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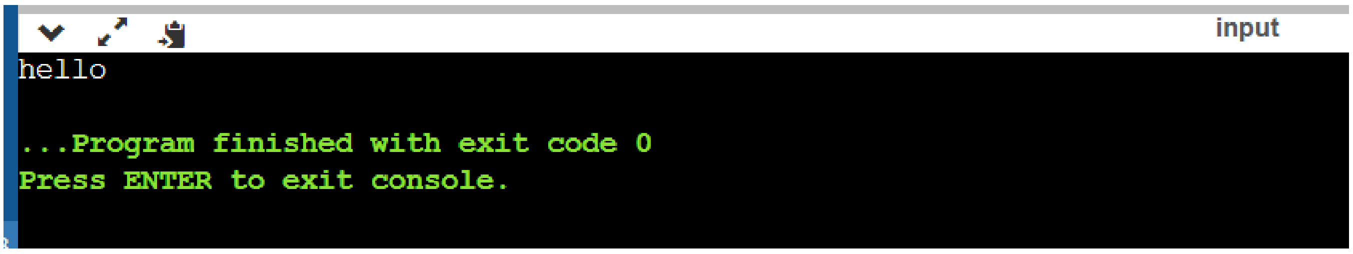
Q1.Demonstration of SINGLE FORK () System Call.

```
#include<stdio.h>
#include<unistd.h>
int main()
{
fork();
printf("hello");
return 0;
 }
```

OUTPUT



```
hello

...Program finished with exit code 0
Press ENTER to exit console.
```

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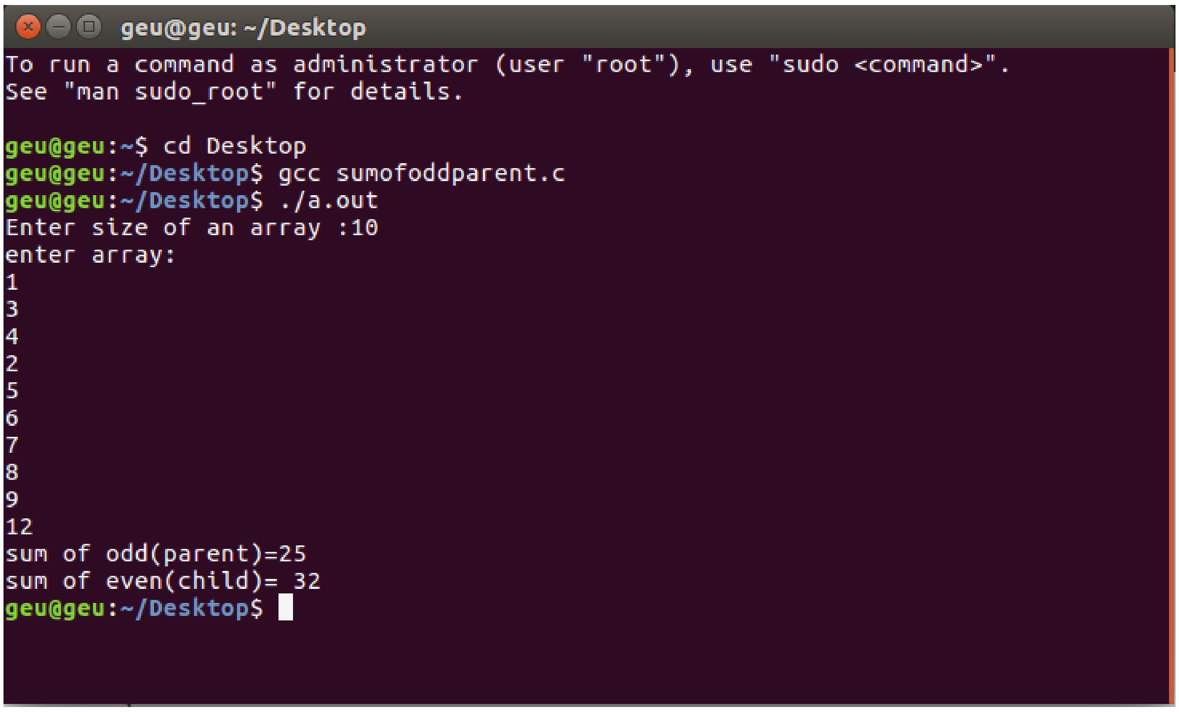
Q2. Parent Process Computes the SUM OF EVEN and Child Process computes the sum of ODD NUMBERS using fork.

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
int main()
{
int arr[10];
int a,n,sume=0,sumo=0;
printf("Enter size of an array :");
scanf("%d",&n);
printf("enter array:\n");
for(int i=0;i<n;i++) {
scanf("%d",&arr[i]);
}
a=fork();
if(a>0){
for(int i=0;i<n;i++){
if(arr[i]%2!=0){
sumo=sumo+arr[i];
}
}
printf("sum of odd(parent)=%d\n",sumo);
exit(0);
}
else if(a==0){
for(int i=0;i<n;i++) {
if(arr[i]%2==0){
sume=sume+arr[i];
}
}
printf("sum of even(child)= %d\n",sume);
exit(0);
}
else
printf("unsuccessful ceation of process\n");
 }
```

OUTPUT



geu@geu: ~/Desktop

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

geu@geu:~$ cd Desktop
geu@geu:~/Desktop$ gcc sumofoddparent.c
geu@geu:~/Desktop$ ./a.out
Enter size of an array :10
enter array:
1
3
4
2
5
6
7
8
9
12
sum of odd(parent)=25
sum of even(child)= 32
geu@geu:~/Desktop$ 
```

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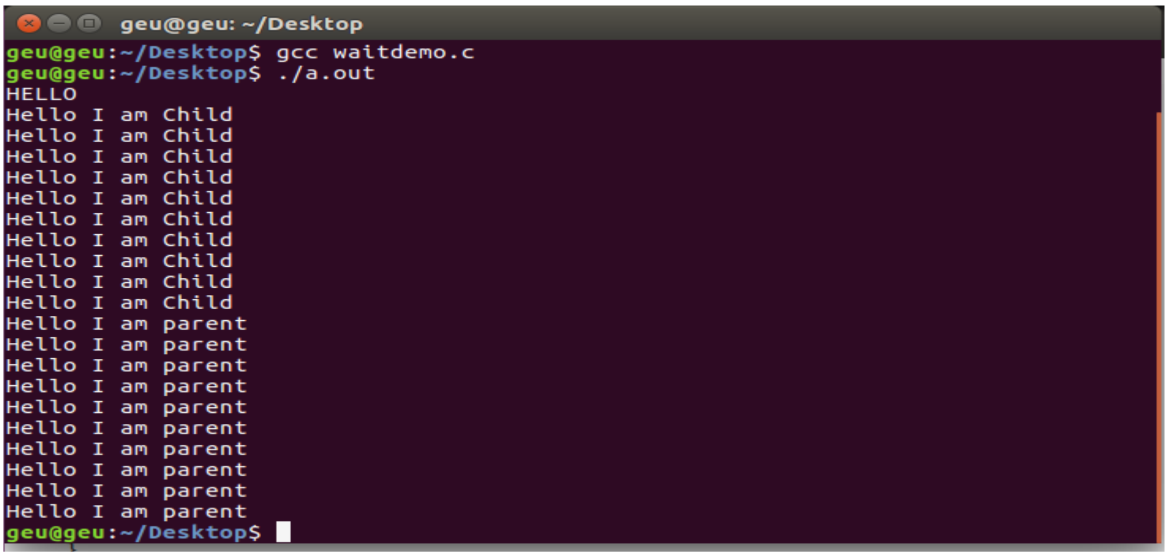
Q3.Demonstration of WAIT () System Call.

```
#include<stdio.h>
#include<unistd.h>
#include<sys/wait.h>
int main()
{
pid_t id;
int i;
id=fork();
if(id==0)
{
for(i=0;i<10;i++)
{
printf("Hello I am Child\n");
}
}
else if(id>0)
{
printf("HELLO\n");
wait(NULL);
for(i=0;i<10;i++)
{
printf("Hello I am parent\n");
}
} }
```

