Parshvanath Charitable Trust's
A. P. SHAH INSTITUTE OF TECHNOLOGY
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(Religious Jain Minority)

# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

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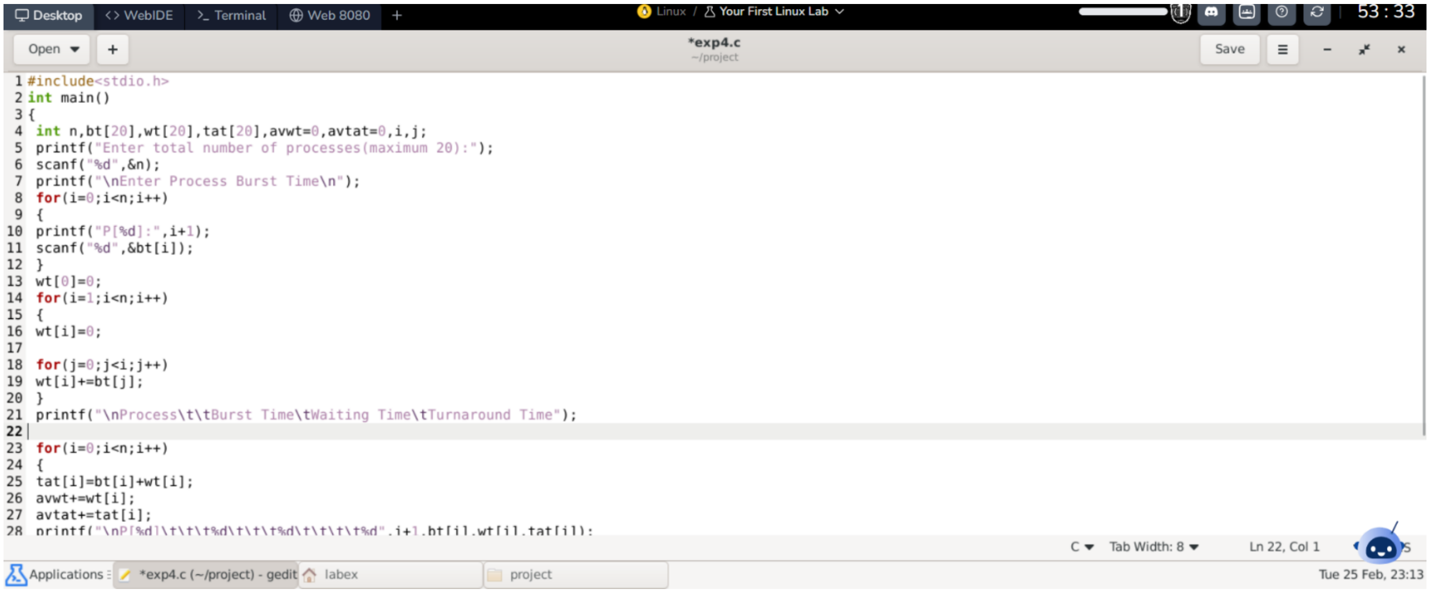
| **Class / Branch: SE AIML** | **Date of Performance:3-02-25** |
| **Subject: CSL403 Operating System Lab** | **Date of Submission:3-02-25** |
| **Name of Instructor: Prof. Poonam Tiware** | |

