Bangladesh University of Business and Technology

(BUBT)

Lab Report

Lab Report No: 02

Course: Object Oriented Programming Lab

Course Code: CSE 112

Date of Submission:

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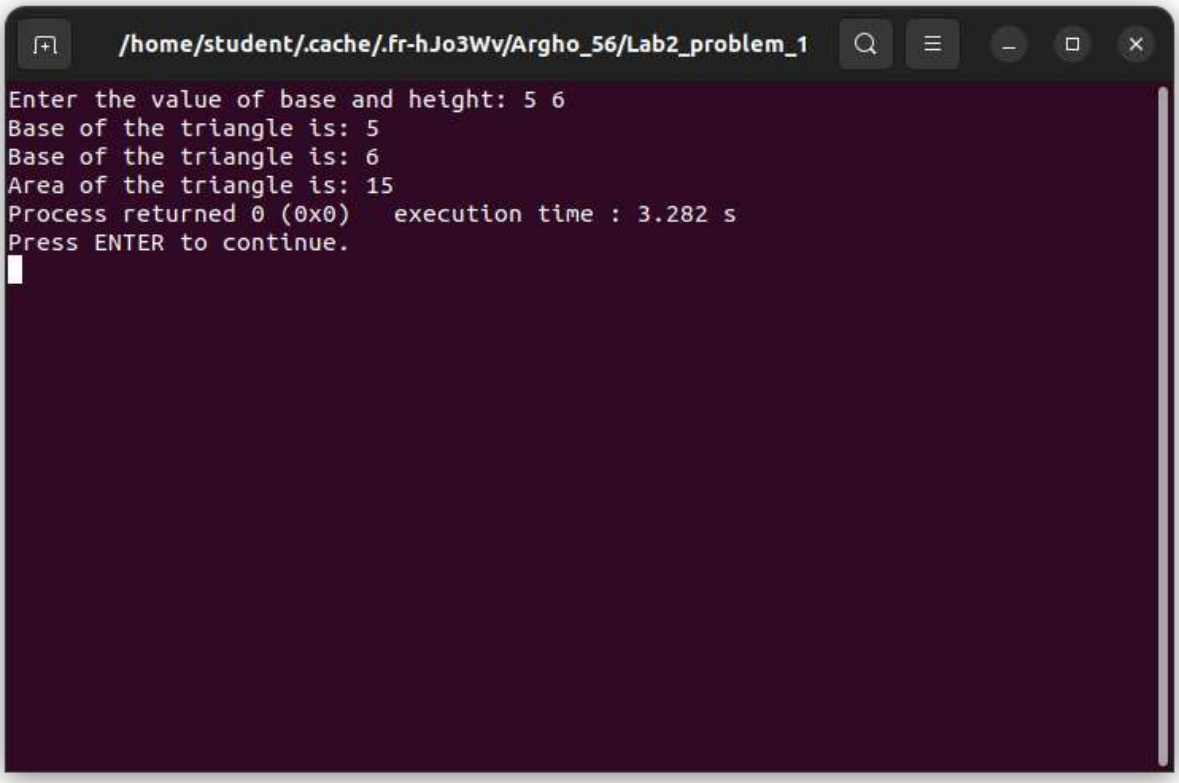
Problem 1:

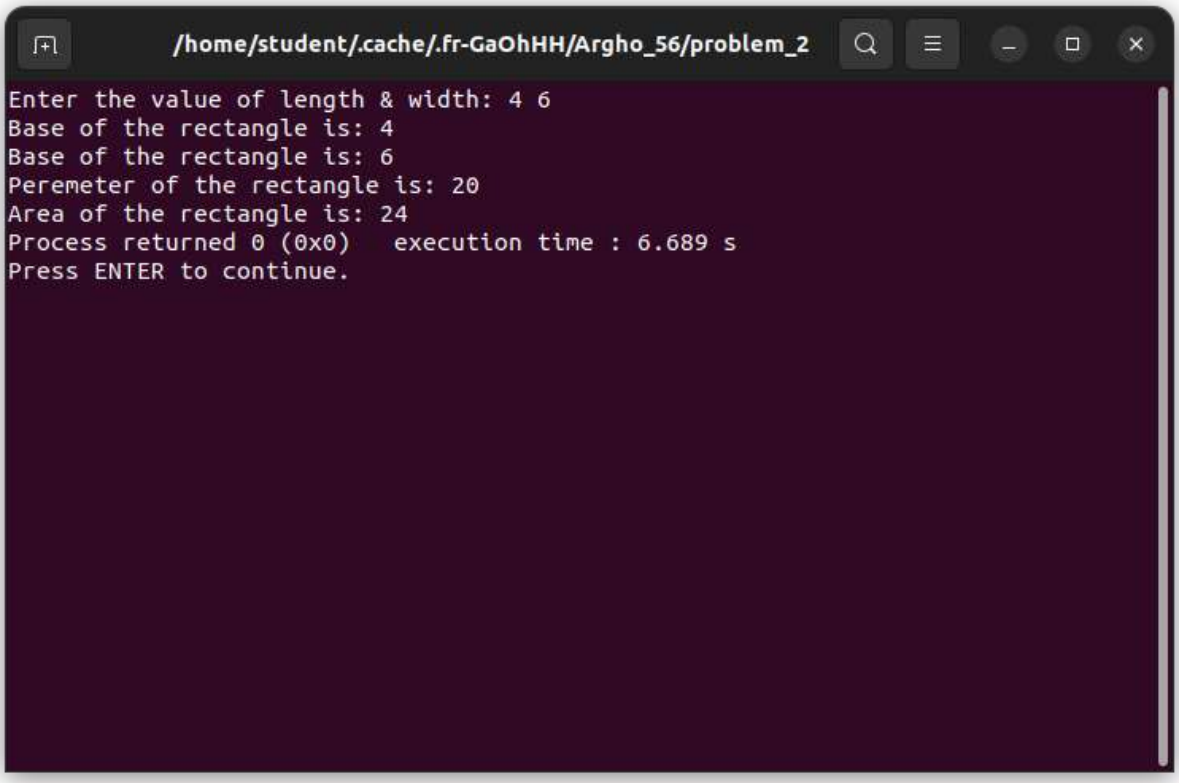
```
#include<bits/stdc++.h>
using namespace std;
class triangle
{
private:
    double base,height ;
public:
    void setvalue(double x,double y)
    {
        base= x;
        height=y;

    }
    double getBase()
    {
        return base;
    }
    double getheight()
    {
        return height;
    }
    double area()
    {
       return (0.5*base*height);
    }

};

int main()
{
  double a,b;
  cout<<"Enter the value of base and height: ";
  cin>>a>>b;
  triangle t;
  t.setvalue(a,b);
  cout<<"Base of the triangle is: "<<t.getBase()<<endl;
  cout<<"Base of the triangle is: "<<t.getheight()<<endl;
  cout<<"Area of the triangle is: "<<setprecision(3)<<t.area();

    return 0;
}
```



Problem 2:
Design a class named Rectangle that represents a rectangle. The class should have private attributes for the length and width of the rectangle. Implement public methods to calculate and return the area and perimeter of the rectangle. Create an object of this class, set the length and width, and display the area and perimeter.

```
#include<bits/stdc++.h>
using namespace std;
class rectangle
{
private:
   double length,width ;
public:
   void setvalue(double x,double y)
   {
      length = x;
      width=y;

   }
   double getlength()
   {
      return length;
   }
   double getwidth()
```

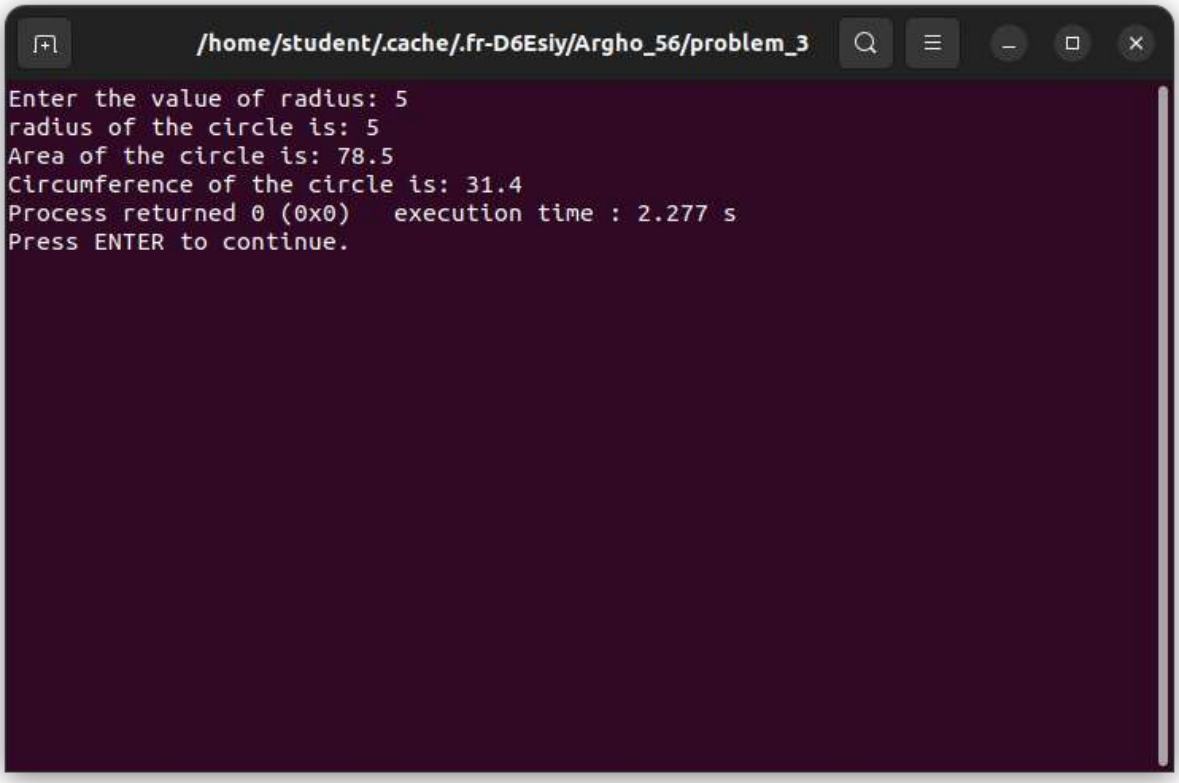
```
    {
        return width;
    }
    double area()
    {
       return (length*width);
    }
    double peremeter()
    {
        return 2*(length+width);
    }

};

int main()
{
  double a,b;
  cout<<"Enter the value of length & width: ";
  cin>>a>>b;
  rectangle t;
  t.setvalue(a,b);
  cout<<"Base of the rectangle is: "<<t.getlength()<<endl;
  cout<<"Base of the rectangle is: "<<t.getwidth()<<endl;
  cout<<"Peremeter of the rectangle is: "<<t.peremeter()<<endl;
  cout<<"Area of the rectangle is: "<<setprecision(3)<<t.area();

    return 0;
}
```



