NAME: TANYA CHANCHALANI

SRN: PES1UG19EC326

BRANCH: ECE

OSLAB_WEEK: 5

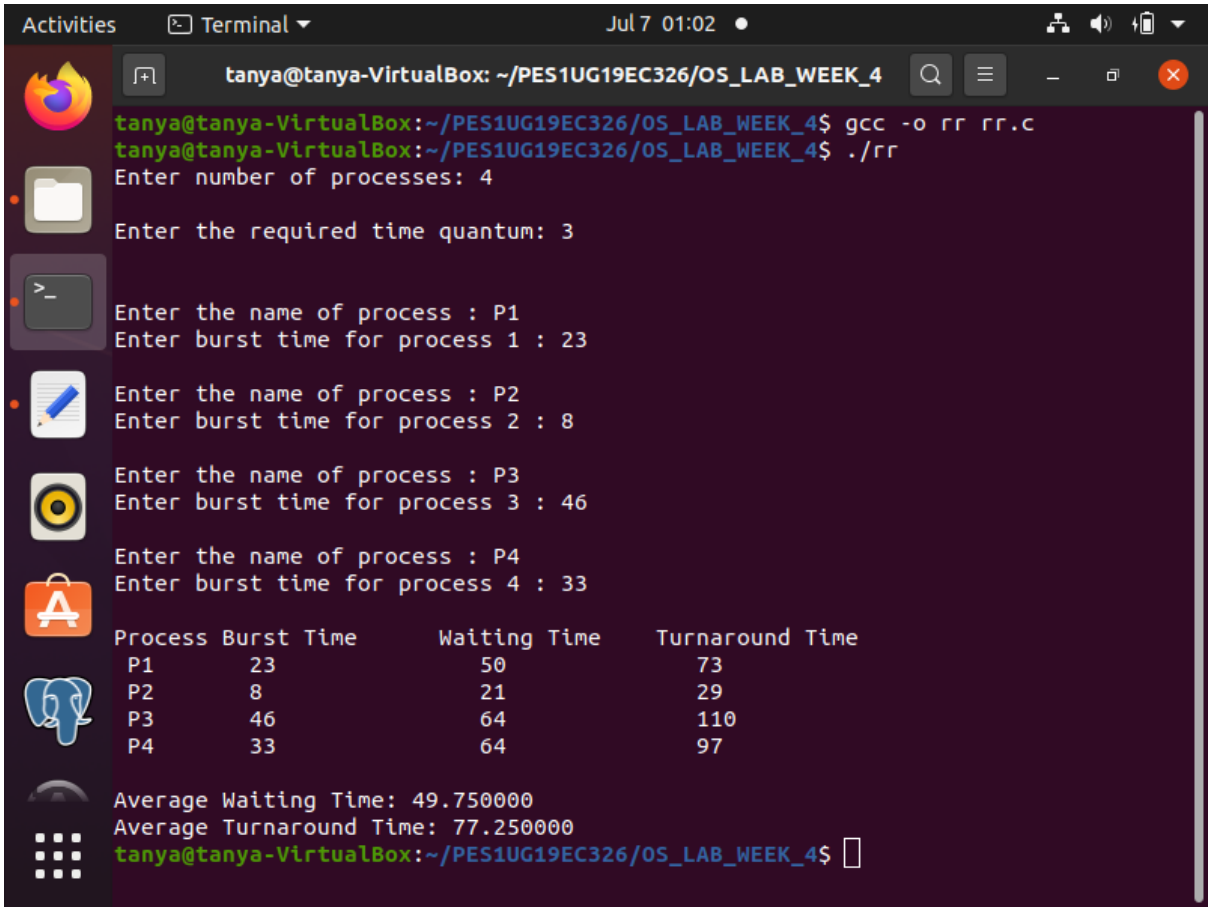
```
//Round Robin Scheduling
#include <stdbool.h>
//bool which expands to _Bool
//flag variable here
//true which expands to 1
//false which expands to 0
#include <stdio.h>
#include <stdlib.h>
//defined functions
void Bursttime(int *, int *, int);
float AvgWaitingtime(int *, int *, int, int);
float AvgTurnaroundtime(int *, int *, int *, int);
void display(int *, int *, int *, int *, int);
int main()
{
   int index, tq;
   printf("Enter number of processes: ");
   scanf("%d", &index);
   printf("\nEnter the required time quantum: ");
   scanf("%d", &tq);
   printf("\n");
   int *p = (int *)malloc(sizeof(int) * index);
   int *bt = (int *)malloc(sizeof(int) * index);
   int *wt = (int *)malloc(sizeof(int) * index);
   int *turnaround = (int *)malloc(sizeof(int) * index);
   Bursttime(bt, p, index);
```