OUTPUT



```
geu@geu:~/Desktop$ gcc waitdemo.c
geu@geu:~/Desktop$ ./a.out
HELLO
Hello I am Child
Hello I am Child
Hello I am Child
Hello I am Child
Hello I am Child
Hello I am Child
Hello I am Child
Hello I am Child
Hello I am Child
Hello I am Child
Hello I am parent
Hello I am parent
Hello I am parent
Hello I am parent
Hello I am parent
Hello I am parent
Hello I am parent
Hello I am parent
Hello I am parent
Hello I am parent
geu@geu:~/Desktop$
```

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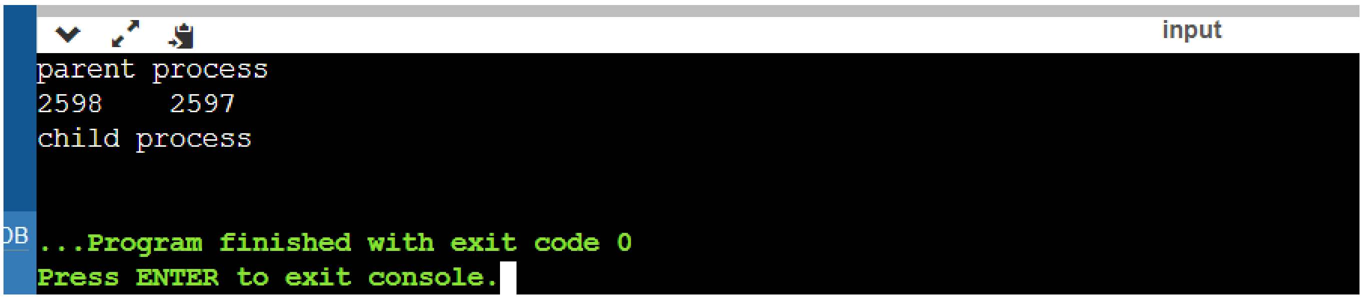
Q4.Implementation of ORPHAN PROCESS & ZOMBIE PROCESS.

```
#include<stdio.h>
#include<unistd.h>
#include<sys/types.h>
#include<stdlib.h>
int main()
{
pid_t id;
id=fork();
if(id>0)
{
printf("parent process\n");
printf("%d\t%d\n",getpid(),getppid());
exit(0);
printf("ABC");
}
else if(id==0)
{
printf("child process\n");
sleep(50);
printf("%d\t%d\n",getpid(),getppid());
}
}
```

OUTPUT



```
parent process
2598     2597
child process


...Program finished with exit code 0
Press ENTER to exit console.
```

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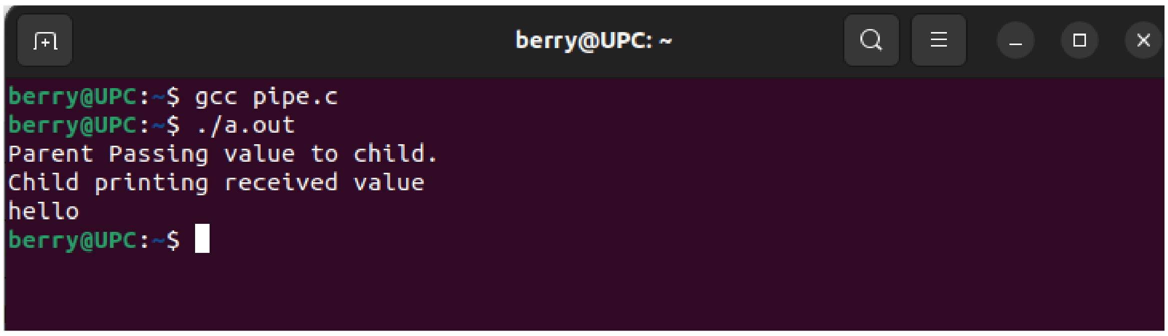
Q5. Implementation of PIPE

```
#include <stdio.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>
int main() {
int fd[2], n;
char buffer[100];
pid_t p;
pipe(fd);
p = fork();
if (p > 0)
{
printf("Parent Passing value to child.\n");
write(fd[1], "hello\n", 6);
wait(NULL);
}
else
{
printf("Child printing received value\n");
n = read(fd[0], buffer, 100);
write(1, buffer, n);
}
}
```

OUTPUT



```
berry@UPC:~$ gcc pipe.c
berry@UPC:~$ ./a.out
Parent Passing value to child.
Child printing received value
hello
berry@UPC:~$
```

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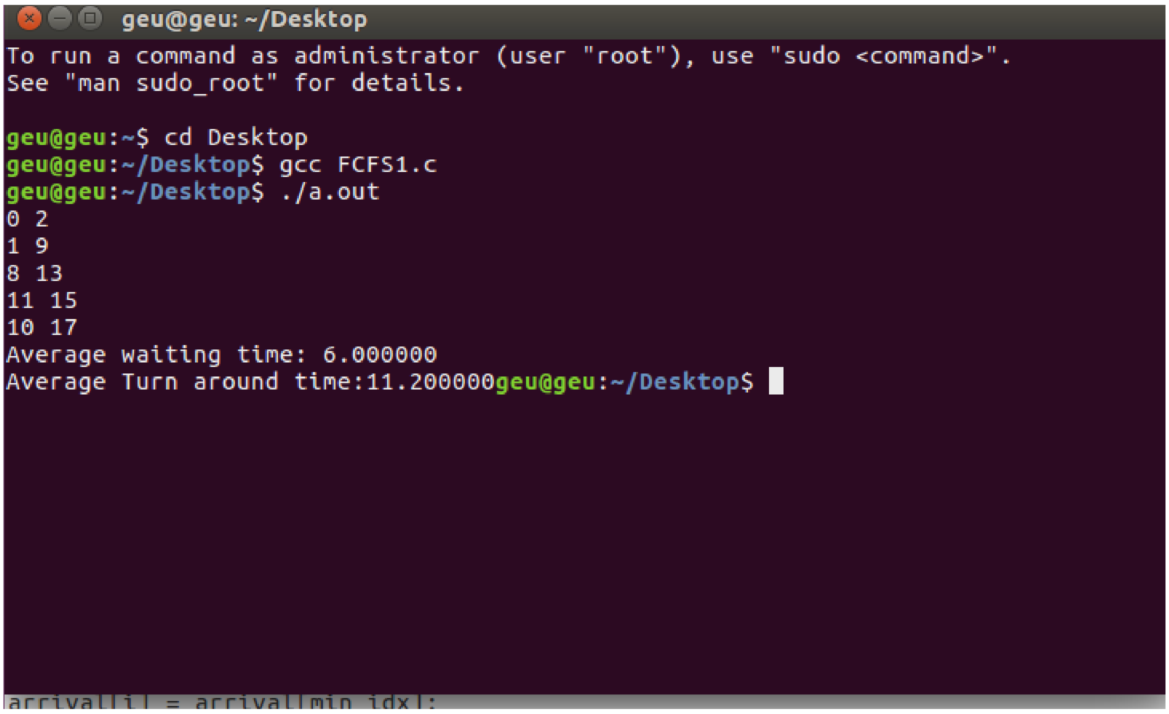
Q6. WAP to implement FIRST COME FIRST SERVED SCHEDULING ALGO. Calculate the average turnaround time and average waiting time.

```
#include <stdio.h>
//FCFS
int main()
{
int arrival[5] = {5,0,1,1,2};
int burst[5] = {7,2,8,5,4};
int wait[5] = {0,0,0,0,0};
int tat[5] = {0,0,0,0,0};
int sum_wait=0 , sum_tat=0;
//selection sort
for(int i=0 ; i<5-1 ; i++)
{
int min_idx = i;
for(int j=i+1 ; j<5 ; j++)
{
if(arrival[j]<arrival[min_idx])
{
min_idx = j;
}
}
if(min_idx!=i)
{
int temp = arrival[i];
arrival[i] = arrival[min_idx];
arrival[min_idx] = temp;
temp = burst[i];
burst[i] = burst[min_idx];
burst[min_idx] = temp;
}
}
wait[0] = 0;
tat[0] = burst[0];
sum_wait+=wait[0];
sum_tat+=tat[0];
printf("%d %d\n",wait[0] , tat[0]);
for(int i=1 ; i<5 ; i++)
{
wait[i] = wait[i-1] + burst[i-1] - arrival[i];
tat[i] = wait[i] + burst[i];
printf("%d %d\n",wait[i] , tat[i]);
sum_wait+=wait[i];
sum_tat+=tat[i];
}
printf("Average waiting time: %f\nAverage Turn around
time:%f",sum_wait/5.0 , sum_tat/5.0);
return 0;
 }
```