Problem 3:
Design a class named Circle that represents a circle. The class should have private attribute for the radius of the circle. Implement public methods to calculate and return the area and circumference of the circle. Create an object of this class, set the radius, and display the area and circumference.

```
#include<bits/stdc++.h>
using namespace std;
const double pi=3.1416;
class circle
{
private:
   double radius ;
public:
   void setvalue(double x)
   {
      radius= x;
   }
   double getradius()
   {
      return radius;
   }

   double area()
```

```
    {
      return (pi*radius*radius);
    }
    double circumference()
    {
       return 2*pi*radius;
    }

};

int main()
{
  double a;
  cout<<"Enter the value of radius: ";
  cin>>a;
  circle t;
  t.setvalue(a);
  cout<<"radius of the circle is: "<<t.getradius()<<endl;
  cout<<"Area of the circle is: "<<setprecision(3)<<t.area()<<endl;
  cout<<"Circumference of the circle is: "<<setprecision(3)<<t.circumference();

    return 0;
}
```



Problem 4:

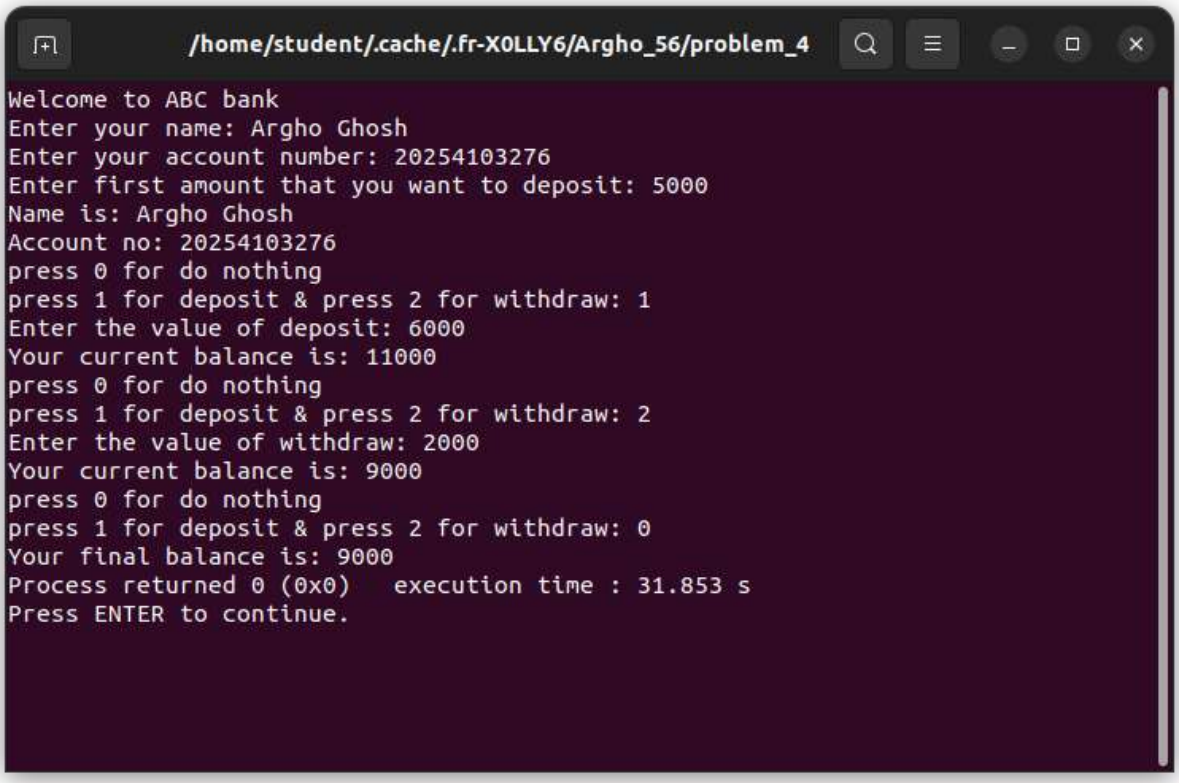
Design a class named BankAccount.The class should have