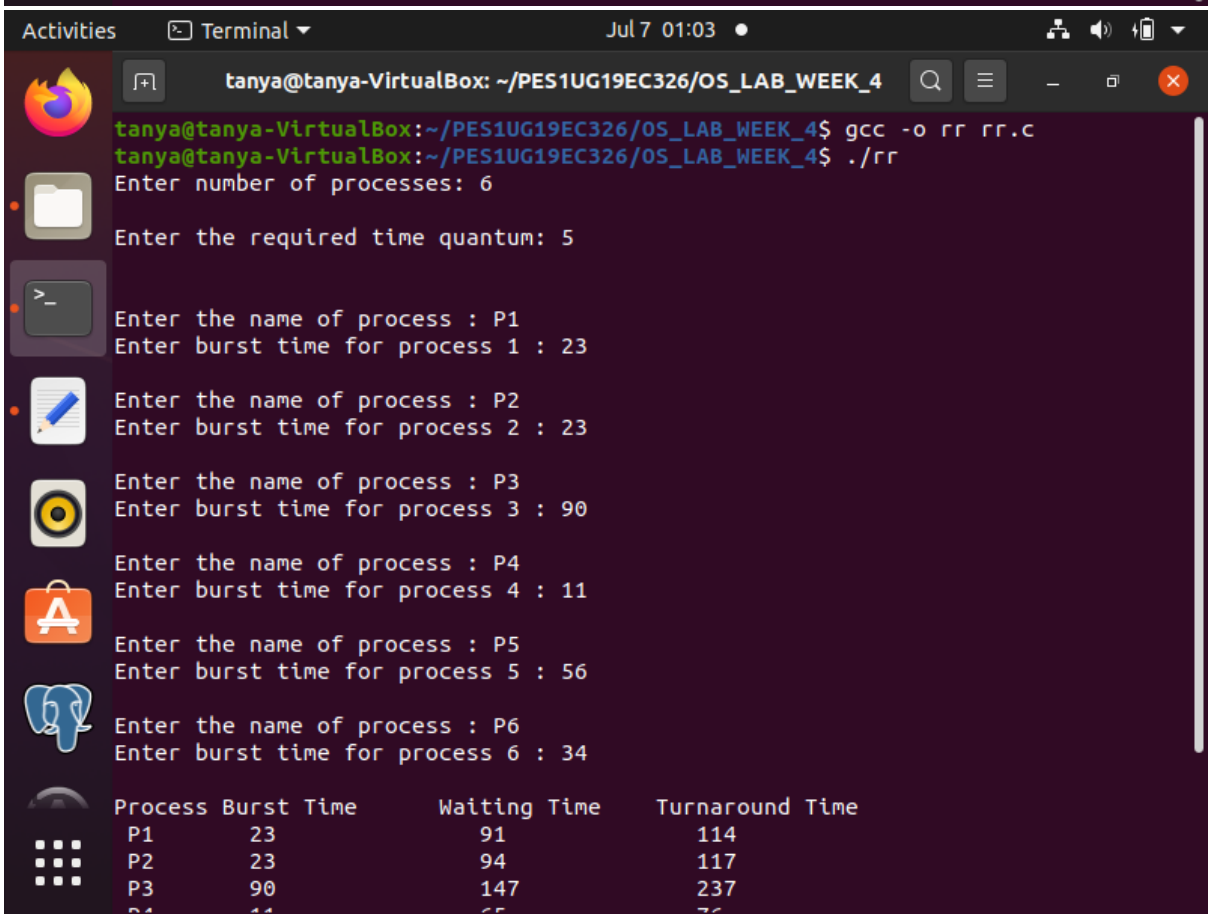
```
    float avgwt = AvgWaitingtime(wt, bt, index, tq);
    float avgturnaround = AvgTurnaroundtime(turnaround, wt, bt, index);
    display(p, bt, wt, turnaround, index);
    printf("Average Waiting Time: %f\n", avgwt);
    printf("Average Turnaround Time: %f\n", avgturnaround);
    free(p);
    free(bt);
    free(wt);
    free(turnaround);
    return 0;
}
//defining functions
void Bursttime(int *bt, int *p, int n)
{
    for (int i = 0; i < n; i++)
    {
            printf("\nEnter the name of process : P%d\n",i+1);
        printf("Enter burst time for process %d : ", i + 1);
        scanf("%d", &bt[i]);
        p[i] = i + 1;
    }
}

float AvgTurnaroundtime(int *turnaround, int *wt, int *bt, int n)
{
    float totalturnaround = 0;
    for (int i = 0; i < n; i++)
    {
        turnaround[i] = bt[i] + wt[i];
        totalturnaround += turnaround[i];
    }
```

