Name: Nikhil Gupta
Roll No.: 20051523

LAB ASSIGNMENT 10

Priority Scheduling (Non-Preemptive)

```
#include <stdio.h>
struct process
{
    int id, WT, AT, BT, TAT, PR;
};
struct process a[10];

void swap(int *b, int *c)
{
    int tem;
    tem = *c;
    *c = *b;
    *b = tem;
}

int main()
{
    int n, check_ar = 0;
    int Cmp_time = 0;
    float Total_WT = 0, Total_TAT = 0, Avg_WT, Avg_TAT;
    printf("Enter the number of process \n");
    scanf("%d", &n);
    printf("Enter the Arrival time , Burst time and priority of
the process\n");
    printf("AT BT PR\n");
    for (int i = 0; i < n; i++)
    {
        scanf("%d%d%d", &a[i].AT, &a[i].BT, &a[i].PR);
        a[i].id = i + 1;

        if (i == 0)
            check_ar = a[i].AT;
```

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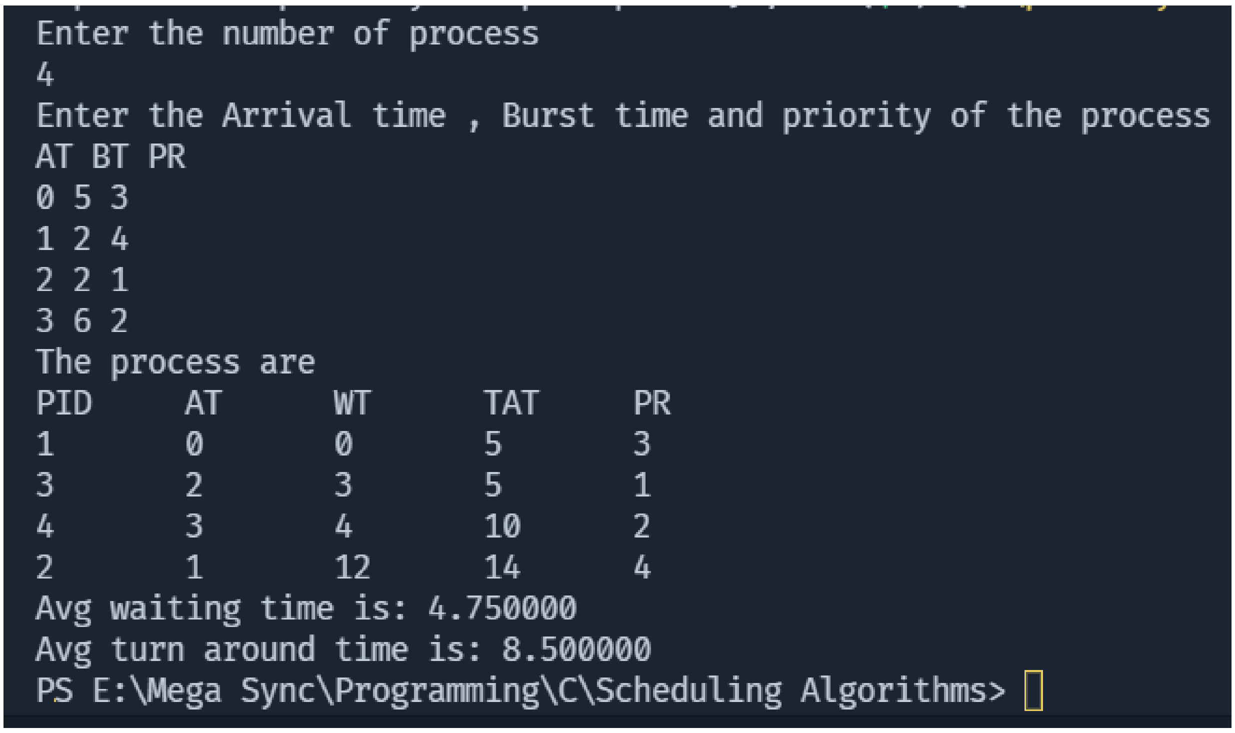
```
        if (check_ar != a[i].AT)
            check_ar = 1;
    }
    if (check_ar != 0)
    {
        for (int i = 0; i < n; i++)
        {
            for (int j = 0; j < n - i - 1; j++)
            {
                if (a[j].AT > a[j + 1].AT)
                {
                    swap(&a[j].id, &a[j + 1].id);
                    swap(&a[j].AT, &a[j + 1].AT);
                    swap(&a[j].BT, &a[j + 1].BT);
                    swap(&a[j].PR, &a[j + 1].PR);
                }
            }
        }
    }

    if (check_ar != 0)
    {
        a[0].WT = a[0].AT;
        a[0].TAT = a[0].BT - a[0].AT;

        Cmp_time = a[0].TAT;
        Total_WT = Total_WT + a[0].WT;
        Total_TAT = Total_TAT + a[0].TAT;
        for (int i = 1; i < n; i++)
        {
            int min = a[i].PR;
            for (int j = i + 1; j < n; j++)
            {
                if (min > a[j].PR && a[j].AT <= Cmp_time)
                {
                    min = a[j].PR;
                    swap(&a[i].id, &a[j].id);
                    swap(&a[i].AT, &a[j].AT);
                    swap(&a[i].BT, &a[j].BT);
                    swap(&a[i].PR, &a[j].PR);
                }
            }
            a[i].WT = Cmp_time - a[i].AT;
            Total_WT = Total_WT + a[i].WT;

            Cmp_time = Cmp_time + a[i].BT;

            a[i].TAT = Cmp_time - a[i].AT;
            Total_TAT = Total_TAT + a[i].TAT;
        }
    }

    else
    {
        for (int i = 0; i < n; i++)
        {
            int min = a[i].PR;
            for (int j = i + 1; j < n; j++)
            {
                if (min > a[j].PR && a[j].AT <= Cmp_time)
                {
                    min = a[j].PR;
                    swap(&a[i].id, &a[j].id);
                    swap(&a[i].AT, &a[j].AT);
                    swap(&a[i].BT, &a[j].BT);
                    swap(&a[i].PR, &a[j].PR);
                }
            }
            a[i].WT = Cmp_time - a[i].AT;

            Cmp_time = Cmp_time + a[i].BT;

            a[i].TAT = Cmp_time - a[i].AT;
            Total_WT = Total_WT + a[i].WT;
            Total_TAT = Total_TAT + a[i].TAT;
        }
    }

    Avg_WT = Total_WT / n;
    Avg_TAT = Total_TAT / n;

    printf("The process are\n");
    printf("PID \tAT \tWT \tTAT\tPR\n");
    for (int i = 0; i < n; i++)
    {
        printf("%d\t%d\t%d\t%d%d\t\n", a[i].id, a[i].AT,
a[i].WT, a[i].TAT, a[i].PR);
    }

    printf("Avg waiting time is: %f\n", Avg_WT);
    printf("Avg turn around time is: %f", Avg_TAT);
    return 0;
}
```

