Assignment 1

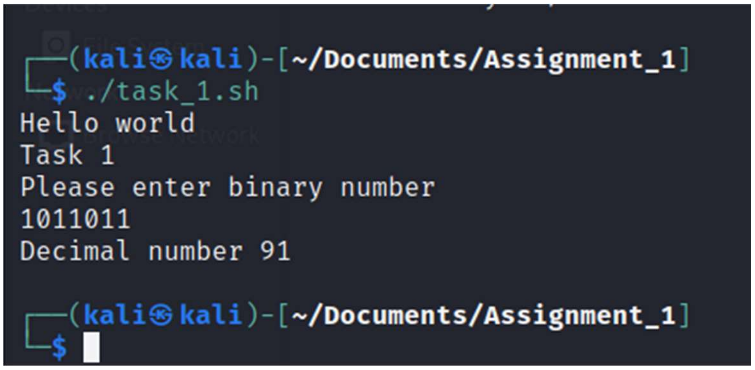
OS Lab 110698

11762 Muhammad Kashif

Task 1 a (Binary to Decimal)

```
#!/bin/bash
echo "Hello world"
echo "Task 1"
echo "Please enter binary number "
read num
dec=0
power=0
while [ $num -ne 0 ]
do
mod=$((num%10))
num=$((num/10))
mod=$((mod*2**power))
dec=$((dec+mod))
power=$((power+1))
done
echo "Decimal number $dec"
```

output



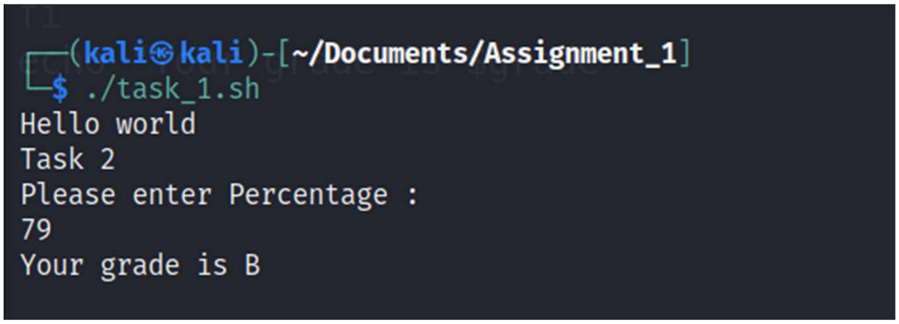
```
┌──(kali㉿kali)-[~/Documents/Assignment_1]
└─$ ./task_1.sh
Hello world
Task 1
Please enter binary number
1011011
Decimal number 91

┌──(kali㉿kali)-[~/Documents/Assignment_1]
└─$ 
```

Task 1 b (Grade decider)

```
#!/bin/bash
echo "Hello world"
echo "Task 2"
echo "Please enter Percentage : "
read num
grade=""
if [ $num -ge 0 ] && [ $num -lt 60 ]
then
grade="F"
elif [ $num -ge 60 ] && [ $num -lt 72 ]
then
```

```
grade="C"
elif [ $num -ge 72 ] && [ $num -lt 87 ]
then
grade="B"
elif [ $num -ge 87 ] && [ $num -le 100 ]
then
grade="A"
fi
echo "Your grade is $grade"
```

Output

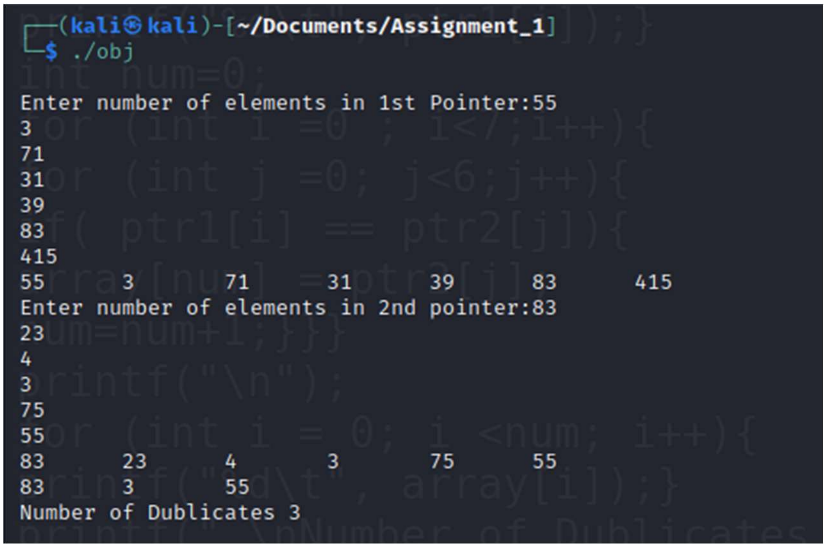


```
┌──(kali㉿kali)-[~/Documents/Assignment_1]
└─$ ./task_1.sh
Hello world
Task 2
Please enter Percentage :
79
Your grade is B
```