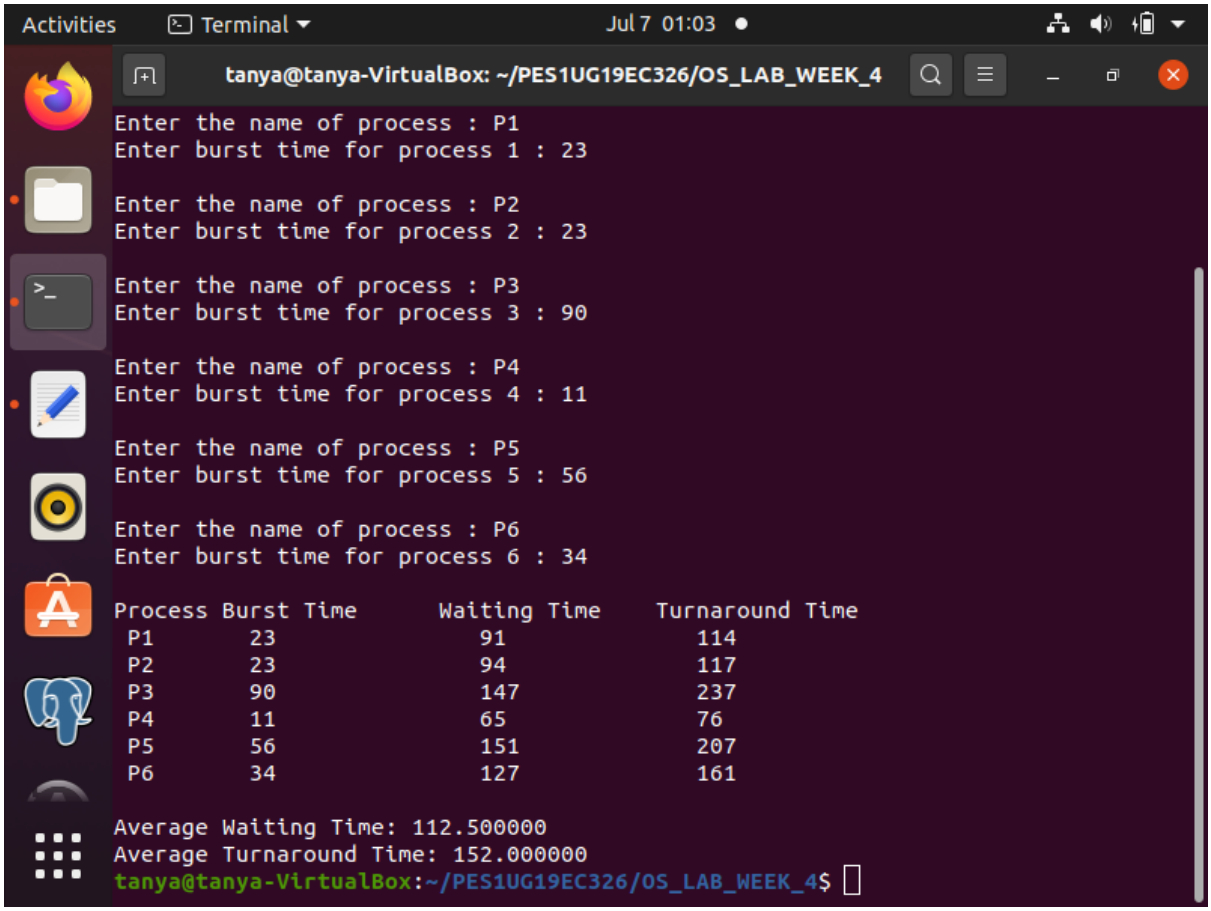
```
    return totalturnaround / n;
}

float AvgWaitingtime(int *wt, int *bt, int n, int tq)
{
    int *remaining = (int *)malloc(sizeof(int) * n);
    int remaining_processes = n, time = 0, p_num = 0, flag = true;
    float totalwt = 0;
    for (int i = 0; i < n; i++)
        remaining[i] = bt[i];
    while (true)
    {
        flag = true;
        for (int i = 0; i < n; i++)
        {
            if (remaining[i] > 0)
            {
                flag = false;
                if (remaining[i] > tq)
                {
                    time += tq;
                    remaining[i] -= tq;
                }
                else
                {
                    time += remaining[i];
                    wt[i] = time - bt[i];
                    remaining[i] = 0;
                }
            }
        }
```