OUTPUT



geu@geu: ~/Desktop

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

geu@geu:~$ cd Desktop
geu@geu:~/Desktop$ gcc FCFS1.c
geu@geu:~/Desktop$ ./a.out
0 2
1 9
8 13
11 15
10 17
Average waiting time: 6.000000
Average Turn around time:11.200000geu@geu:~/Desktop$ 
```

```
arrival[i] = arrival[min_idx];
```

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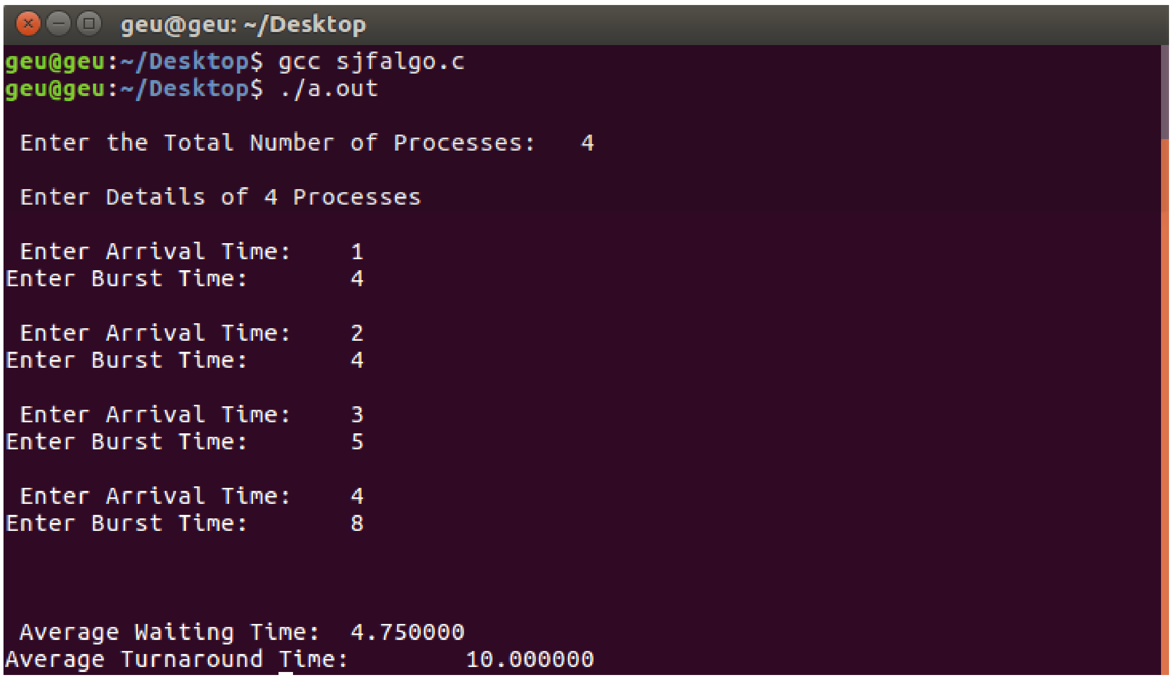
Q7. WAP to implement SHORTEST JOB FIRST SCHEDULING ALGO. Calculate the average turnaround time and average waiting time and average response time.

```
#include <stdio.h>
int main()
{
int arrival_time[10], burst_time[10], temp[10];
int i, smallest, count = 0, time, limit;
double wait_time = 0, turnaround_time = 0, end;
float average_waiting_time, average_turnaround_time;
printf("\n Enter the Total Number of Processes:\t");
scanf("%d", &limit);
printf("\n Enter Details of %d Processes \n", limit);
for(i = 0; i < limit; i++)
{
printf("\n Enter Arrival Time:\t");
scanf("%d", &arrival_time[i]);
printf("Enter Burst Time:\t");
scanf("%d", &burst_time[i]);
temp[i] = burst_time[i];
}
burst_time[9] = 9999;
for(time = 0; count != limit; time++)
{
smallest = 9;
for(i = 0; i < limit; i++)
{
if(arrival_time[i] <= time && burst_time[i] < burst_time[smallest] &&
burst_time[i] > 0)
{
smallest = i;
}
}
burst_time[smallest]--;
if(burst_time[smallest] == 0)
{
count++;
end = time + 1;
wait_time = wait_time + end - arrival_time[smallest] - temp[smallest];
turnaround_time = turnaround_time + end - arrival_time[smallest];
}
}
average_waiting_time = wait_time / limit;
average_turnaround_time = turnaround_time / limit;
printf("\n\n\n Average Waiting Time:\t%lf\n", average_waiting_time);
printf("Average Turnaround Time:\t%lf\n", average_turnaround_time);
return 0;
}
```

OUTPUT


geu@geu: ~/Desktop

```
geu@geu:~/Desktop$ gcc sjfalgo.c
geu@geu:~/Desktop$ ./a.out

 Enter the Total Number of Processes:   4

 Enter Details of 4 Processes

 Enter Arrival Time:    1
Enter Burst Time:       4

 Enter Arrival Time:    2
Enter Burst Time:       4

 Enter Arrival Time:    3
Enter Burst Time:       5

 Enter Arrival Time:    4
Enter Burst Time:       8



 Average Waiting Time:  4.750000
Average Turnaround Time:        10.000000
```

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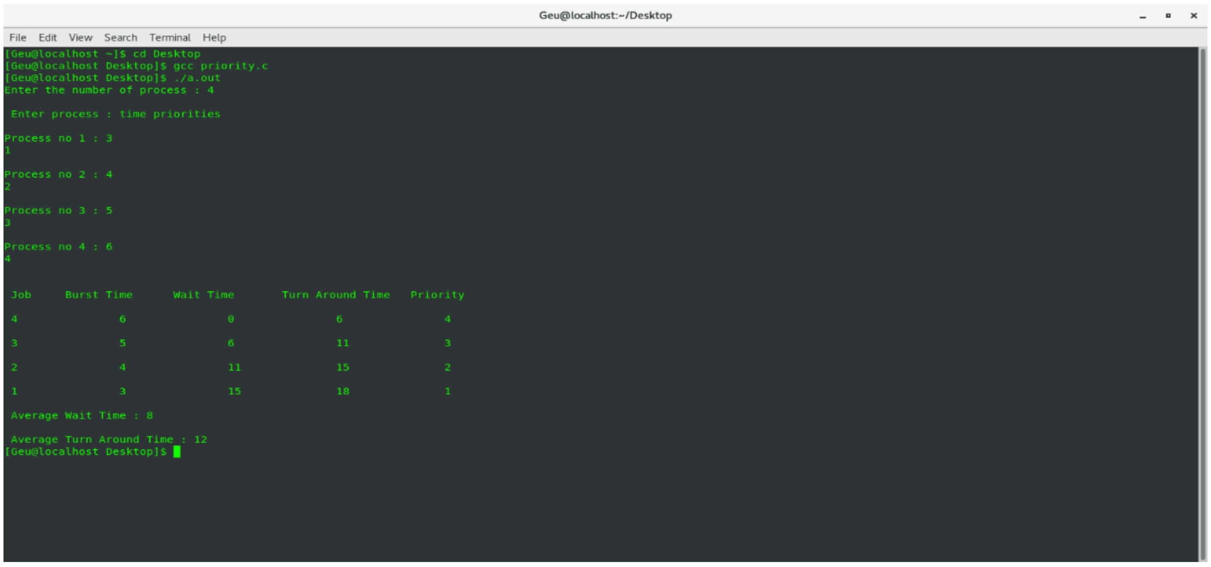
Q8. WAP to implement PRIORITY SCHEDULING ALGO. Calculate the average turnaround time and average waiting time and average response time.