Task 2

```
#include<stdio.h>
#include<stdlib.h>
int main(){
int*ptr1;
int*ptr2;
int *array;
int a=0;
ptr1 = (int*)malloc(7 * sizeof(int));
array = (int*)malloc(7 * sizeof(int));
ptr2 = (int*)malloc(7 * sizeof(int));
printf("\nEnter number of elements in 1st Pointer:");
for (int i = 0; i <7 ; i++){
scanf("%d",&ptr1[i]);}
for (int i = 0; i <7 ; i++){
printf("%d\t", ptr1[i]);
ptr2[i]=ptr1[i];}
ptr1=realloc(ptr1,6);
printf("\nEnter number of elements in 2nd pointer:");
for (int i = 0; i <6 ; i++){
scanf("%d",&ptr1[i]);}
for (int i = 0; i <6 ; i++){
printf("%d\t", ptr1[i]);}
int num=0;
for (int i =0 ; i<7;i++){
for (int j =0; j<6;j++){
if( ptr1[i] == ptr2[j]){
array[num] = ptr2[j];
num=num+1;}}}
printf("\n");
for (int i = 0; i <num; i++){
printf("%d\t", array[i]);}
printf(" \nNumber of Dublicates %d\t", num);
return 0;}
```

Output

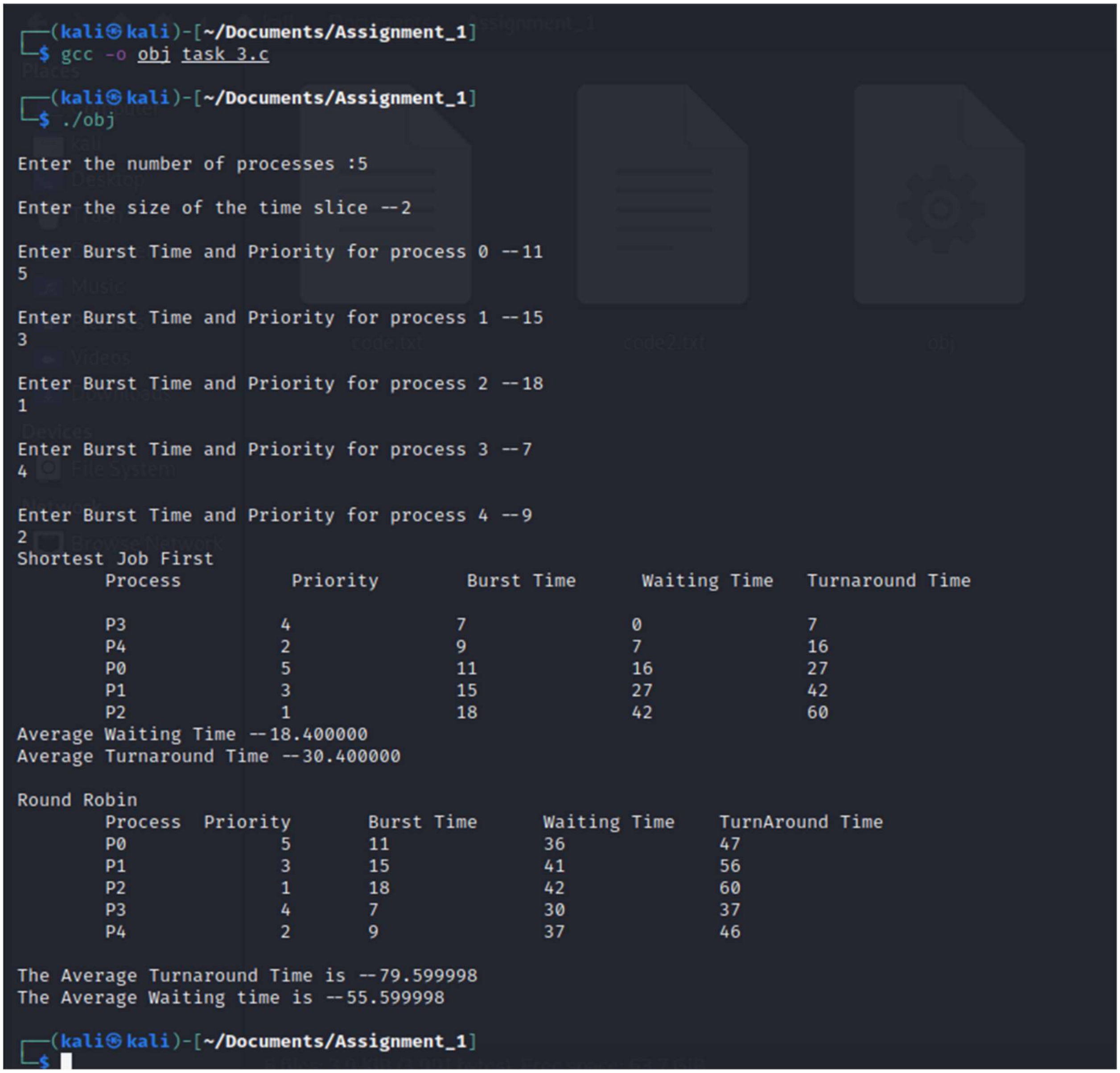


```
┌──(kali㉿kali)-[~/Documents/Assignment_1]
└─$ ./obj

Enter number of elements in 1st Pointer:55
3
71
31
39
83
415
55      3       71      31      39      83      415
Enter number of elements in 2nd pointer:83
23
4
3
75
55
83      23      4       3       75      55
83      3       55
Number of Dublicates 3
```