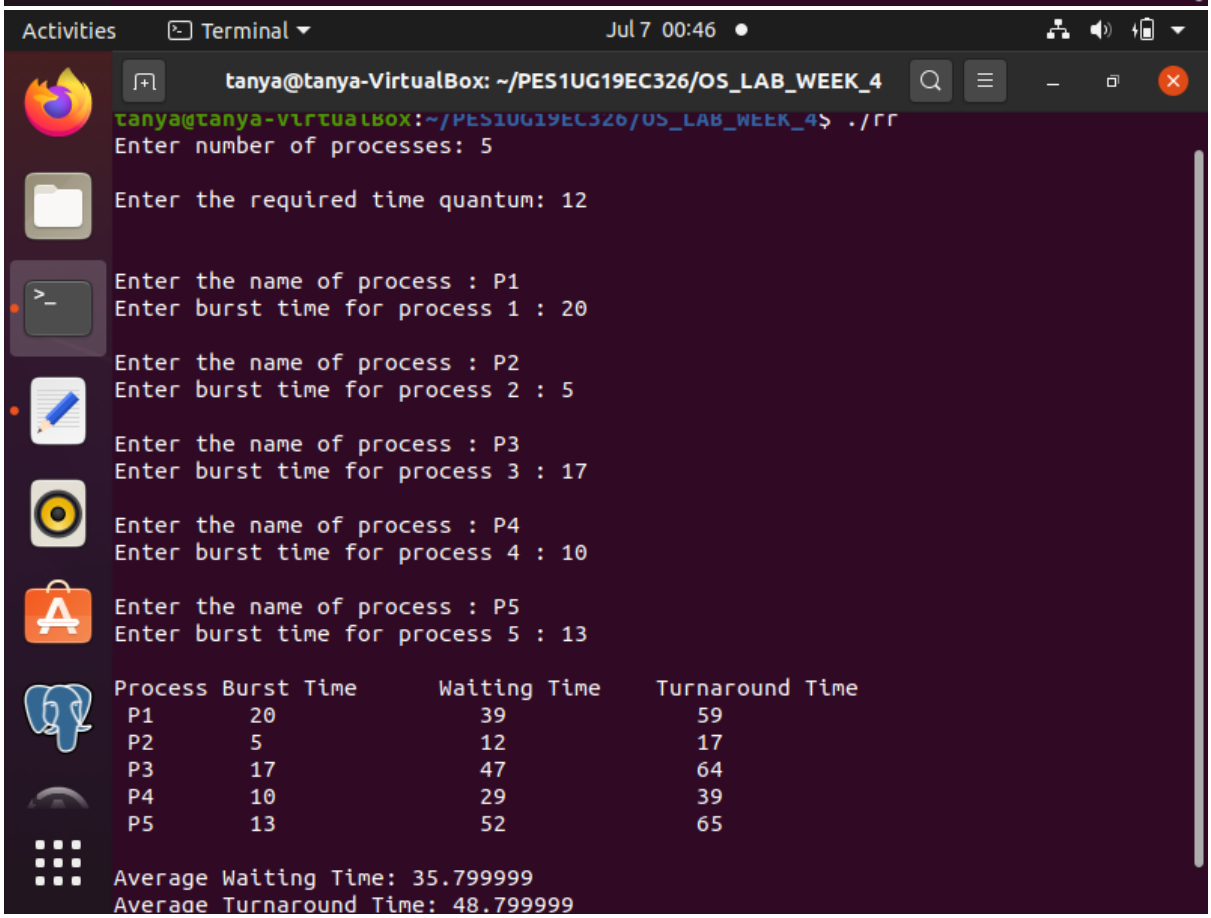
```
        if (flag)
            break;
    }
    for (int i = 0; i < n; i++)
        totalwt += wt[i];
    return totalwt / n;
}
void display(int *p, int *bt, int *wt, int *turnaround, int n)
{
    printf("\nProcess\tBurst Time\tWaiting Time\tTurnaround Time\n");
    for (int i = 0; i < n; i++)
        printf(" P%d\t  %d\t\t   %d\t\t   %d\n", p[i], bt[i], wt[i], turnaround[i]);
    printf("\n");
}
```

