



AMA INTERNATIONAL UNIVERSITY – BAHRAIN

Salmabad, Kingdom of Bahrain  
COLLEGE OF COMPUTER STUDIES

✓ 1<sup>st</sup> Tri, 2<sup>nd</sup> Tri, 3<sup>rd</sup> Tri, Summer, SY 2017-2018

CSCI431 - COMPUTER PROGRAMMING - II (Term Project)

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LAST DATE OF SUBMISSION IS 26.11.2017 FOR LECTURE AND 28.11.2017 FOR LAB – CO

LAST DATE OF SUBMISSION IS 26.11.2017 FOR LAB AND 28.11.2017 FOR LECTURE – CN

LAST DATE OF SUBMISSION IS 27.11.2017 FOR LECTURE AND 28.11.2017 FOR LAB – CM

### Instructions:

**FOR LAB :** You will be asked to develop a series of programs based on the concepts learned in this course. You will also be asked to execute these programs followed by a brief question answer session.

**(40 marks) Attached rubrics. (Standard Rubrics for Output + Standard Rubrics for Collaborative Work)**

**FOR LECTURE :** Student should also prepare a documentation, listing of all the programs along with their output.

**(20 marks ) Attached rubrics. (Standard Rubrics for Programming Problem)**

### 1. Banking Transactions

1. Create a class named Account with fields that holds the details of the account holder like account number, name of the account holder, address, type of account (savings / current) and balance. During each withdrawal, ensure that based on the type of the account, the balance in the account should not fall below the minimum balance as for savings account minimum balance should be 20BD and for current account the minimum balance should be 100BD. If it is so then such a withdrawal should be prohibited and should print an appropriate message, otherwise it can be processed. Include methods to get and set each of the fields. Include a method named Withdraw() that performs the withdrawal process. Include a method named Deposit() that adds the deposited amount to the existing balance and updates the available balance. Create a class Loan inheriting the needed information from Account and check the eligibility for the account (if the balance is 1000 or more in savings, 2000 or more in current account) then the account holder can be given thrice the balance in his account as a loan. If he is eligible sanction the loan and

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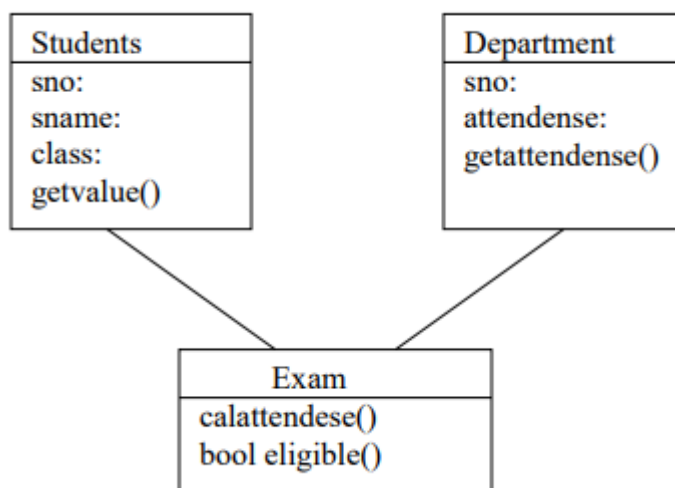
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**CSCI431 - COMPUTER PROGRAMMING - II (Term Project)**

update it to his account. In main method, call all methods to display all results. Save the class as Bank.java.

**2. Student's Exam eligibility System**

Write a java program to find the details of the students eligible to enroll for the examination (Students, Department combinedly give the eligibility criteria for the enrollment class) using interfaces. Repeat the process for all the students in the class by reading the number of students from the user.



**3. Point of Sale System**

Point of Sale System is a software-based application developed in Java programming language. The project aims at serving the Sales department by computerizing the billing system. It mainly focuses on the calculation of Gross bill and Net bill taking into consideration the needed information like Item code, item Quantity, price, discount, promotional price etc.. This computerized system will make the overall billing system easy, accessible, comfortable and effective for managers in taking decision. Use Applets.