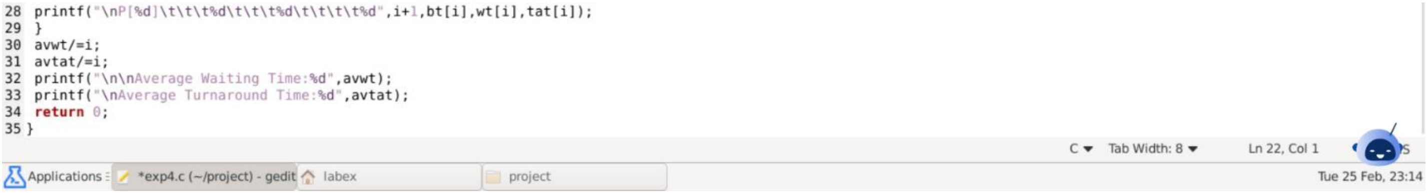
## Experiment No.4

**Aim: Write a program to demonstrate the concept of non-preemptive, preemptive scheduling algorithms.**

**Program: Implementation of FCFS algorithm**

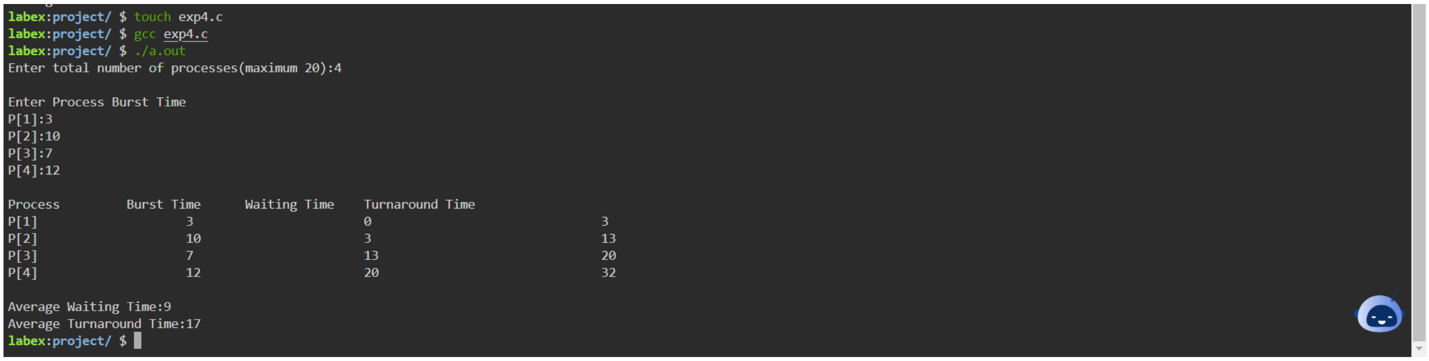


```
#include<stdio.h>
int main()
{
 int n,bt[20],wt[20],tat[20],avwt=0,avtat=0,i,j;
 printf("Enter total number of processes(maximum 20):");
 scanf("%d",&n);
 printf("\nEnter Process Burst Time\n");
 for(i=0;i<n;i++)
 {
 printf("P[%d]:",i+1);
 scanf("%d",&bt[i]);
 }
 wt[0]=0;
 for(i=1;i<n;i++)
 {
 wt[i]=0;

 for(j=0;j<i;j++)
 wt[i]+=bt[j];
 }
 printf("\nProcess\t\tBurst Time\tWaiting Time\tTurnaround Time");

 for(i=0;i<n;i++)
 {
 tat[i]=bt[i]+wt[i];
 avwt+=wt[i];
 avtat+=tat[i];
```



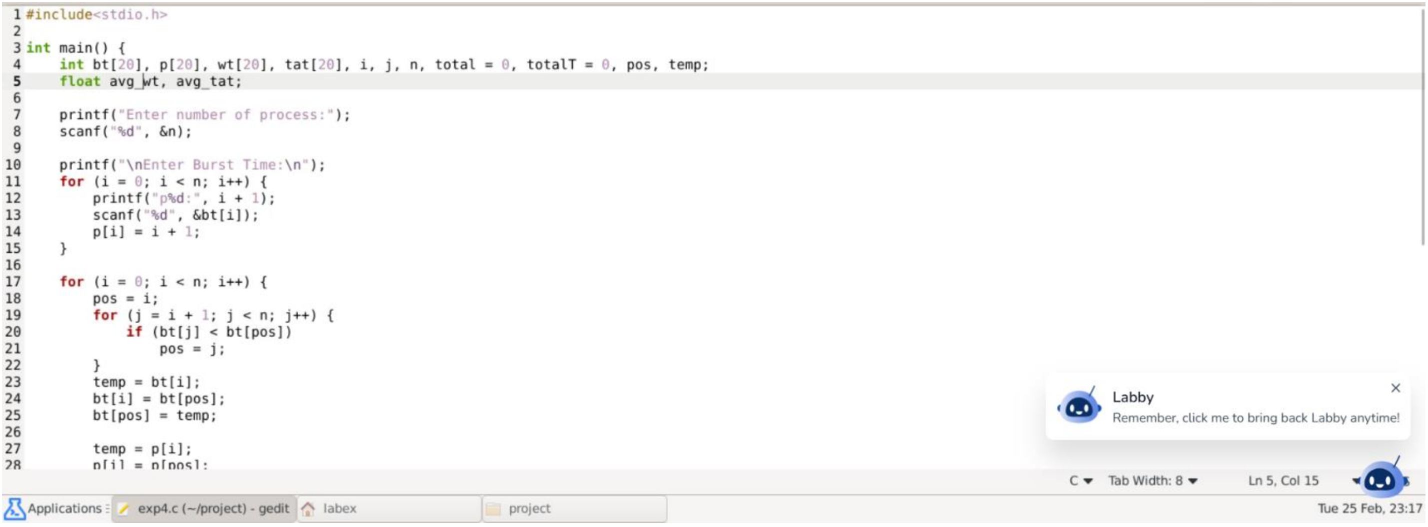
```
 printf("\nP[%d]\t\t\t%d\t\t\t%d\t\t\t\t%d",i+1,bt[i],wt[i],tat[i]);
 }
 avwt/=i;
 avtat/=i;
 printf("\n\nAverage Waiting Time:%d",avwt);
 printf("\nAverage Turnaround Time:%d",avtat);
 return 0;
}
```

