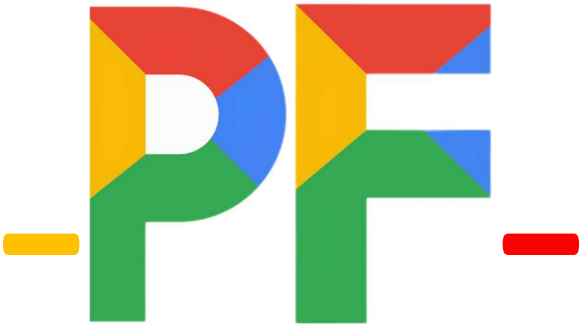


NATIONAL UNIVERSITY
of Computer & Emerging Sciences

Course: CL1002 – Programming Fundamentals Lab.

Instructor: Sir Muhammad Usman

Submitted by: Muhammad Rehan

Roll no. 22P-9106

Class: BSE-1A (Fall 2022)

Assignment no. 01

Date: September 22th, 2022.

Department of Computer Science

All the code is uploaded on GitHub, you could check it over there if it is more effortless for you.
https://github.com/Rohtanza/CL1002-PFLab./tree/main/Assignment%2001

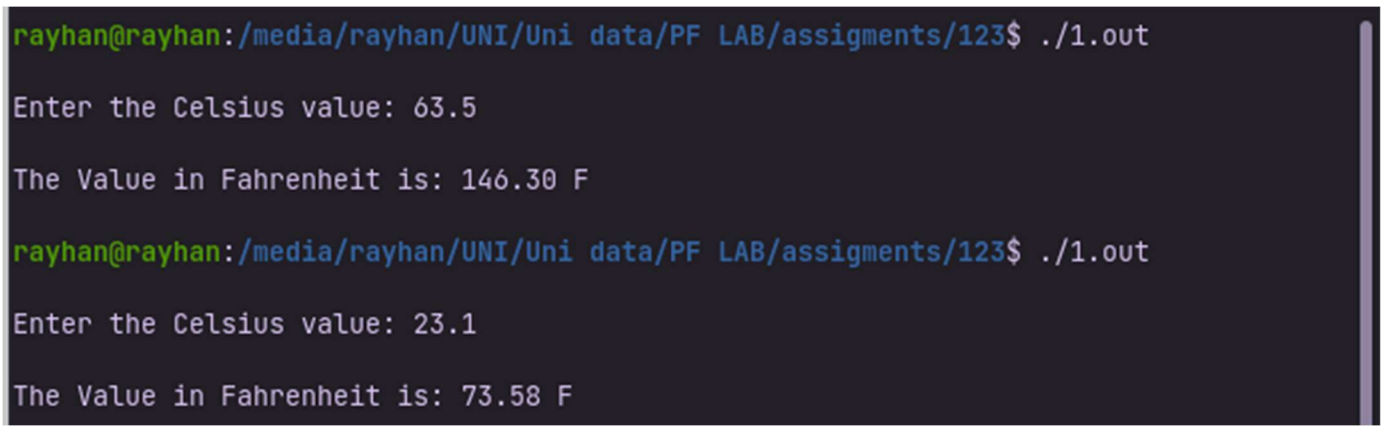
Problem 01:

I've used float because mostly temperature values are in decimal point. Using int means less efficient program. I called the function inside the code it makes code more compact and its looks cool.

Code:

```c
//Converts Celsius to Fahrenheit
/*Float is been used instead of int
beacuse of Accuracy and Precision.
& caculation is limited in int.
and C to F conversion gives
result in decimal point*/
#include<stdio.h>
float celsiusToFahrenheit(float celsius);
int main()
{
float celsius;
printf("\nEnter the Celsius value: ");
scanf("%f",&celsius);
//Calling function inside of printf to improve code efficency
printf("\nThe Value in Fahrenheit is: %.2f F\n\n",celsiusToFahrenheit(celsius));
return 0;
}
// A Function which converts Celsius to Fahrenheiit.
float celsiusToFahrenheit(float celsius)
{
return (celsius*9/5+32);
}
```

Screenshots:



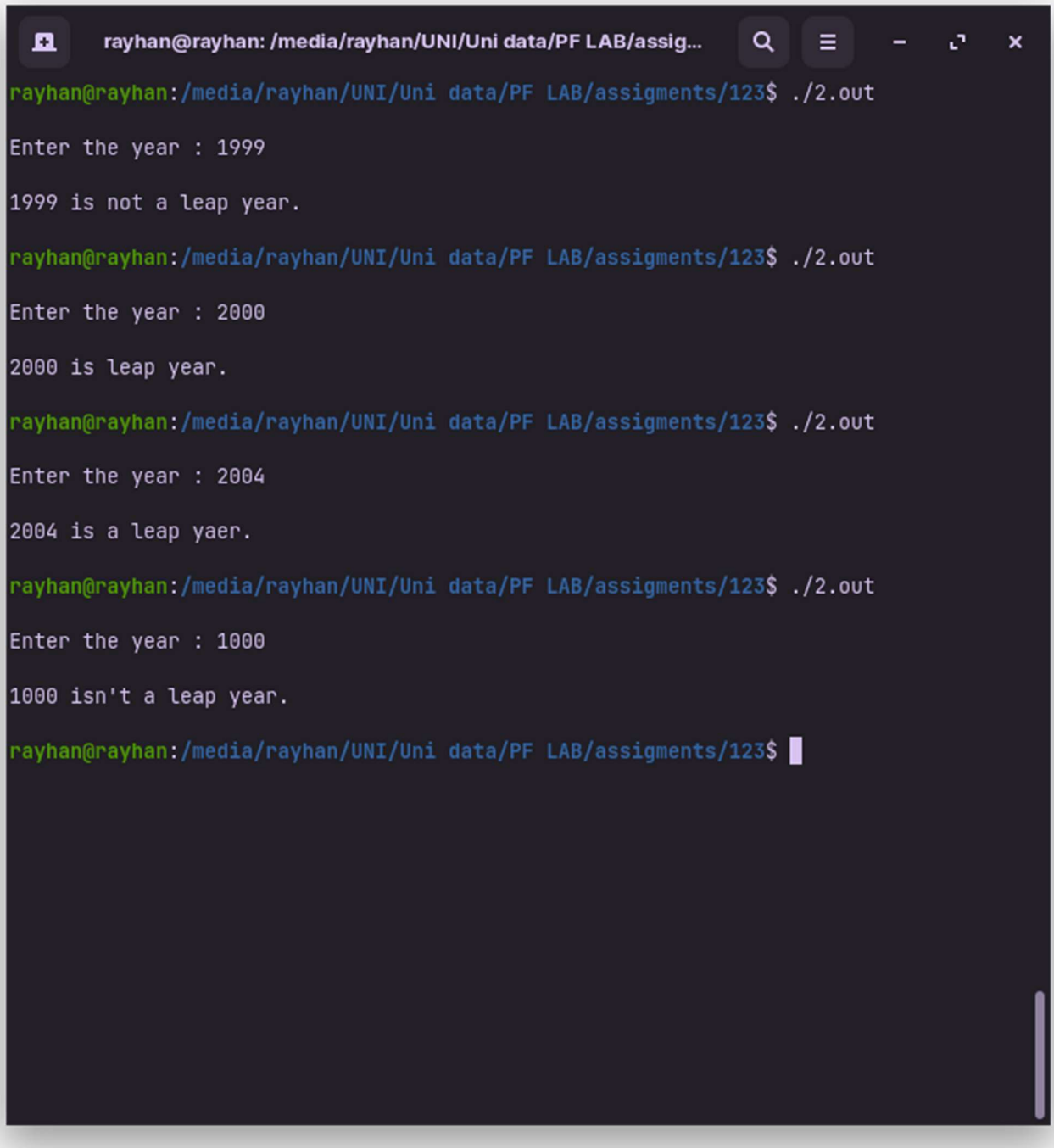
Problem 02:

Main function will input the value and give it to function which will then determine whether it's a leap year or not.

Code:

```
//Program to Check whether is leap or not.
#include<stdio.h>
void isleap(int year);
int main()
{
int year;
printf("\nEnter the year : ");
scanf("%d",&year);
isleap(year);
return 0;
}
void isleap(int year)
//Above funtion will determine weather a year is leap or not.
//Using nested if-else.
{
//Checking if its a century year
if (year%100==0)
{
//if its a Century year then it's divisible by 400.
    if(year%400==0)
    {
    printf("\n%d is leap year.\n\n",year);
    }
else
    {
    printf("\n%d isn't a leap year.\n\n",year);
    }
}
else
{
//if it aint a Century year then it's divisible by 4.
    if(year%4==0)
    {
    printf("\n%d is a leap yaer.\n\n",year);
    }
    else
    {
    printf("\n%d is not a leap year.\n\n",year);
    }
}}
```

Screenshot:

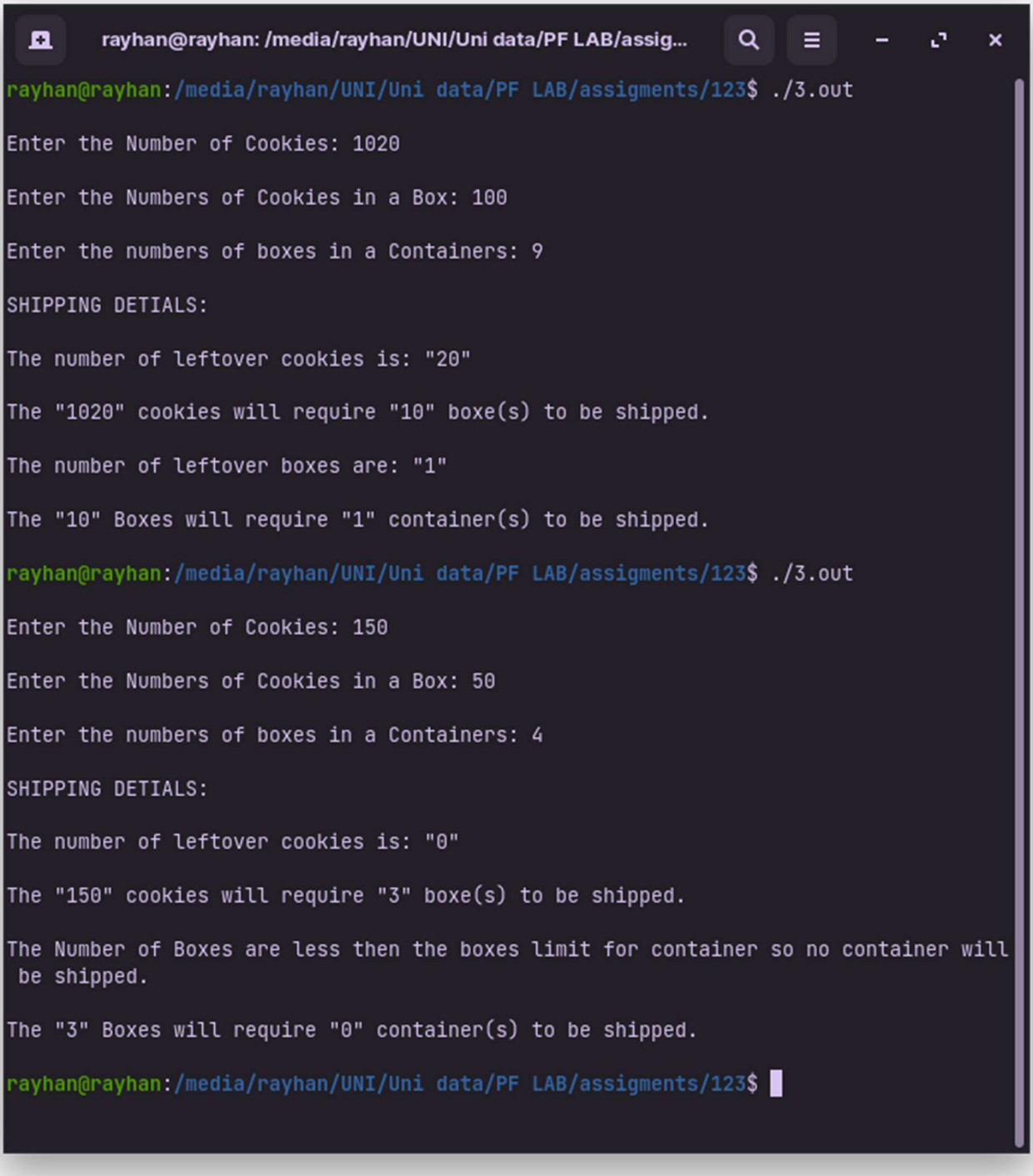

rayhan@rayhan: /media/rayhan/UNI/Uni data/PF LAB/assig...
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./2.out
Enter the year : 1999
1999 is not a leap year.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./2.out
Enter the year : 2000
2000 is leap year.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./2.out
Enter the year : 2004
2004 is a leap yaer.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./2.out
Enter the year : 1000
1000 isn't a leap year.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$

Problem 03:

```c
//Program to Calculate Cookies,Boxes and Containers Shipment.
#include<stdio.h>
int BoxCal(int Cookies,int NumOfBox);
//Above Function will Calculate Boxes and leftover Cookies.
int ConCal(int Box,int NumOfCon);
//Above Function will Calculate Containers and leftover Boxes.
int main()
{
    int Cookies,NumOfBox,NumOfCon,Box,Con;
    printf("\nEnter the Number of Cookies: ");
    scanf("%d",&Cookies);
    printf("\nEnter the Numbers of Cookies in a Box: ");
    scanf("%d",&NumOfBox);
    printf("\nEnter the numbers of boxes in a Containers: ");
    scanf("%d",&NumOfCon);
    printf("\nSHIPPING DETIALS:\n");
    Box=BoxCal(Cookies,NumOfBox);
   printf("\nThe \"%d\" cookies will require \"%d\" boxe(s) to be
shipped.\n",Cookies,Box);
    Con=ConCal(Box,NumOfCon);
     printf("\nThe \"%d\" Boxes will require \"%d\" container(s) to be
shipped.\n\n",Box,Con);

return 0;}
int BoxCal(int Cookies,int NumOfBox)
{
   int boxes,leftover;
   // Calculating Boxes to be shipped.
   boxes=Cookies/NumOfBox;
   // Calculating Leftcover Cookies.
   leftover=Cookies%NumOfBox;
   printf("\nThe number of leftover cookies is: \"%d\"\n",leftover);
   return boxes;
   // Returning boxes to main to be printed.
}
int ConCal(int Box, int NumOfCon)
{
 if (NumOfCon>Box)
 {printf("\nThe Number of Boxes are less then the boxes limit for container so no
container will be shipped.\n");
 return 0;}
 else
 {int contain,leftoverbox;
 // Calculating Containers to be shipped.
 contain=Box/NumOfCon;
 // Calculating Leftover Boxes.
 leftoverbox=Box%NumOfCon;
 printf("\nThe number of leftover boxes are: \"%d\"\n",leftoverbox);
 return contain;
 // returning Containers to main to be printed.
 }}
```