OUTPUT



```
Enter the number of process
4
Enter the Arrival time , Burst time and priority of the process
AT BT PR
0 5 3
1 2 4
2 2 1
3 6 2
The process are
PID     AT      WT      TAT     PR
1       0       0       5       3
3       2       3       5       1
4       3       4       10      2
2       1       12      14      4
Avg waiting time is: 4.750000
Avg turn around time is: 8.500000
PS E:\Mega Sync\Programming\C\Scheduling Algorithms> 
```

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Priority Scheduling (Preemptive)

```c
#include <stdio.h>
struct process
{
    int WT, AT, BT, TAT, PT;
};

struct process a[10];

int main()
{
    int n, temp[10], t, count = 0, short_p;
    float total_WT = 0, total_TAT = 0, Avg_WT, Avg_TAT;
    printf("Enter the number of the process\n");
    scanf("%d", &n);
    printf("Enter the arrival time , burst time and
priority of the process\n");
    printf("AT BT PT\n");
    for (int i = 0; i < n; i++)
    {
        scanf("%d%d%d", &a[i].AT, &a[i].BT, &a[i].PT);

        temp[i] = a[i].BT;
    }

    a[9].PT = 10000;

    for (t = 0; count != n; t++)
    {
        short_p = 9;
        for (int i = 0; i < n; i++)
        {
            if (a[short_p].PT > a[i].PT && a[i].AT <= t
&& a[i].BT > 0)
            {
                short_p = i;
            }
        }
```