## Output:



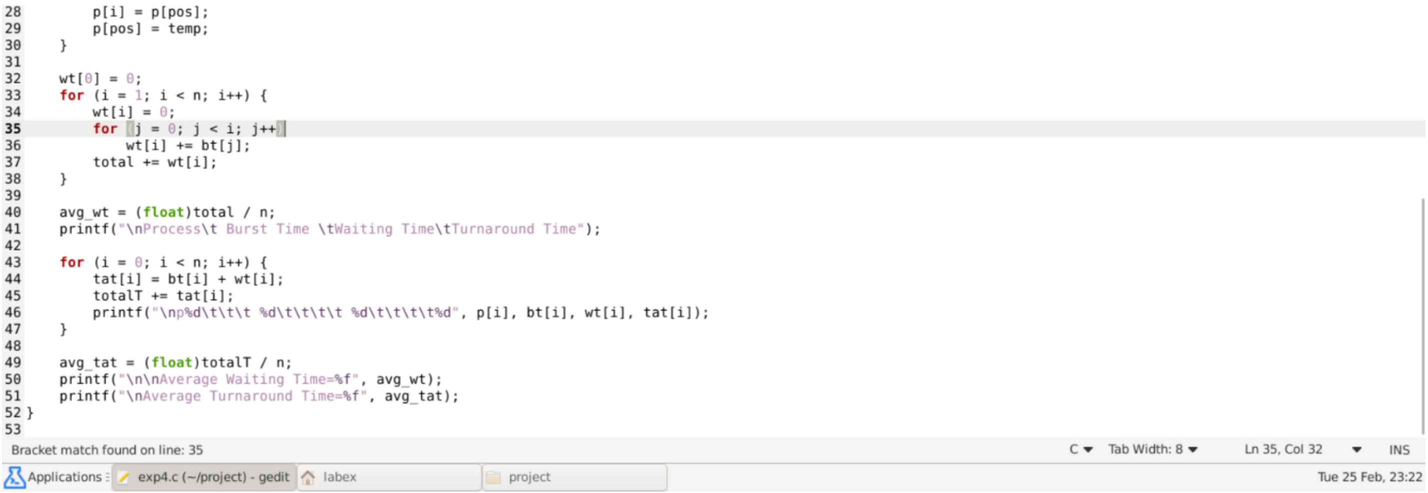
```
labex:project/ $ touch exp4.c
labex:project/ $ gcc exp4.c
labex:project/ $ ./a.out
Enter total number of processes(maximum 20):4

Enter Process Burst Time
P[1]:3
P[2]:10
P[3]:7
P[4]:12

Process         Burst Time      Waiting Time    Turnaround Time
P[1]                    3                       0                               3
P[2]                    10                      3                               13
P[3]                    7                       13                              20
P[4]                    12                      20                              32

Average Waiting Time:9
Average Turnaround Time:17
labex:project/ $
```