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4. Implement Dynamic Polymorphism in Java. Write a java program for abstract class to find areas of different shapes. Given below is the algorithm of the program

**ALGORITHM:**

1. Start the program.
2. Create an abstract class with class name Shape.
3. Create a constructor with arguments and declare variables dim1, dim2 and PI.
4. Declare an abstract method area() inside the class.
5. Create the classes Rectangle, Triangle, Circle, and Ellipse to find the area.
6. Define abstract method area() inside the subclasses and call the constructor of class Shape using super keyword.
7. In main(), create the objects for all classes and pass values to fields of constructors.
8. Create a reference variable figure for abstract class.
9. Using reference variable of class Shape, call the method area() of all subclasses
10. Print the areas for all shapes.
11. Stop the program.

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## Java 2 Project

2.

Input:

```
import java.util.Scanner;
public class MidTermProject2 {

    Scanner sc=new Scanner(System.in);

    int x, sn,sclass, att;

    String sna;

    public void getValue()
    {

        {

            System.out.println("Enter the Student no.:");

            sn= sc.nextInt();

            System.out.println("Enter the Student name:");
            sna= sc.next();

            System.out.println("Enter the class no:");
            sclass= sc.nextInt();

            System.out.println("Enter the number of days the student attended:");
            att= sc.nextInt();

        }

    }

}

public interface Department {

    int percent=85;

}
```

```
import java.util.Scanner;
public class Exam extends MidTermProject2 implements Department{

    public void compare()
    {
        int atp;

        atp=(att/9)*100;

        if(atp<percent)
        {
            System.out.println("The student is not eligible.");
        }

        else if (atp>percent)
        {
            System.out.println("The student is eligible.");
        }

    }

    public static void main(String[]args)
    {
        int num;

        Scanner s=new Scanner(System.in);

        System.out.println("Number of Students:");

        num=s.nextInt();

        for (int i=0;i<num;i++)
        {
            Exam sa= new Exam();

            sa.getValue();

            sa.compare();

        }

    }
}
```

Output:

```

Number of Students:
2
Enter the Student no.:
1650089
Enter the Student name:
Dam
Enter the class no:
12112
Enter the number of days the student attended:
4
The student is not eligible.
Enter the Student no.:
1650034
Enter the Student name:
Sam
Enter the class no:
1212
Enter the number of days the student attended:
30
The student is eligible.

```

4.

```

public abstract class SHape {

    int dim1, dim2;
    double PI=3.14;

    public abstract void Area();
    {

    }

    public SHape ( int x,int y)
    {

        dim1=x;
        dim2=y;

    }

}

public class rectangle extends SHape {

    public rectangle(int x, int y) {
        super(x, y);

    }
}

```

```
public void Area()  
{  
    int area;  
    area= dim1 * dim2;  
    System.out.println("Area of the Rectangle:"+area);  
}  
}
```

```
public class triangle extends SHape {  
    public triangle(int x, int y) {  
        super(x, y);  
    }  
    public void Area()  
    {  
        double area;  
        area= 0.5*(dim1 * dim2);  
        System.out.println("Area of the Triangle:"+area);  
    }  
}
```

```
public class circle extends SHape{  
    public circle(int x, int y) {  
        super(x, y);  
    }  
    public void Area()  
    {  
        double area;  
        int r=2;  
        area= PI*(r*r);  
    }  
}
```

```
        System.out.println("Area of the Circle:"+area);

    }

    public static void main(String[]args)
    {
        circle c=new circle(1,1);

        triangle t= new triangle(1,1);

        rectangle r= new rectangle(1,1);

        c.Area();
        t.Area();
        r.Area();

    }

}
```

Output:

```
Area of the Circle:12.56
Area of the Triangle:0.5
Area of the Rectangle:1
```