```
#include<stdio.h>
int main() {
int x,n,p[10],pp[10],pt[10],w[10],t[10],awt,atat,i,j;
printf("Enter the number of process : ");
scanf("%d",&n);
printf("\n Enter process : time priorities \n");
for(i=0;i<n;i++)
{
printf("\nProcess no %d : ",i+1);
scanf("%d %d",&pt[i],&pp[i]);
p[i]=i+1;
}
for(i=0;i<n-1;i++){
for(j=i+1;j<n;j++)
{
if(pp[i]<pp[j])
{
x=pp[i];
pp[i]=pp[j];
pp[j]=x;
x=pt[i];
pt[i]=pt[j];
pt[j]=x;
x=p[i];
p[i]=p[j];
p[j]=x;
}
}
}
w[0]=0;
awt=0;
t[0]=pt[0];
atat=t[0];
for(i=1;i<n;i++)
{
w[i]=t[i-1];
awt+=w[i];
t[i]=w[i]+pt[i];
atat+=t[i];
}
printf("\n\n Job \t Burst Time \t Wait Time \t Turn Around Time
Priority \n");
for(i=0;i<n;i++)
printf("\n %d \t\t %d \t\t %d \t\t %d \t\t %d
\n",p[i],pt[i],w[i],t[i],pp[i]);
awt/=n;
atat/=n;
printf("\n Average Wait Time : %d \n",awt);
printf("\n Average Turn Around Time : %d \n",atat);
return 0;
}
```

OUTPUT


Geu@localhost:~/Desktop

```
[Geu@localhost ~]$ cd Desktop
[Geu@localhost Desktop]$ gcc priority.c
[Geu@localhost Desktop]$ ./a.out
Enter the number of process : 4

 Enter process : time priorities

Process no 1 : 3
1

Process no 2 : 4
2

Process no 3 : 5
3

Process no 4 : 6
4


 Job     Burst Time      Wait Time       Turn Around Time   Priority

 4               6               0               6               4

 3               5               6               11              3

 2               4               11              15              2

 1               3               15              18              1

 Average Wait Time : 8

 Average Turn Around Time : 12
[Geu@localhost Desktop]$ 
```

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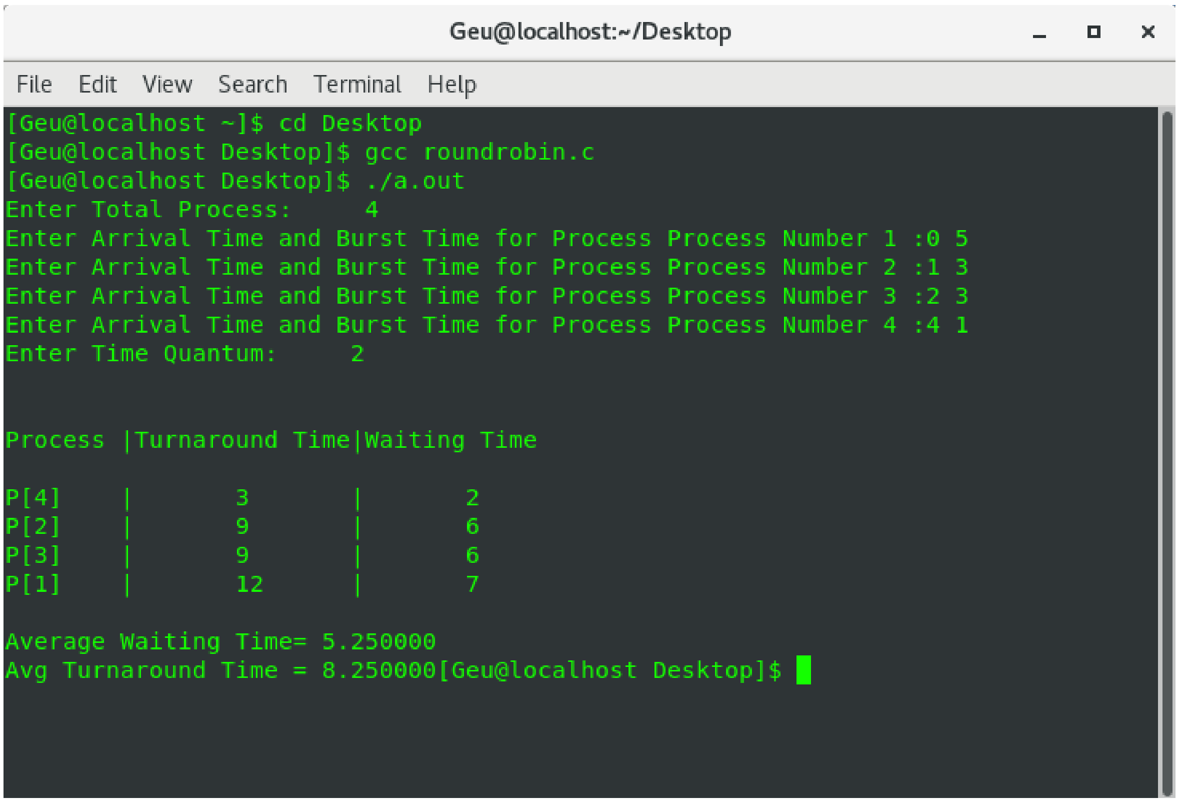
Q9.Implementation of ROUND ROBIN SCHEDULING ALGORITHM. Calculate the average turnaround time and average waiting time and average response time.

```
#include<stdio.h>
int main()
{
int cnt,j,n,t,remain,flag=0,tq;
int wt=0,tat=0,at[10],bt[10],rt[10];
printf("Enter Total Process:\t ");
scanf("%d",&n);
remain=n;
for(cnt=0;cnt<n;cnt++)
{
printf("Enter Arrival Time and Burst Time for Process Process Number
%d :",cnt+1);
scanf("%d",&at[cnt]);
scanf("%d",&bt[cnt]);
rt[cnt]=bt[cnt];
}
printf("Enter Time Quantum:\t");
scanf("%d",&tq);
printf("\n\nProcess\t|Turnaround Time|Waiting Time\n\n");
for(t=0,cnt=0;remain!=0;)
{
if(rt[cnt]<=tq && rt[cnt]>0)
{
t+=rt[cnt];
rt[cnt]=0;
flag=1;
}
else if(rt[cnt]>0)
{
rt[cnt]-=tq;
t+=tq;
}
if(rt[cnt]==0 && flag==1)
{
remain--;
printf("P[%d]\t|\t%d\t|\t%d\n",cnt+1,t-at[cnt],t-at[cnt]-bt[cnt]);
wt+=t-at[cnt]-bt[cnt];
tat+=t-at[cnt];
flag=0;
}
if(cnt==n-1)
cnt=0;
else if(at[cnt+1]<=t)
cnt++;
else
cnt=0;
}
printf("\nAverage Waiting Time= %f\n",wt*1.0/n);
printf("Avg Turnaround Time = %f",tat*1.0/n);
return 0;
}
```

OUTPUT