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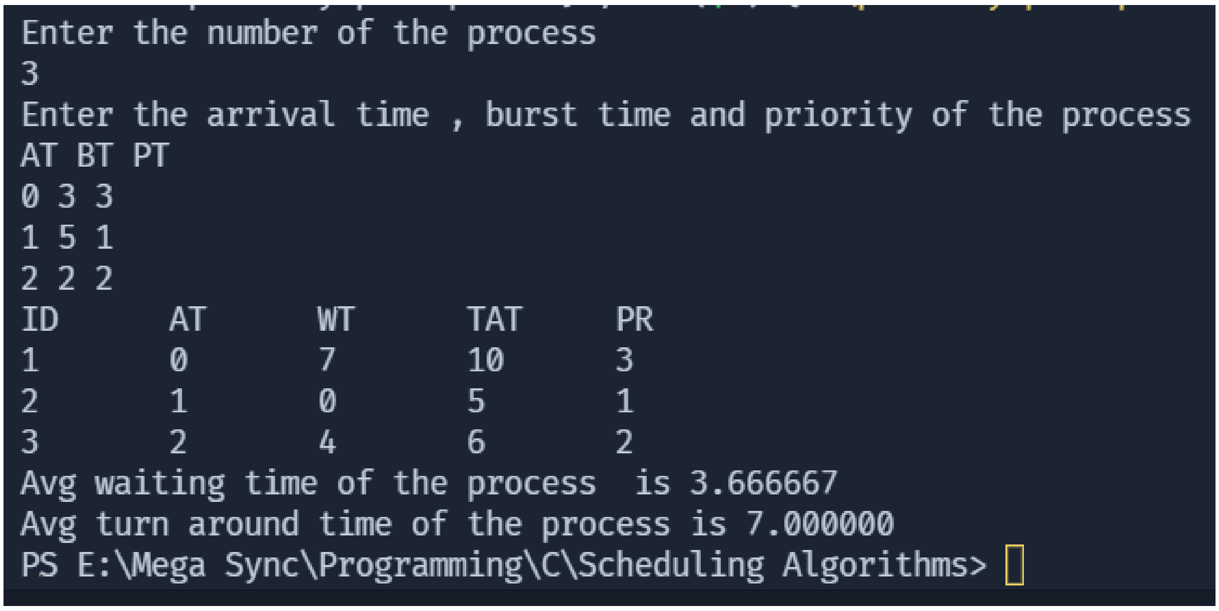
```
        a[short_p].BT = a[short_p].BT - 1;

        if (a[short_p].BT == 0)
        {

            count++;
            a[short_p].WT = t + 1 - a[short_p].AT -
temp[short_p];
            a[short_p].TAT = t + 1 - a[short_p].AT;

            total_WT = total_WT + a[short_p].WT;
            total_TAT = total_TAT + a[short_p].TAT;
        }
    }

    Avg_WT = total_WT / n;
    Avg_TAT = total_TAT / n;

    printf("ID\tAT\tWT\tTAT\tPR \n");
    for (int i = 0; i < n; i++)
    {
        printf("%d\t%d\t%d\t%d\t%d\n", i + 1, a[i].AT,
a[i].WT, a[i].TAT, a[i].PT);
    }

    printf("Avg waiting time of the process  is %f\n",
Avg_WT);
    printf("Avg turn around time of the process is %f\n",
Avg_TAT);

    return 0;
}
```

OUTPUT



```
Enter the number of the process
3
Enter the arrival time , burst time and priority of the process
AT BT PT
0 3 3
1 5 1
2 2 2
ID      AT      WT      TAT     PR
1       0       7       10      3
2       1       0       5       1
3       2       4       6       2
Avg waiting time of the process  is 3.666667
Avg turn around time of the process is 7.000000
PS E:\Mega Sync\Programming\C\Scheduling Algorithms>
```