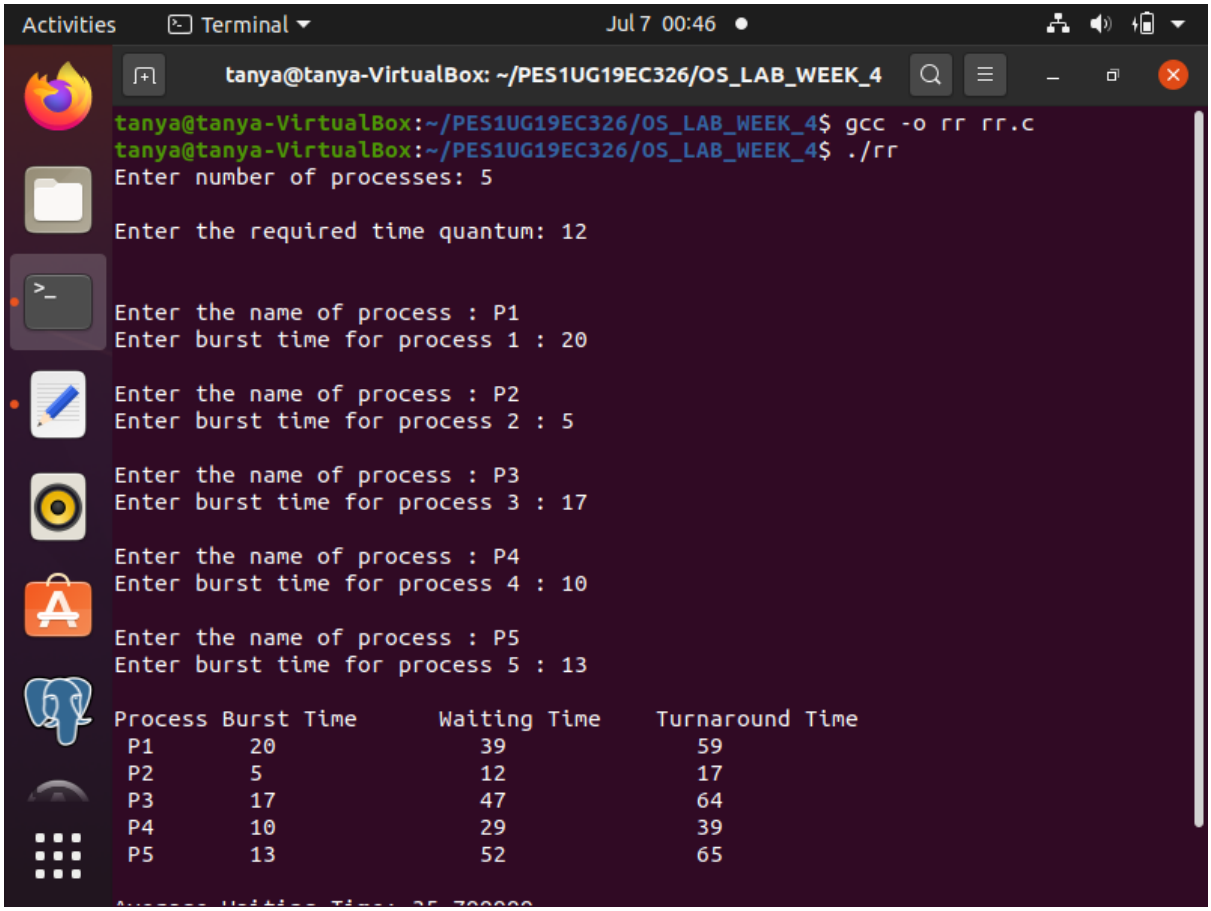
SCREENSHOTS OF THE OUTPUTS :-

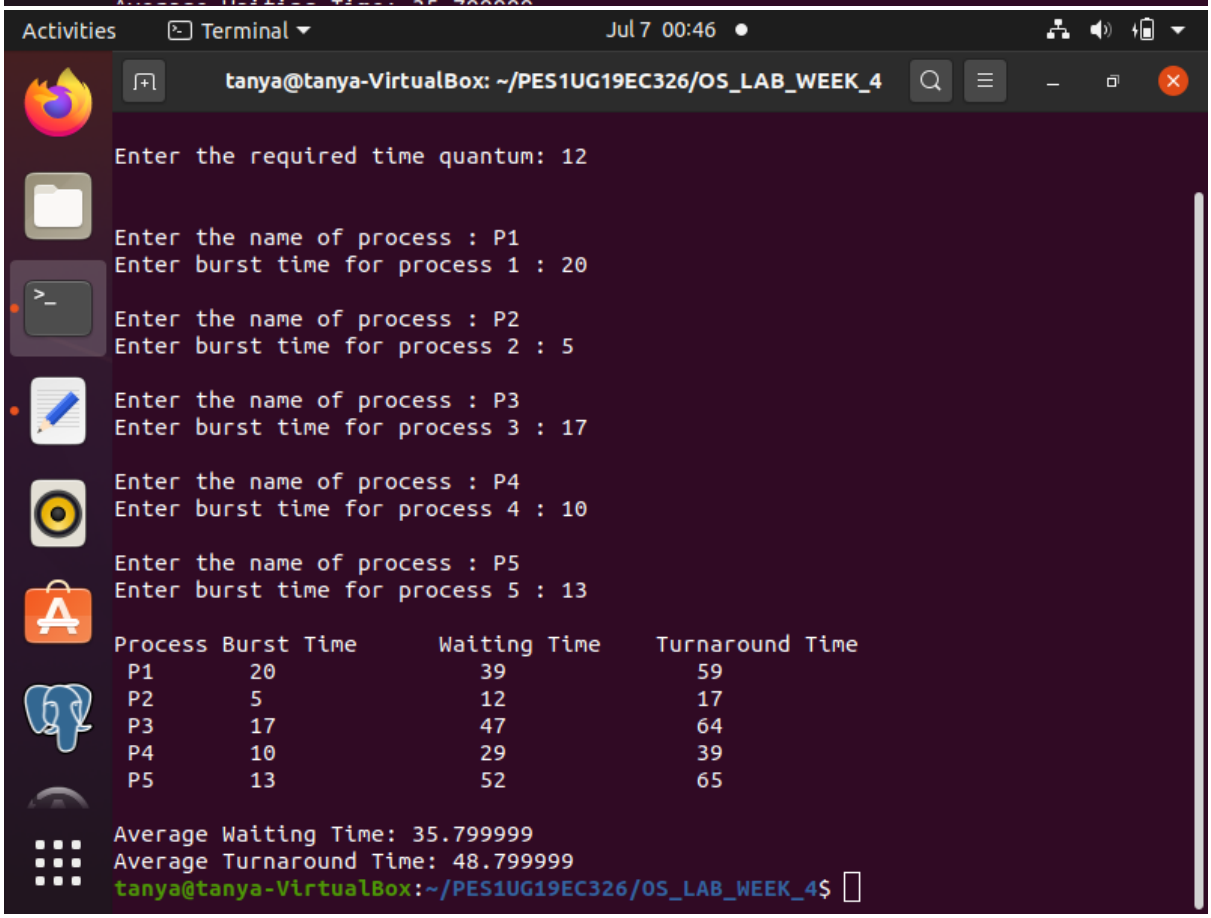

Activities
Terminal
Jul 7 01:02
tanya@tanya-VirtualBox: ~/PES1UG19EC326/OS_LAB_WEEK_4
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$ gcc -o rr rr.c
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$ ./rr
Enter number of processes: 4
Enter the required time quantum: 3
Enter the name of process : P1
Enter burst time for process 1 : 23
Enter the name of process : P2
Enter burst time for process 2 : 8
Enter the name of process : P3
Enter burst time for process 3 : 46
Enter the name of process : P4
Enter burst time for process 4 : 33
Process Burst Time Waiting Time Turnaround Time
P1 23 50 73
P2 8 21 29
P3 46 64 110
P4 33 64 97
Average Waiting Time: 49.750000
Average Turnaround Time: 77.250000
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$