```
[Geu@localhost ~]$ cd Desktop
[Geu@localhost Desktop]$ gcc roundrobin.c
[Geu@localhost Desktop]$ ./a.out
Enter Total Process:     4
Enter Arrival Time and Burst Time for Process Process Number 1 :0 5
Enter Arrival Time and Burst Time for Process Process Number 2 :1 3
Enter Arrival Time and Burst Time for Process Process Number 3 :2 3
Enter Arrival Time and Burst Time for Process Process Number 4 :4 1
Enter Time Quantum:     2


Process |Turnaround Time|Waiting Time

P[4]    |       3       |       2
P[2]    |       9       |       6
P[3]    |       9       |       6
P[1]    |       12      |       7

Average Waiting Time= 5.250000
Avg Turnaround Time = 8.250000[Geu@localhost Desktop]$ 
```

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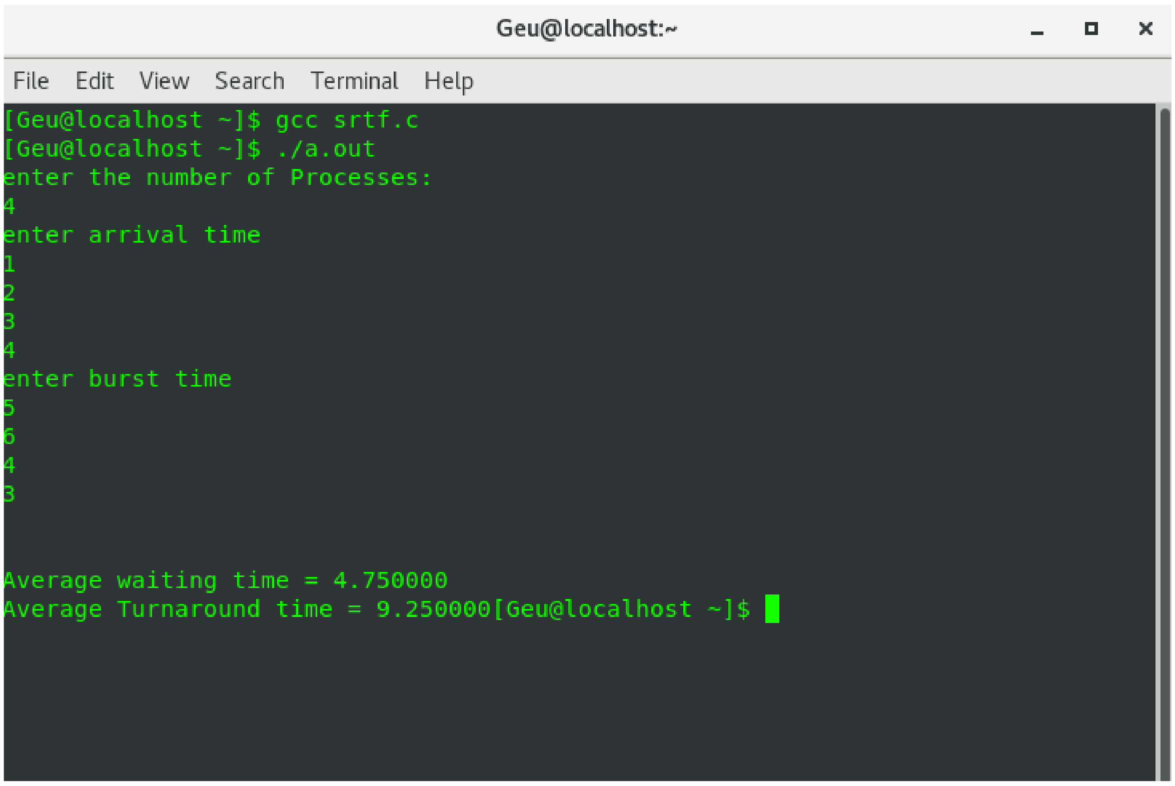
Q10. Implementation of SHORTEST REMAINING TIME FIRST ALGORITHM. Calculate the average turnaround time and average waiting time and average response time.

```
#include <stdio.h>
int main()
{
int a[10],b[10],x[10],i,j,smallest,count=0,time,n;
double avg=0,tt=0,end;
printf("enter the number of Processes:\n");
scanf("%d",&n);
printf("enter arrival time\n");
for(i=0;i<n;i++)
scanf("%d",&a[i]);
printf("enter burst time\n");
for(i=0;i<n;i++)
scanf("%d",&b[i]);
for(i=0;i<n;i++)
x[i]=b[i];
b[9]=9999;
for(time=0;count!=n;time++)
{
smallest=9;
for(i=0;i<n;i++)
{
if(a[i]<=time && b[i]<b[smallest] && b[i]>0 )
smallest=i;
}
b[smallest]--;
if(b[smallest]==0)
{
count++;
end=time+1;
avg=avg+end-a[smallest]-x[smallest];
tt= tt+end-a[smallest];
}
}
printf("\n\nAverage waiting time = %lf\n",avg/n);
printf("Average Turnaround time = %lf",tt/n);
return 0;
}
```

OUTPUT



```
[Geu@localhost ~]$ gcc srtf.c
[Geu@localhost ~]$ ./a.out
enter the number of Processes:
4
enter arrival time
1
2
3
4
enter burst time
5
6
4
3


Average waiting time = 4.750000
Average Turnaround time = 9.250000[Geu@localhost ~]$
```

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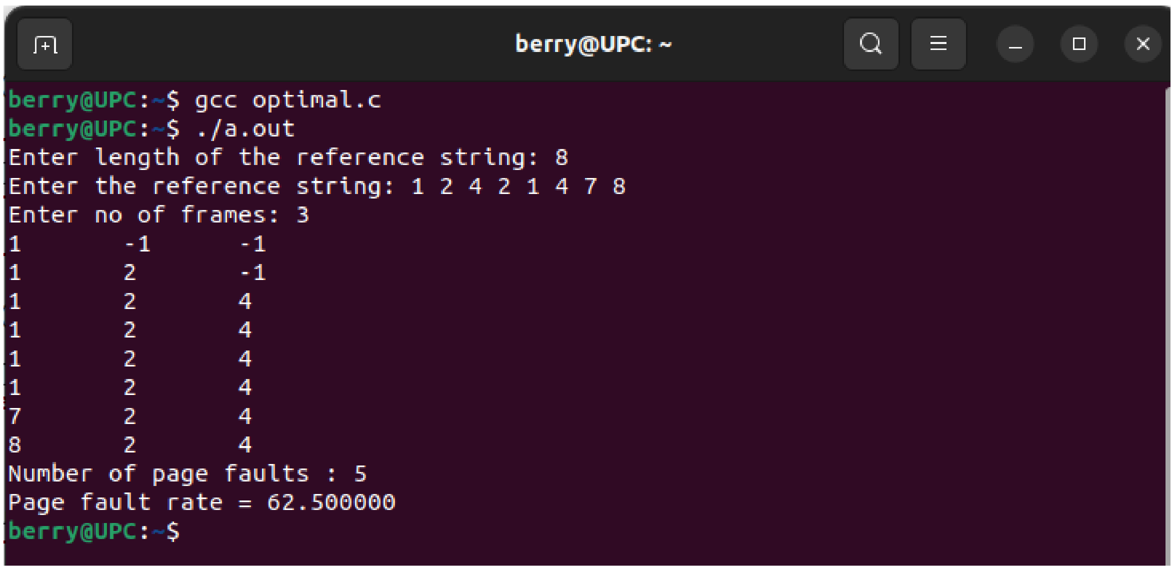
Q11. Implementation of OPTIMAL PAGE REPLACEMENT POLICY. Calculate the number of misses for a given sequence of page numbers. (sequence and frame number will be given by user).