private attributes for account holder name, account number, and balance.
Implement public methods to:
Deposit an amount into the account
Withdraw an amount from the account
Display the current balance
Create an object of this class, set the account details, perform deposit and withdrawal operations, and display the final balance.

```
#include<bits/stdc++.h>
using namespace std;
class bank
{
private:
    string name;
    long long acc_num,balance;
public:
    void setName(string n)
    {
        name = n;
    }
    void setAcc(long long a)
    {
        acc_num = a;
    }
    void setBalance(long long b=0)
    {
        balance = b;
    }
    string getName()
    {
        return name;
    }
    long long getAcc()
    {
        return acc_num;
    }
    long long getBalance()
    {
        return balance;
    }
    long long deposit(long long x)
    {
        return balance += x;
    }
```

```
    long long withdraw(long long y)
    {
        return balance -= y;
    }



};

int main()
{
    cout<<"Welcome to ABC bank"<<endl;

    string s;
    cout<<"Enter your name: ";
    getline(cin,s);

    long long acc;
    cout<<"Enter your account number: ";
    cin>>acc;

    long long balance;
    cout<<"Enter first amount that you want to deposit: ";
    cin>>balance;

    bank a;
    a.setName(s);
    a.setAcc(acc);
    a.setBalance(balance);

    cout<<"Name is: "<<a.getName()<<endl;
    cout<<"Account no: "<<a.getAcc()<<endl;

    while(1)
    {
        cout<<"press 0 for do nothing"<<endl;
        cout<<"press 1 for deposit & press 2 for withdraw: ";
        string z;
        cin>>z;
        if(z=="1")
        {
            long long d;
            cout<<"Enter the value of deposit: ";
            cin>>d;
            a.deposit(d);
```

```
        }
        else if(z=="2")
        {
            long long c;
            cout<<"Enter the value of withdraw: ";
            cin>>c;
            a.withdraw(c);

        }
        else if(z=="0")
        {
            break;
        }
        else
        {
            cout<<"Invalid input"<<endl<<"Please give input 0,1 or 2"<<endl;
        }
        cout<<"Your current balance is: "<<a.getBalance()<<endl;

    }
    cout<<"Your final balance is: "<<a.getBalance();


}
```



Problem 5:
Design a class named Student that stores information about a student's name, roll number, and marks in three subjects. Implement methods to calculate the total marks and average marks. Create two objects for this class, set the values, and display the students' details along with the total and average marks.

```
#include<bits/stdc++.h>
using namespace std;
class student
{
private:
    string name;
    long long ID;
    double sub1,sub2,sub3;


public:
    void setName(string n)
    {
        name = n;
    }
    void setID(long long a)
    {
        ID = a;
```

```
    }
    void setMarks(double m1,double m2,double m3)
    {
        sub1 = m1;
        sub2 = m2;
        sub3 = m3;
        cout<<"CSE-111 = "<<sub1<<endl;
        cout<<"EEE-101 = "<<sub2<<endl;
        cout<<"CSE-112 = "<<sub3<<endl;
    }
    string getName()
    {
        return name;
    }
    long long getID()
    {
        return ID;
    }
    int getTotal()
    {
        return (sub1+sub2+sub3);
    }
    double getAvg()
    {
        return (sub1+sub2+sub3)/3;
    }
};
int main()
{
    student a;
    string s;
    cout<<"Enter your name: ";
    getline(cin,s);
    a.setName(s);

    long long b;
    cout<<"Enter your ID: ";
    cin>>b;
    a.setID(b);

    double m,n,t;
    cout<<"Enter your 3 subject marks: ";
    cin>>m>>n>>t;
```

```
    cout<<"Student name : "<<a.getName()<<endl;
    cout<<"Student ID: "<<a.getID()<<endl;
    a.setMarks(m,n,t);
    cout<<"Total marks: "<<a.getTotal()<<endl;
    cout<<"Average = "<<a.getAvg()<<endl;


}
```