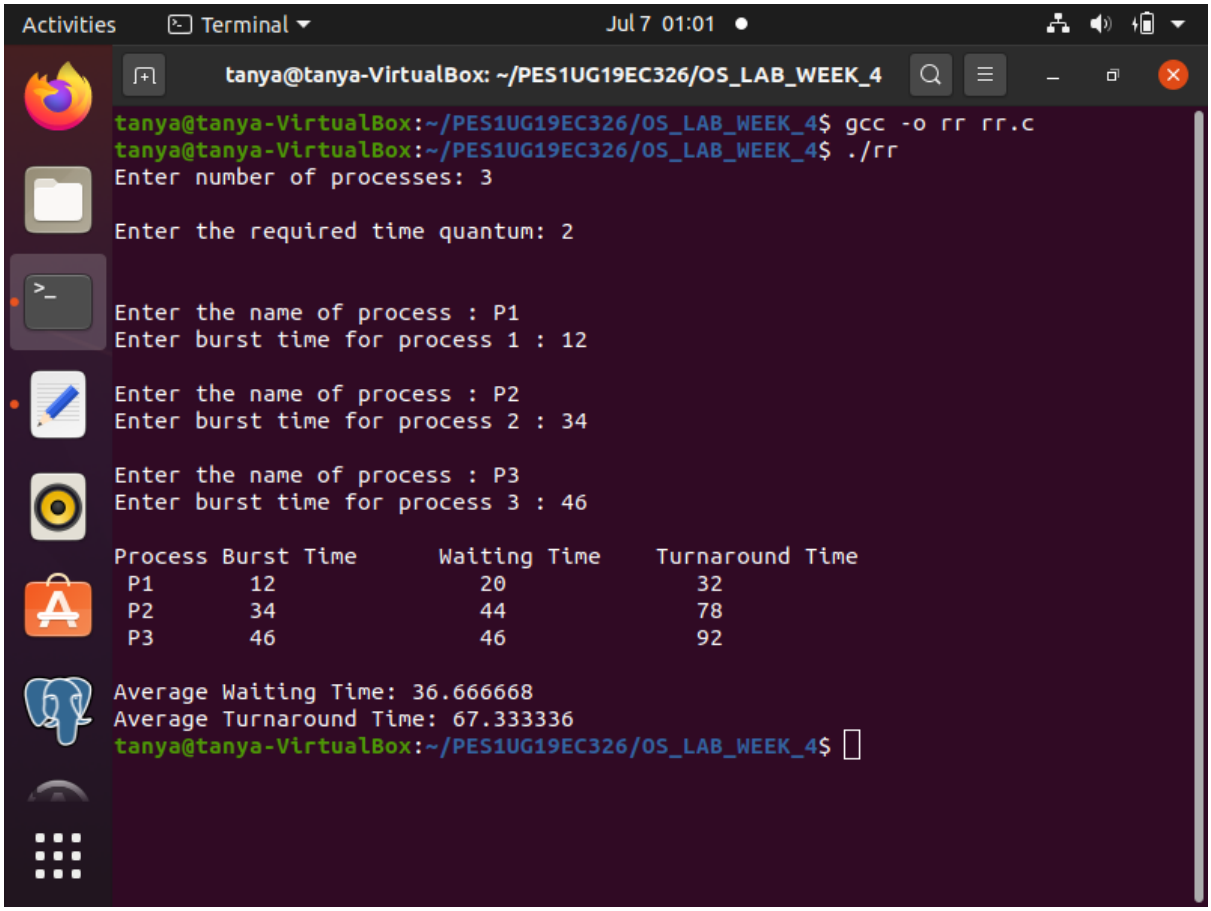

Activities
Terminal
Jul 7 01:03
tanya@tanya-VirtualBox: ~/PES1UG19EC326/OS_LAB_WEEK_4
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$ gcc -o rr rr.c
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$ ./rr
Enter number of processes: 6
Enter the required time quantum: 5
Enter the name of process : P1
Enter burst time for process 1 : 23
Enter the name of process : P2
Enter burst time for process 2 : 23
Enter the name of process : P3
Enter burst time for process 3 : 90
Enter the name of process : P4
Enter burst time for process 4 : 11
Enter the name of process : P5
Enter burst time for process 5 : 56
Enter the name of process : P6
Enter burst time for process 6 : 34
Process Burst Time Waiting Time Turnaround Time
P1 23 91 114
P2 23 94 117
P3 90 147 237


