    throughput = float(n) / (p[n-1].completion_time -
p[0].arrival_time);

    sort(p,p+n,compareID);

    cout<<endl;

cout<<"#P\t"<<"AT\t"<<"BT\t"<<"ST\t"<<"CT\t"<<"TAT\t"<<"WT\t"<<"RT\t"<
<"\n"<<endl;

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

cout<<p[i].pid<<"\t"<<p[i].arrival_time<<"\t"<<p[i].burst_time<<"\t"<<
p[i].start_time<<"\t"<<p[i].completion_time<<"\t"<<p[i].turnaround_tim
e<<"\t"<<p[i].waiting_time<<"\t"<<p[i].response_time<<"\t"<<"\n"<<endl
;
    }
    cout<<"Average Turnaround Time = "<<avg_turnaround_time<<endl;
    cout<<"Average Waiting Time = "<<avg_waiting_time<<endl;
    cout<<"Average Response Time = "<<avg_response_time<<endl;
    cout<<"CPU Utilization = "<<cpu_utilisation<<"%"<<endl;
    cout<<"Throughput = "<<throughput<<" process/unit time"<<endl;
```

}

OUTPUT-:


Enter the number of processes: 4
Enter arrival time of process 1: 0
Enter burst time of process 1: 2
Enter arrival time of process 2: 1
Enter burst time of process 2: 2
Enter arrival time of process 3: 5
Enter burst time of process 3: 3
Enter arrival time of process 4: 6
Enter burst time of process 4: 4
#P AT BT ST CT TAT WT RT
1 0 2 0 2 2 0 0
2 1 2 2 4 3 1 1
3 5 3 5 8 3 0 0
4 6 4 8 12 6 2 2
Average Turnaround Time = 3.50
Average Waiting Time = 0.75
Average Response Time = 0.75
CPU Utilization = 91.67%
Throughput = 0.33 process/unit time
Ln 74, Col 16
Spaces: 4