```
#include<stdio.h>
int fr[3], n, m;
void display();
int main()
{
int i,j,page[20],fs[10];
int max,found=0,lg[3],index,k,l,flag1=0,flag2=0,pf=0;
float pr;
printf("Enter length of the reference string: ");
scanf("%d",&n);
printf("Enter the reference string: ");
for(i=0;i<n;i++)
scanf("%d",&page[i]);
printf("Enter no of frames: ");
scanf("%d",&m);
for(i=0;i<m;i++)
fr[i]=-1;
pf=m;
for(j=0;j<n;j++)
{
flag1=0;
flag2=0;
for(i=0;i<m;i++)
{
if(fr[i]==page[j])
{
flag1=1;
flag2=1;
break;
}
```

```
}
if(flag1==0)
{
for(i=0;i<m;i++)
{
if(fr[i]==-1)
{
fr[i]=page[j];
flag2=1;
break;
}
}
}
if(flag2==0)
{
for(i=0;i<m;i++)
lg[i]=0;
for(i=0;i<m;i++)
{
for(k=j+1;k<=n;k++)
{
if(fr[i]==page[k])
{
lg[i]=k-j;
break;
}
}
}
found=0;
for(i=0;i<m;i++)
{
if(lg[i]==0)
{
index=i;
found = 1;
break;
}
}
if(found==0)
{
max=lg[0]; index=0;
for(i=0;i<m;i++)
{
if(max<lg[i])
{
max=lg[i];
index=i;
}
}
}
fr[index]=page[j];
pf++;
}
display();
}
printf("Number of page faults : %d\n", pf);
pr=(float)pf/n*100;
printf("Page fault rate = %f \n", pr);
return 0;
}
void display()
{
int i; for(i=0;i<m;i++)
printf("%d\t",fr[i]);
printf("\n");
}
```

OUTPUT



```
berry@UPC:~$ gcc optimal.c
berry@UPC:~$ ./a.out
Enter length of the reference string: 8
Enter the reference string: 1 2 4 2 1 4 7 8
Enter no of frames: 3
1       -1      -1
1       2       -1
1       2       4
1       2       4
1       2       4
1       2       4
7       2       4
8       2       4
Number of page faults : 5
Page fault rate = 62.500000
berry@UPC:~$
```

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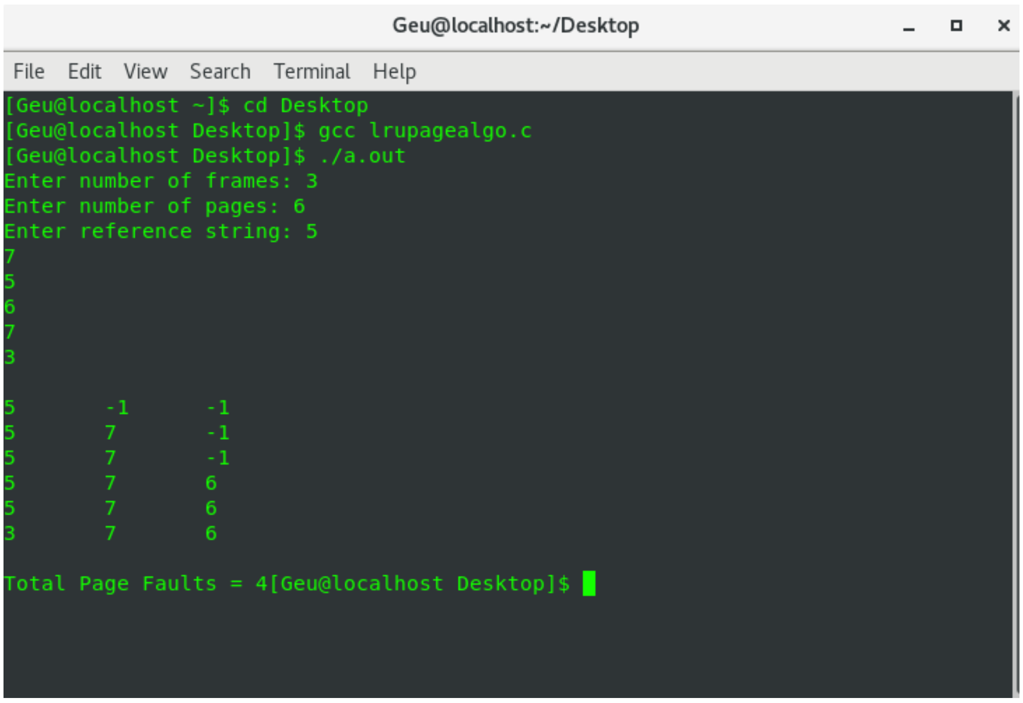
Q12.Implementation of LRU PAGE REPLECMENT POLICY. Calculate the number of misses for a given sequence of page numbers. (sequence and frame number will be given by user).

```
#include<stdio.h>
int findLRU(int time[], int n){
int i, minimum = time[0], pos = 0;
for(i = 1; i < n; ++i){
if(time[i] < minimum){
minimum = time[i];
pos = i;
}
}
return pos;
}
int main()
{
int no_of_frames, no_of_pages, frames[10], pages[30],
counter = 0, time[10], flag1, flag2, i, j, pos, faults = 0;
printf("Enter number of frames: ");
scanf("%d", &no_of_frames);
printf("Enter number of pages: ");
scanf("%d", &no_of_pages);
printf("Enter reference string: ");
for(i = 0; i < no_of_pages; ++i){
scanf("%d", &pages[i]);
}
for(i = 0; i < no_of_frames; ++i){
frames[i] = -1;
}
for(i = 0; i < no_of_pages; ++i){
flag1 = flag2 = 0;
for(j = 0; j < no_of_frames; ++j){
if(frames[j] == pages[i]){
counter++;
time[j] = counter;
flag1 = flag2 = 1;
break; } }
if(flag1 == 0){
for(j = 0; j < no_of_frames; ++j){
if(frames[j] == -1){
counter++;
faults++;
frames[j] = pages[i];
time[j] = counter;
flag2 = 1;
break; } } }
if(flag2 == 0){
pos = findLRU(time, no_of_frames);
counter++;
faults++;
frames[pos] = pages[i];
time[pos] = counter; }
printf("\n");
for(j = 0; j < no_of_frames; ++j){
printf("%d\t", frames[j]);
}
}
printf("\n\nTotal Page Faults = %d", faults);
return 0;
}
```

OUTPUT



```
[Geu@localhost ~]$ cd Desktop
[Geu@localhost Desktop]$ gcc lrupagealgo.c
[Geu@localhost Desktop]$ ./a.out
Enter number of frames: 3
Enter number of pages: 6
Enter reference string: 5
7
5
6
7
3

5       -1      -1
5       7       -1
5       7       -1
5       7       6
5       7       6
3       7       6

Total Page Faults = 4[Geu@localhost Desktop]$ 
```

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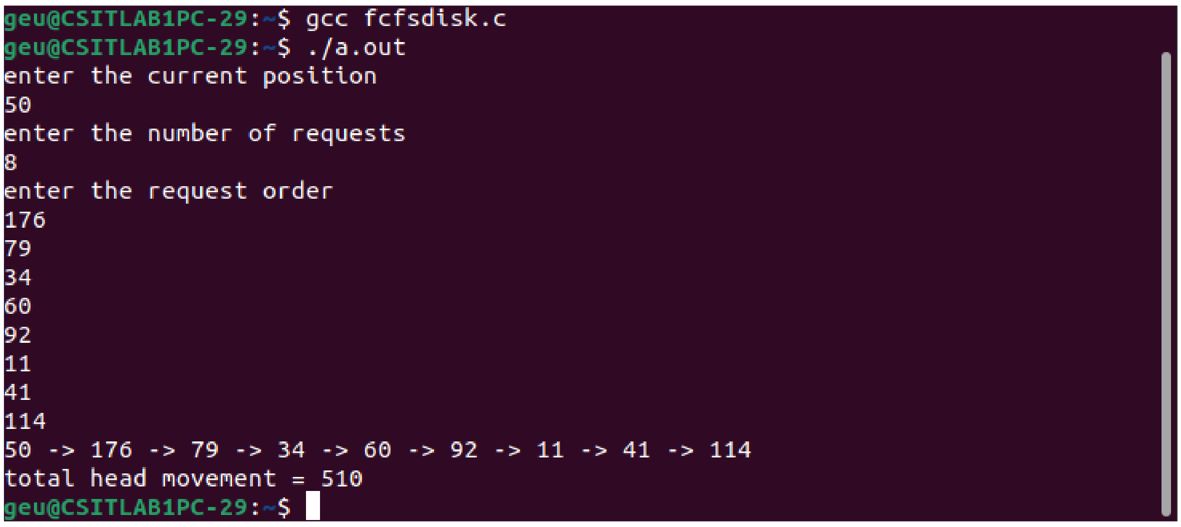
Q13. WAP to implement FCFS disk scheduling algorithm. Calculate the total seek time.