Task 3

```
#include<stdio.h>
int main(){
int bt[20],bt2[20],wt[20],tat[20],i,n,p[20],p2[20],k,prt[20],prt2[20],t,ct[20], max;
float wtavg, tatavg, temp,j;
printf("\nEnter the number of processes :");
scanf("%d",&n);
printf("\nEnter the size of the time slice --");
scanf("%d",&t);
for (i = 0;i<n;i++){
p[i]=i;
p2[i]=i;
printf("\nEnter Burst Time and Priority for process %d --",i);
scanf("%d %d",&bt[i], &prt[i]);
ct[i]=bt[i];
prt2[i]=prt[i];
bt2[i]=bt[i];}
for(i=0;i<n;i++){
for(k=i+1;k<n;k++){
if(bt[i]>bt[k]){
temp=bt[i];
bt[i]=bt[k];
bt[k]=temp;
temp=prt[i];
prt[i]=prt[k];
prt[k]=temp;
temp=p[i];
p[i]=p[k];
p[k]=temp;}}}
wt[0]= wtavg =0;
tat[0] = tatavg = bt[0];
for (i=1;i<n;i++){
wt[i]= wt[i-1] + bt[i-1];
tat[i] = tat[i-1] + bt[i];
wtavg = wtavg + wt[i];
tatavg = tatavg+tat[i];}
printf("Shortest Job First\n");
printf("\tProcess \t Priority \t Burst Time \t Waiting Time \tTurnaround Time\n");
for(i=0;i<n;i++){
printf("\n\tP%d\t\t%d\t\t%d\t\t%d\t\t%d",p[i],prt[i],bt[i],wt[i],tat[i]);}
printf("\nAverage Waiting Time --%f",wtavg/n);
printf("\nAverage Turnaround Time --%f\n",tatavg/n);
temp = 0;
printf("\nRound Robin");
max = bt2[0];
for (i=1;i<n;i++){
if(max<bt2[i]){
max=bt2[i];}}
for (j=0;j<(max/t)+1;j++){
for (i=0;i<n;i++){
if (bt2[i] != 0){
if (bt2[i] <= t){
tat[i]=temp+bt2[i];
temp=temp+bt2[i];
bt2[i]=0;}
else{
bt2[i]=bt2[i]-t;
temp=temp+t;}}}}
for(i=0;i<n;i++){
wt[i]=tat[i]-ct[i];
tatavg+=tat[i];
wtavg+=wt[i];}
printf("\n\tProcess\t Priority\tBurst Time \tWaiting Time\tTurnAround Time\n");
for(i=0;i<n;i++){
printf("\tP%d \t\t%d\t%d \t\t%d\t\t%d\n",p2[i],prt2[i],ct[i],wt[i],tat[i]);}
printf("\nThe Average Turnaround Time is --%f",tatavg/n);
printf("\nThe Average Waiting time is --%f",wtavg/n);}
```

Output



```
┌──(kali㉿kali)-[~/Documents/Assignment_1]
└─$ gcc -o obj task_3.c

┌──(kali㉿kali)-[~/Documents/Assignment_1]
└─$ ./obj

Enter the number of processes :5

Enter the size of the time slice --2

Enter Burst Time and Priority for process 0 --11
5

Enter Burst Time and Priority for process 1 --15
3

Enter Burst Time and Priority for process 2 --18
1

Enter Burst Time and Priority for process 3 --7
4

Enter Burst Time and Priority for process 4 --9
2
Shortest Job First
        Process          Priority        Burst Time      Waiting Time   Turnaround Time

        P3              4               7               0               7
        P4              2               9               7               16
        P0              5               11              16              27
        P1              3               15              27              42
        P2              1               18              42              60
Average Waiting Time --18.400000
Average Turnaround Time --30.400000

Round Robin
        Process  Priority       Burst Time      Waiting Time    TurnAround Time
        P0              5       11              36              47
        P1              3       15              41              56
        P2              1       18              42              60
        P3              4       7               30              37
        P4              2       9               37              46

The Average Turnaround Time is --79.599998
The Average Waiting time is --55.599998

┌──(kali㉿kali)-[~/Documents/Assignment_1]
└─$ 
```