## Program: Implementation of Pre-emptive Shortest Job First (SJF) algorithm



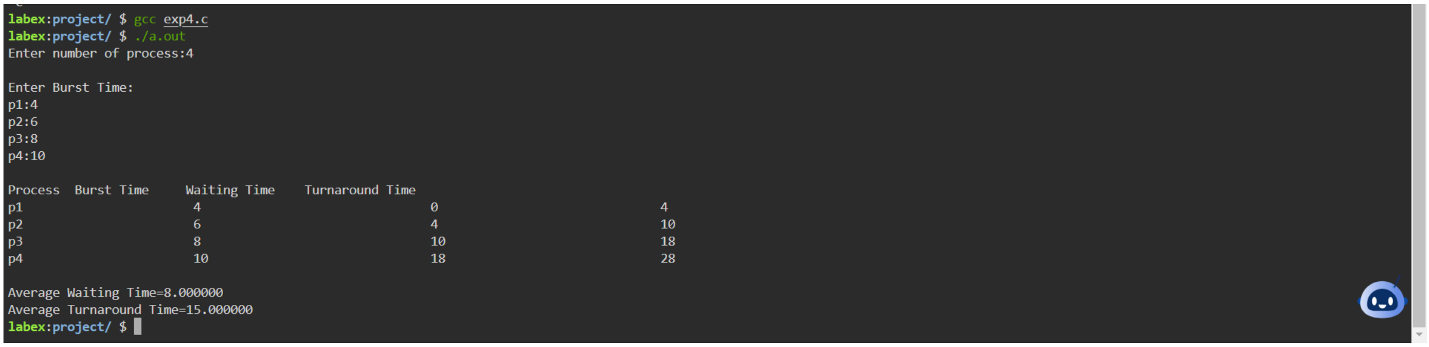
```c
#include<stdio.h>

int main() {
    int bt[20], p[20], wt[20], tat[20], i, j, n, total = 0, totalT = 0, pos, temp;
    float avg_wt, avg_tat;

    printf("Enter number of process:");
    scanf("%d", &n);

    printf("\nEnter Burst Time:\n");
    for (i = 0; i < n; i++) {
        printf("p%d:", i + 1);
        scanf("%d", &bt[i]);
        p[i] = i + 1;
    }

    for (i = 0; i < n; i++) {
        pos = i;
        for (j = i + 1; j < n; j++) {
            if (bt[j] < bt[pos])
                pos = j;
        }
        temp = bt[i];
        bt[i] = bt[pos];
        bt[pos] = temp;

        temp = p[i];
        p[i] = p[pos];
```

Labby
Remember, click me to bring back Labby anytime!



```
        p[i] = p[pos];
        p[pos] = temp;
    }

    wt[0] = 0;
    for (i = 1; i < n; i++) {
        wt[i] = 0;
        for (j = 0; j < i; j++)
            wt[i] += bt[j];
        total += wt[i];
    }

    avg_wt = (float)total / n;
    printf("\nProcess\t Burst Time \tWaiting Time\tTurnaround Time");

    for (i = 0; i < n; i++) {
        tat[i] = bt[i] + wt[i];
        totalT += tat[i];
        printf("\np%d\t\t\t %d\t\t\t\t %d\t\t\t\t%d", p[i], bt[i], wt[i], tat[i]);
    }

    avg_tat = (float)totalT / n;
    printf("\n\nAverage Waiting Time=%f", avg_wt);
    printf("\nAverage Turnaround Time=%f", avg_tat);
}
```

## Output:



```
labex:project/ $ gcc exp4.c
labex:project/ $ ./a.out
Enter number of process:4

Enter Burst Time:
p1:4
p2:6
p3:8
p4:10

Process  Burst Time     Waiting Time    Turnaround Time
p1                       4                               0                              4
p2                       6                               4                              10
p3                       8                               10                             18
p4                       10                              18                             28

Average Waiting Time=8.000000
Average Turnaround Time=15.000000
labex:project/ $ 
```

## Conclusion: Hence, we have implemented FCFS and SJF algorithm.