Activities
Terminal
Jul 7 01:03
tanya@tanya-VirtualBox: ~/PES1UG19EC326/OS_LAB_WEEK_4
Enter the name of process : P1
Enter burst time for process 1 : 23
Enter the name of process : P2
Enter burst time for process 2 : 23
Enter the name of process : P3
Enter burst time for process 3 : 90
Enter the name of process : P4
Enter burst time for process 4 : 11
Enter the name of process : P5
Enter burst time for process 5 : 56
Enter the name of process : P6
Enter burst time for process 6 : 34
Process Burst Time Waiting Time Turnaround Time
P1 23 91 114
P2 23 94 117
P3 90 147 237
P4 11 65 76
P5 56 151 207
P6 34 127 161
Average Waiting Time: 112.500000
Average Turnaround Time: 152.000000
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$


Activities
Terminal
Jul 7 00:46
tanya@tanya-VirtualBox: ~/PES1UG19EC326/OS_LAB_WEEK_4
Enter number of processes: 5
Enter the required time quantum: 12
Enter the name of process : P1
Enter burst time for process 1 : 20
Enter the name of process : P2
Enter burst time for process 2 : 5
Enter the name of process : P3
Enter burst time for process 3 : 17
Enter the name of process : P4
Enter burst time for process 4 : 10
Enter the name of process : P5
Enter burst time for process 5 : 13
Process Burst Time Waiting Time Turnaround Time
P1 20 39 59
P2 5 12 17
P3 17 47 64
P4 10 29 39
P5 13 52 65
Average Waiting Time: 35.799999
Average Turnaround Time: 48.799999


Activities
Terminal
Jul 7 00:46
tanya@tanya-VirtualBox: ~/PES1UG19EC326/OS_LAB_WEEK_4
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$ gcc -o rr rr.c
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$ ./rr
Enter number of processes: 5
Enter the required time quantum: 12
Enter the name of process : P1
Enter burst time for process 1 : 20
Enter the name of process : P2
Enter burst time for process 2 : 5
Enter the name of process : P3
Enter burst time for process 3 : 17
Enter the name of process : P4
Enter burst time for process 4 : 10
Enter the name of process : P5
Enter burst time for process 5 : 13
Process Burst Time Waiting Time Turnaround Time
P1 20 39 59
P2 5 12 17
P3 17 47 64
P4 10 29 39
P5 13 52 65


Activities
Terminal
Jul 7 00:46
tanya@tanya-VirtualBox: ~/PES1UG19EC326/OS_LAB_WEEK_4
Enter the required time quantum: 12
Enter the name of process : P1
Enter burst time for process 1 : 20
Enter the name of process : P2
Enter burst time for process 2 : 5
Enter the name of process : P3
Enter burst time for process 3 : 17
Enter the name of process : P4
Enter burst time for process 4 : 10
Enter the name of process : P5
Enter burst time for process 5 : 13
Process Burst Time Waiting Time Turnaround Time
P1 20 39 59
P2 5 12 17
P3 17 47 64
P4 10 29 39
P5 13 52 65
Average Waiting Time: 35.799999
Average Turnaround Time: 48.799999
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$


Activities
Terminal
Jul 7 01:01
tanya@tanya-VirtualBox: ~/PES1UG19EC326/OS_LAB_WEEK_4
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$ gcc -o rr rr.c
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$ ./rr
Enter number of processes: 3
Enter the required time quantum: 2
Enter the name of process : P1
Enter burst time for process 1 : 12
Enter the name of process : P2
Enter burst time for process 2 : 34
Enter the name of process : P3
Enter burst time for process 3 : 46
Process Burst Time Waiting Time Turnaround Time
P1 12 20 32
P2 34 44 78
P3 46 46 92
Average Waiting Time: 36.666668
Average Turnaround Time: 67.333336
tanya@tanya-VirtualBox:~/PES1UG19EC326/OS_LAB_WEEK_4$