Screenshot:

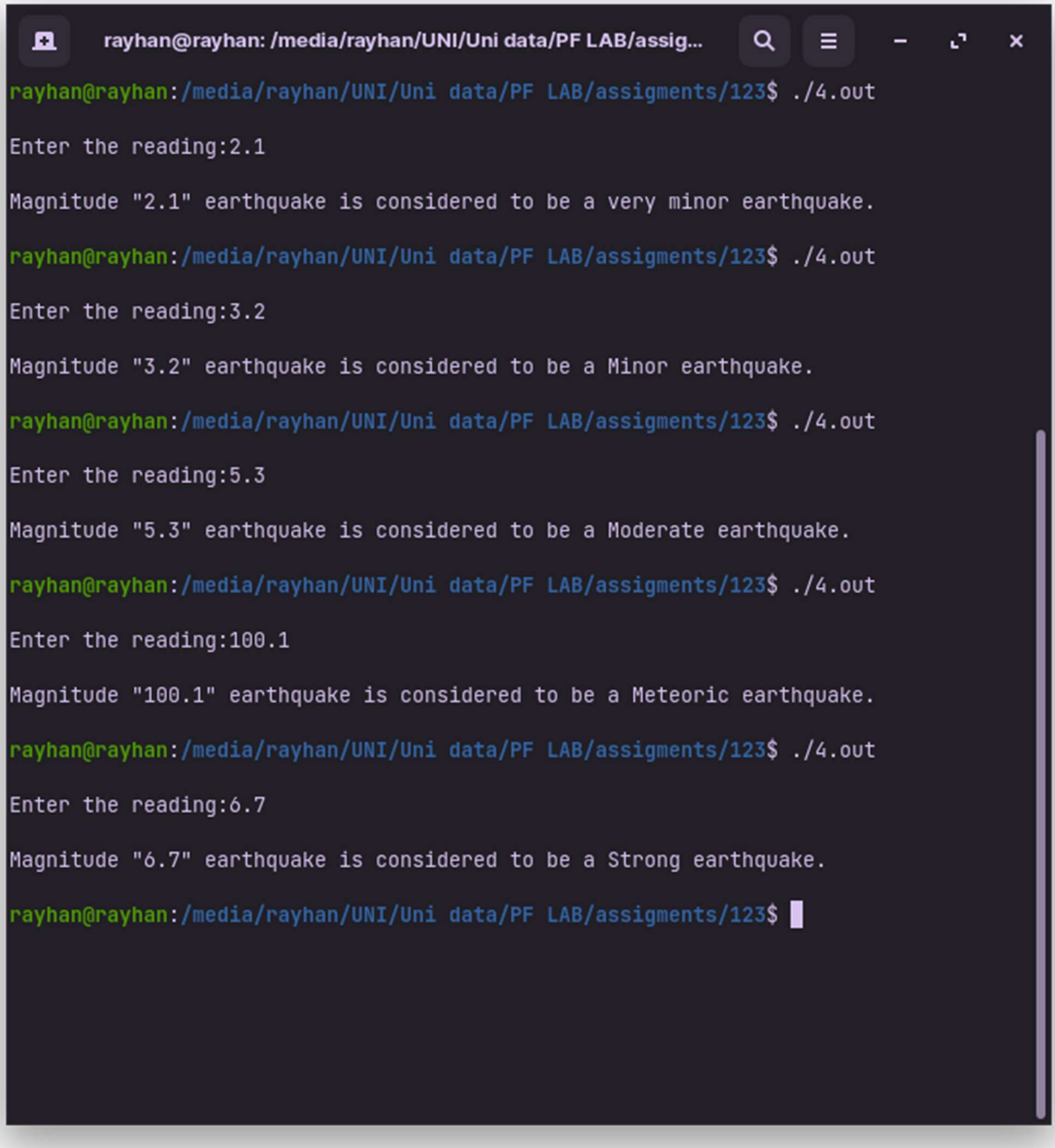

rayhan@rayhan: /media/rayhan/UNI/Uni data/PF LAB/assig...
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./3.out
Enter the Number of Cookies: 1020
Enter the Numbers of Cookies in a Box: 100
Enter the numbers of boxes in a Containers: 9
SHIPPING DETIALS:
The number of leftover cookies is: "20"
The "1020" cookies will require "10" boxe(s) to be shipped.
The number of leftover boxes are: "1"
The "10" Boxes will require "1" container(s) to be shipped.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./3.out
Enter the Number of Cookies: 150
Enter the Numbers of Cookies in a Box: 50
Enter the numbers of boxes in a Containers: 4
SHIPPING DETIALS:
The number of leftover cookies is: "0"
The "150" cookies will require "3" boxe(s) to be shipped.
The Number of Boxes are less then the boxes limit for container so no container will be shipped.
The "3" Boxes will require "0" container(s) to be shipped.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$

Problem 4:

Code:

```
//EarthQuick mangitude range checker.
//Program is pretty much simple.
//Using "if" and rucursion of "else if" to read ranges.
#include<stdio.h>
int main()
{
float read;
printf("\nEnter the reading:");
scanf("%f",&read);
// Reading Magnitudes using relational operators.
if(read<2.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a Micro
earthquake.\n\n",read);}
else if(read==2.0||read<3.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a very minor
earthquake.\n\n",read);}
else if(read==3.0||read<4.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a Minor