```
#include<math.h>
#include<stdio.h>
#include<stdlib.h>
int main()
{
int i,n,req[50],mov=0,cp;
printf("enter the current position\n");
scanf("%d",&cp);
printf("enter the number of requests\n");
scanf("%d",&n);
printf("enter the request order\n");
for(i=0;i<n;i++)
{
scanf("%d",&req[i]);
}
mov=mov+abs(cp-req[0]); // abs is used to calculate the
absolute value
printf("%d -> %d",cp,req[0]);
for(i=1;i<n;i++)
{
mov=mov+abs(req[i]-req[i-1]);
printf(" -> %d",req[i]);
}
printf("\n");
printf("total head movement = %d\n",mov);
}
```

OUTPUT



```
geu@CSITLAB1PC-29:~$ gcc fcfsdisk.c
geu@CSITLAB1PC-29:~$ ./a.out
enter the current position
50
enter the number of requests
8
enter the request order
176
79
34
60
92
11
41
114
50 -> 176 -> 79 -> 34 -> 60 -> 92 -> 11 -> 41 -> 114
total head movement = 510
geu@CSITLAB1PC-29:~$
```

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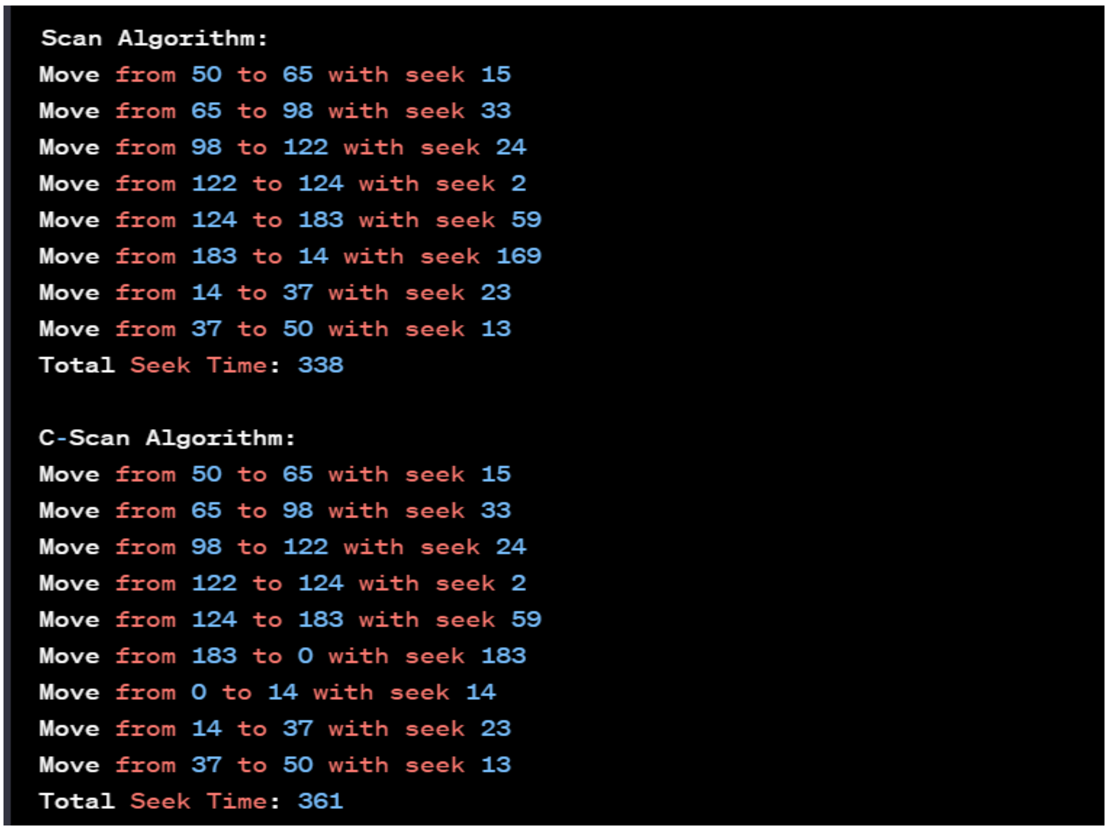
Q14. WAP to implement Scan and C-scan disk scheduling algorithm. Calculate the total seek time

```
#include <stdio.h>

#include <stdlib.h>

// Function to perform the Scan disk scheduling algorithm

void scan(int arr[], int head, int size) {

   int distance, total_seek_time = 0;

   int current = head;

   // Sorting the array to simplify the scan algorithm

   qsort(arr, size, sizeof(int), compare);


   // Finding the index of the head

   int index = 0;

   while (arr[index] < head) {

      index++;

   }


   // Moving towards the end

   for (int i = index; i < size; i++) {

      distance = abs(arr[i] - current);

      total_seek_time += distance;

      current = arr[i];

      printf("Move from %d to %d with seek %d\n", current - distance, current, distance);

   }
```

```
    // Moving towards the beginning
    for (int i = index - 1; i >= 0; i--) {
        distance = abs(arr[i] - current);
        total_seek_time += distance;
        current = arr[i];
        printf("Move from %d to %d with seek %d\n", current + distance, current, distance);
    }

    printf("Total Seek Time: %d\n", total_seek_time);
}

// Function to perform the C-Scan disk scheduling algorithm
void cscan(int arr[], int head, int size) {
    int distance, total_seek_time = 0;
    int current = head;

    // Sorting the array to simplify the cscan algorithm
    qsort(arr, size, sizeof(int), compare);

    // Finding the index of the head
    int index = 0;
    while (arr[index] < head) {
        index++;
    }

    // Moving towards the end
    for (int i = index; i < size; i++) {
        distance = abs(arr[i] - current);
        total_seek_time += distance;
        current = arr[i];
        printf("Move from %d to %d with seek %d\n", current - distance, current, distance);
    }

    // Moving to the beginning (circular)
    distance = abs(arr[0] - current) + abs(arr[size - 1] - arr[0]);
    total_seek_time += distance;
    current = arr[0];
    printf("Move from %d to %d with seek %d\n", current + distance, current, distance);

    // Moving towards the end again
    for (int i = 1; i < index; i++) {
        distance = abs(arr[i] - current);
        total_seek_time += distance;
        current = arr[i];
        printf("Move from %d to %d with seek %d\n", current - distance, current, distance);
    }
    printf("Total Seek Time: %d\n", total_seek_time);
}
// Function to compare integers for qsort
int compare(const void *a, const void *b) {
    return (*(int *)a - *(int *)b);
}

int main() {
    int cylinders[] = {98, 183, 37, 122, 14, 124, 65, 67};
    int size = sizeof(cylinders) / sizeof(cylinders[0]);
    printf("Scan Algorithm:\n");
    scan(cylinders, 50, size);
    printf("\nC-Scan Algorithm:\n");
    cscan(cylinders, 50, size);
    return 0;
}
```

OUTPUT