earthquake.\n\n",read);}
else if(read==4.0||read<5.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a Light
earthquake.\n\n",read);}
else if(read==5.0||read<6.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a Moderate
earthquake.\n\n",read);}
else if(read==6.0||read<7.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a Strong
earthquake.\n\n",read);}
else if(read==7.0||read<8.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a Major
earthquake.\n\n",read);}
else if(read==8.0||read<10.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a Great
earthquake.\n\n",read);}
else if(read>=10.0)
{printf("\nMagnitude \"%.1f\" earthquake is considered to be a Meteoric
earthquake.\n\n",read);}
else
return 0;
}
```

Screenshot:


rayhan@rayhan: /media/rayhan/UNI/Uni data/PF LAB/assig...
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./4.out
Enter the reading:2.1
Magnitude "2.1" earthquake is considered to be a very minor earthquake.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./4.out
Enter the reading:3.2
Magnitude "3.2" earthquake is considered to be a Minor earthquake.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./4.out
Enter the reading:5.3
Magnitude "5.3" earthquake is considered to be a Moderate earthquake.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./4.out
Enter the reading:100.1
Magnitude "100.1" earthquake is considered to be a Meteoric earthquake.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./4.out
Enter the reading:6.7
Magnitude "6.7" earthquake is considered to be a Strong earthquake.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$

Problem 05:

Code:

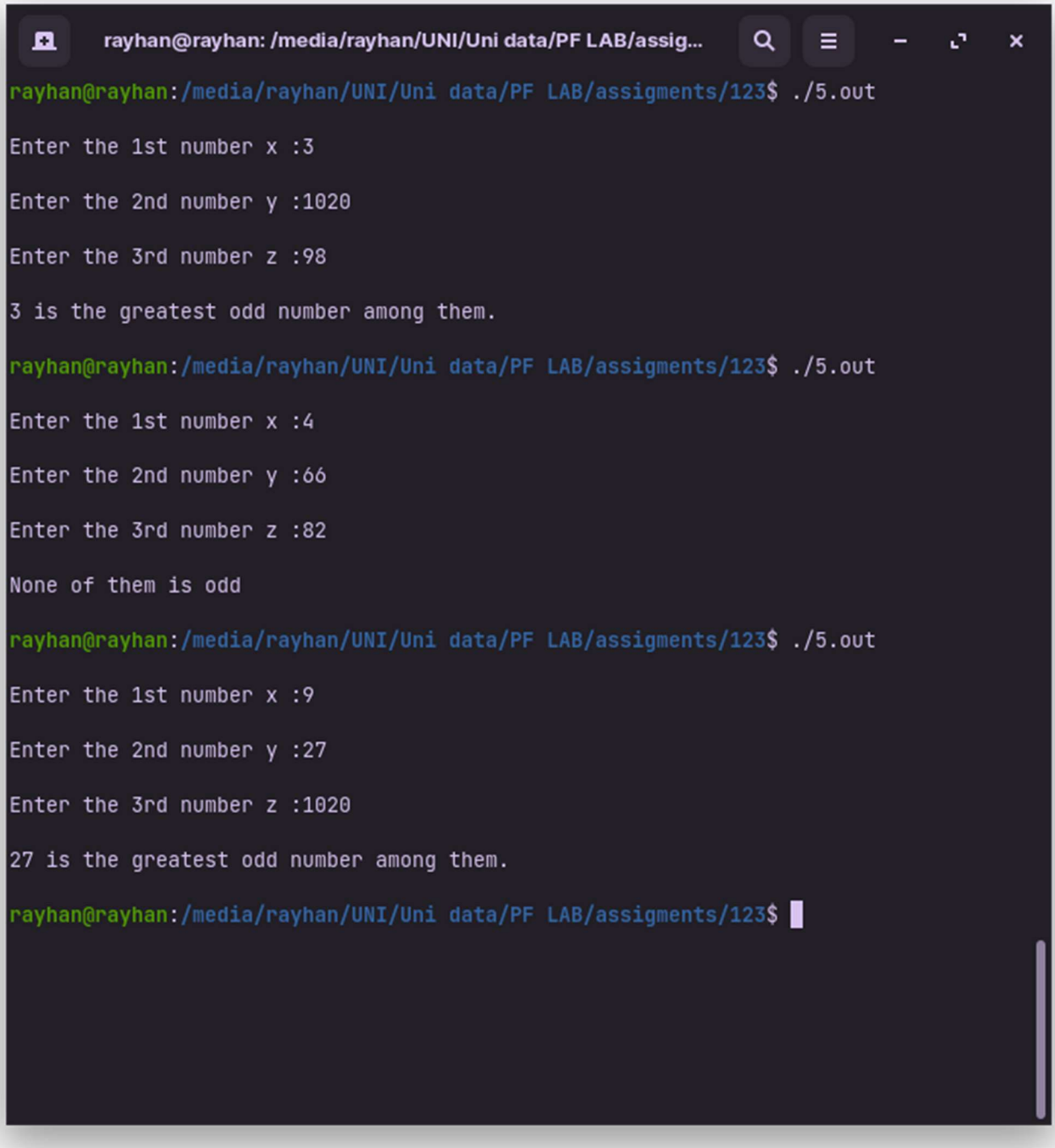
```c
//Program to examin Greatest odd number and determin the nature to numbers.
//Program detects if none of them is odd and show relative output.
#include<stdio.h>
int main()
{
     int x,y,z;
     printf("\nEnter the 1st number x :");
     scanf("%d",&x);
     printf("\nEnter the 2nd number y :");
     scanf("%d",&y);
     printf("\nEnter the 3rd number z :");
     scanf("%d",&z);

if(x%2!=0||y%2!=0||z%2!=0)
// Determining if any of input is odd.
// If one of them is odd them determing the Greatest one.
  {
     if(x%2==0)
     {x=0;}
     if(y%2==0)
     {y=0;}
     if(z%2==0)
     {z=0;}
     if(x>y && x>y)
     {printf("\n%d is the greatest odd number among them.\n\n",x);}
     else if( y>x && y>z)
     {printf("\n%d is the greatest odd number among them.\n\n",y);}
     else
     {printf("\n%d is the greastest odd number among them.\n\n",z);}

  }
// If none of them is odd then the following output is shown.
else
  {
      printf("\nNone of them is odd\n\n");
  }

return 0;}
```

Screenshot:


rayhan@rayhan: /media/rayhan/UNI/Uni data/PF LAB/assig...
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./5.out
Enter the 1st number x :3
Enter the 2nd number y :1020
Enter the 3rd number z :98
3 is the greatest odd number among them.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./5.out
Enter the 1st number x :4
Enter the 2nd number y :66
Enter the 3rd number z :82
None of them is odd
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./5.out
Enter the 1st number x :9
Enter the 2nd number y :27
Enter the 3rd number z :1020
27 is the greatest odd number among them.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$

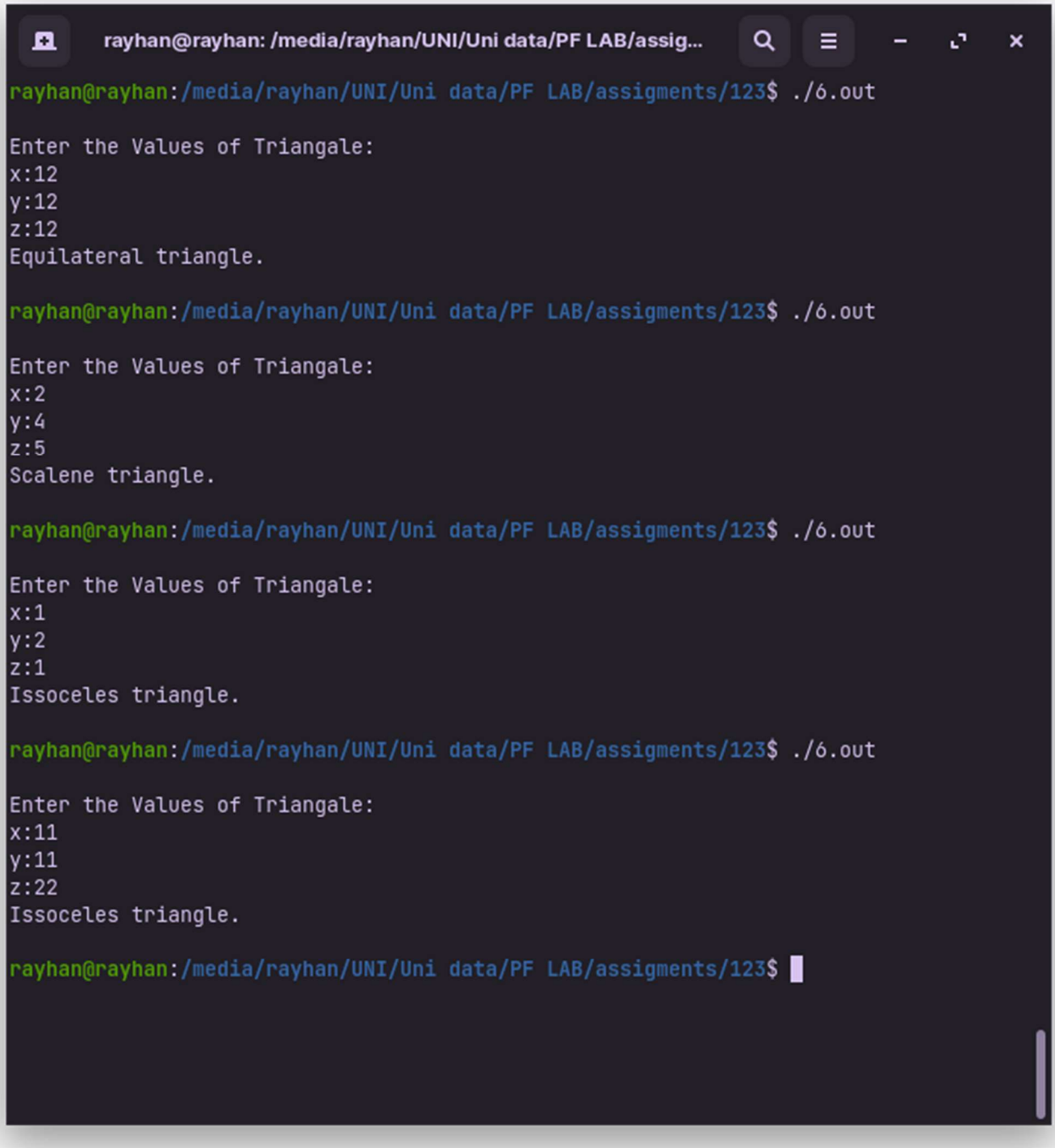
Problem 06:

Code:

```c
//Program to check if triangle is equilateral, isosceles or scalene.
#include<stdio.h>
void TriangleChecker(int x,int y,int z);
//Above Function checks the type of Triangle.
int main()
{
    int x,y,z;
    printf("\nEnter the Values of Triangale:\nx:");
    scanf("%d",&x);
    printf("y:");
    scanf("%d",&y);
    printf("z:");
    scanf("%d",&z);
    TriangleChecker(x,y,z);
    return 0;}

    void TriangleChecker(int x,int y,int z)
    {
       if(x==y&&y==z&&x==z)
       // Checking if all sides are equal.
         {printf("Equilateral triangle.\n\n");}
       if(x!=y&&y!=z&&x!=z)
       // Checking is all sides are unequal.
         {printf("Scalene triangle.\n\n");}
       if(x==y&&x!=z||x==z&&x!=y||y==z&&y!=x)
       // Checking if one two of sides are equal.
         {printf("Issoceles triangle.\n\n");}
     }
```

Screenshot:

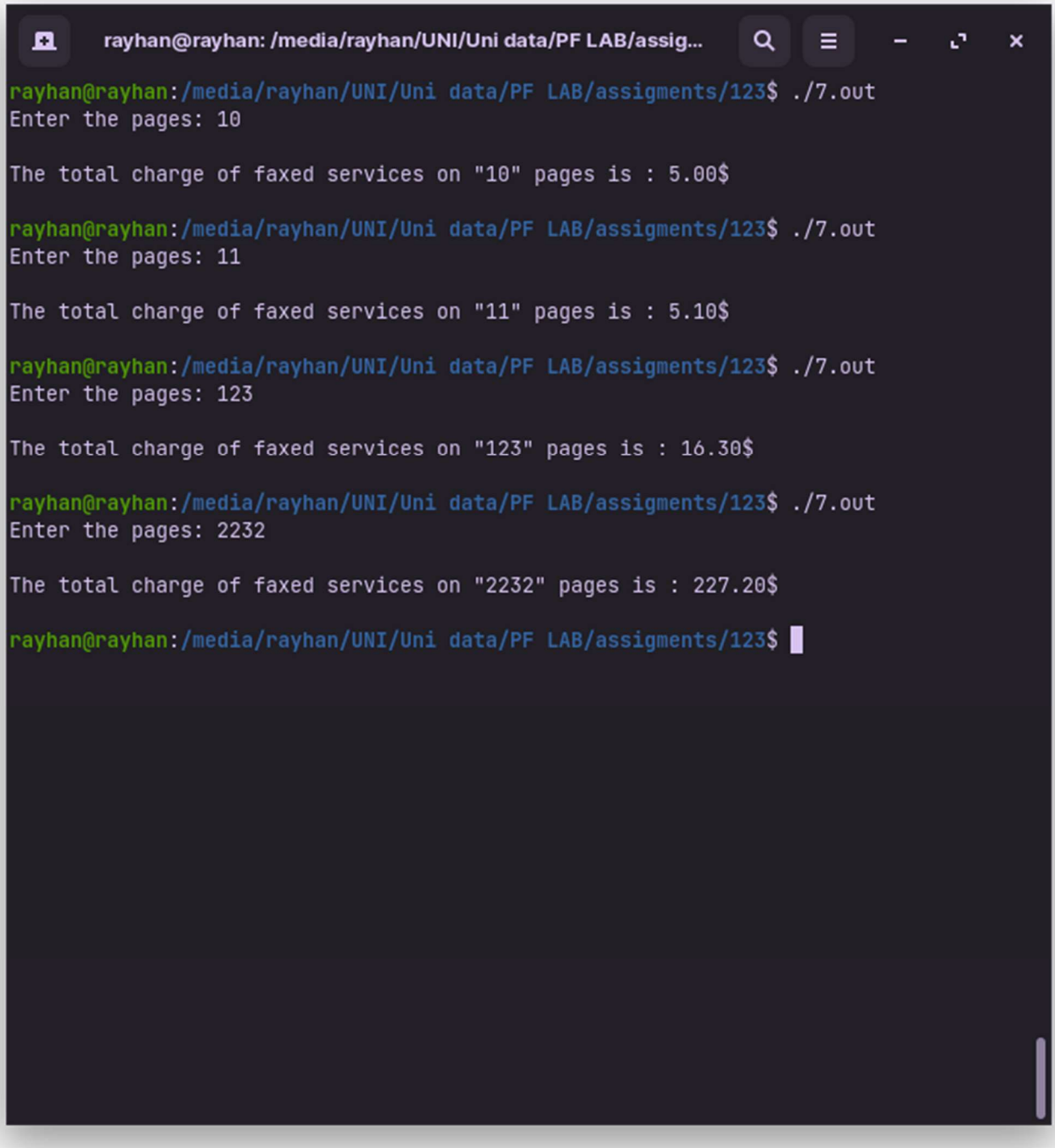

rayhan@rayhan: /media/rayhan/UNI/Uni data/PF LAB/assig...
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./6.out
Enter the Values of Triangale:
x:12
y:12
z:12
Equilateral triangle.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./6.out
Enter the Values of Triangale:
x:2
y:4
z:5
Scalene triangle.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./6.out
Enter the Values of Triangale:
x:1
y:2
z:1
Issoceles triangle.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./6.out
Enter the Values of Triangale:
x:11
y:11
z:22
Issoceles triangle.
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$

Problem 07:

Code:

```
//Program to Calculate the Cost of Fax service.
#include<stdio.h>
// Defining Constants to use in Prgram.
#define servicecharge 3.00
#define charge1 0.20
// Charge1 is for first ten pages.
#define charge2 0.10
// Charge2 is for pages other then the first ten pages.
#define limit 10
float ChargeCal(float Pages);
//Function to Calculate cost.
int main()
{
float Pages;
printf("Enter the pages: ");
scanf("%f",&Pages);
printf("\nThe total charge of faxed services on \"%.0f\" pages is : %.2f$
\n\n",Pages,ChargeCal(Pages));
return 0;
}
float ChargeCal (float Pages)
{
  if(Pages<=limit)
  //Checking if pages are equal or less then 10.
  return (servicecharge+(Pages*charge1));
  else
  {
  float AmountDue,Page1,Page2;
  //Page1 is pages after the frist ten pages.
  //Page2 is frist then pages.
  Page1=Pages-limit;
  Page2=Pages-Page1;
  AmountDue=((Page2*charge1)+(Page1*charge2)+servicecharge);
  return AmountDue;
  }
}
```

Screenshot:


rayhan@rayhan: /media/rayhan/UNI/Uni data/PF LAB/assig...
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./7.out
Enter the pages: 10
The total charge of faxed services on "10" pages is : 5.00$
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./7.out
Enter the pages: 11
The total charge of faxed services on "11" pages is : 5.10$
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./7.out
Enter the pages: 123
The total charge of faxed services on "123" pages is : 16.30$
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$ ./7.out
Enter the pages: 2232
The total charge of faxed services on "2232" pages is : 227.20$
rayhan@rayhan:/media/rayhan/UNI/Uni data/PF LAB/assigments/123$