```
Scan Algorithm:
Move from 50 to 65 with seek 15
Move from 65 to 98 with seek 33
Move from 98 to 122 with seek 24
Move from 122 to 124 with seek 2
Move from 124 to 183 with seek 59
Move from 183 to 14 with seek 169
Move from 14 to 37 with seek 23
Move from 37 to 50 with seek 13
Total Seek Time: 338

C-Scan Algorithm:
Move from 50 to 65 with seek 15
Move from 65 to 98 with seek 33
Move from 98 to 122 with seek 24
Move from 122 to 124 with seek 2
Move from 124 to 183 with seek 59
Move from 183 to 0 with seek 183
Move from 0 to 14 with seek 14
Move from 14 to 37 with seek 23
Move from 37 to 50 with seek 13
Total Seek Time: 361
```

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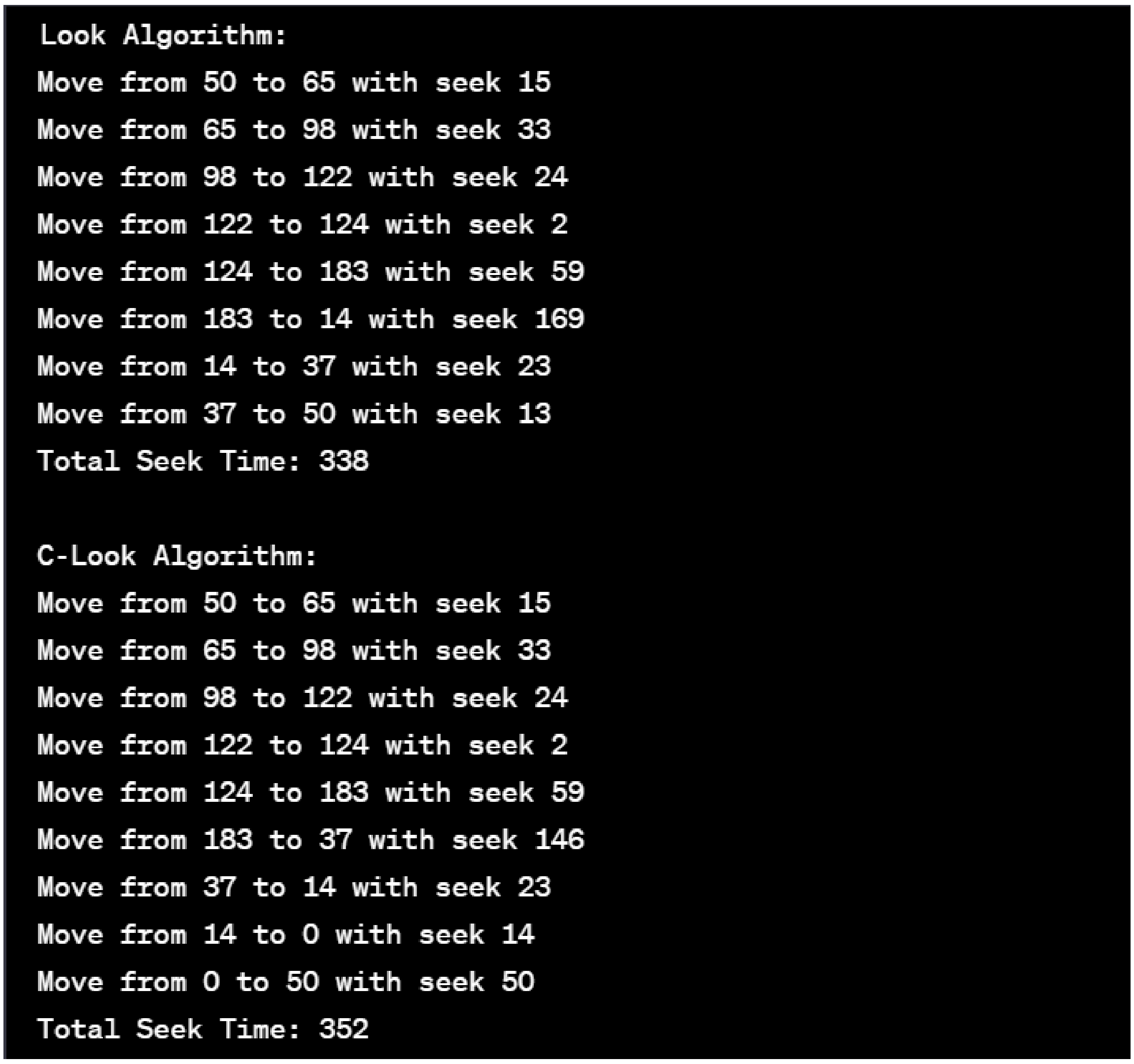
Q15. WAP to implement Look and C-look disk scheduling algorithm. Calculate the total seek time.

```
#include <stdio.h>
#include <stdlib.h>

// Function to perform the Look disk scheduling algorithm
void look(int arr[], int head, int size) {
    int distance, total_seek_time = 0;
    int current = head;

    // Sorting the array to simplify the look algorithm
    qsort(arr, size, sizeof(int), compare);

    // Finding the index of the head
    int index = 0;
    while (arr[index] < head) {
        index++;
    }

    // Moving towards the end
    for (int i = index; i < size; i++) {
        distance = abs(arr[i] - current);
        total_seek_time += distance;
        current = arr[i];
        printf("Move from %d to %d with seek %d\n", current - distance, current, distance);
    }
    // Moving towards the beginning
    for (int i = index - 1; i >= 0; i--) {
        distance = abs(arr[i] - current);
        total_seek_time += distance;
        current = arr[i];
        printf("Move from %d to %d with seek %d\n", current - distance, current, distance);
    }

    printf("Total Seek Time: %d\n", total_seek_time);
}

// Function to perform the C-Look disk scheduling algorithm
void clook(int arr[], int head, int size) {
    int distance, total_seek_time = 0;
    int current = head;

    // Sorting the array to simplify the clook algorithm
    qsort(arr, size, sizeof(int), compare);

    // Finding the index of the head
    int index = 0;
    while (arr[index] < head) {
        index++;
    }

    // Moving towards the end
    for (int i = index; i < size; i++) {
        distance = abs(arr[i] - current);
        total_seek_time += distance;
        current = arr[i];
        printf("Move from %d to %d with seek %d\n", current - distance, current, distance);
    }

    // Moving towards the beginning (circular)
    for (int i = 0; i < index; i++) {
        distance = abs(arr[i] - current);
        total_seek_time += distance;
        current = arr[i];
        printf("Move from %d to %d with seek %d\n", current - distance, current, distance);
    }

    printf("Total Seek Time: %d\n", total_seek_time);
}

// Function to compare integers for qsort
int compare(const void *a, const void *b) {
    return (*(int *)a - *(int *)b);
}

int main() {
    int cylinders[] = {98, 183, 37, 122, 14, 124, 65, 67};
    int size = sizeof(cylinders) / sizeof(cylinders[0]);

    printf("Look Algorithm:\n");
    look(cylinders, 50, size);

    printf("\nC-Look Algorithm:\n");
    clook(cylinders, 50, size);
    return 0;
}
```

OUTPUT



```
Look Algorithm:
Move from 50 to 65 with seek 15
Move from 65 to 98 with seek 33
Move from 98 to 122 with seek 24
Move from 122 to 124 with seek 2
Move from 124 to 183 with seek 59
Move from 183 to 14 with seek 169
Move from 14 to 37 with seek 23
Move from 37 to 50 with seek 13
Total Seek Time: 338

C-Look Algorithm:
Move from 50 to 65 with seek 15
Move from 65 to 98 with seek 33
Move from 98 to 122 with seek 24
Move from 122 to 124 with seek 2
Move from 124 to 183 with seek 59
Move from 183 to 37 with seek 146
Move from 37 to 14 with seek 23
Move from 14 to 0 with seek 14
Move from 0 to 50 with seek 50
Total Seek Time: 352
```