DAAR-UL-REHMAT TRUST'S

A.E.KALSEKAR DEGREE COLLEGE

(PERMANENTLY AFFILIATED TO UNIVERSITY OF MUMBAI)

ACCREDITED BY NAAC WITH B++ GRADE

ISO CERTIFIED 9001:2015

ADD: NEAR BHARAT GAS FACTORY, POST DAWLA,KAUSA-MUMBRA, DISTTHANE, PIN 400612, MAHARASHTRA(INDIA)

CERTIFICATE

THIS IS TO CERTIFY THAT Ansari Ashad Hussain

(EXAM SEAT NO 1) OF FY/SY/TY. B. SC. INFORMATION TECHNOLOGY CLASS HAS SATISFACTORY COMPLETED HIS / HER PROJECT/ASSIGNMENT/PRACTICAL ON Core Java FOR THE PARTIAL FULFILLMENT OF THE DEGREE BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY AS PRESCRIBED BY UNIVERSITY OF MUMBAI. FOR ACADEMIC YEAR 20 -20

HOD

PROFESSOR-IN-CHARGE

Sr. No	Practical	Date	Signature
1	Write a Java program that takes a number as input and prints its multiplication table up to 10.	7/12/22	
2	Write a Java program to display the following pattern. ***** **** *** ** *	14/12/22	
3	Write a Java program to print the area and perimeter of a circle.	14/12/22	
4	Write a Java program to reverse a string.	21/12/22	
5	Write a Java program to count the letters, spaces, numbers and other characters of an input string.	21/12/22	
6	Find the smallest and largest element from the array	11/01/23	
7	Designed a class SortData that contains the method asec() and desc().	18/01/23	
8	Designed a class that demonstrates the use of constructor and destructor.	25/01/23	
9	Write a java program to demonstrate the implementation of abstract class.	25/01/2	
10	Write a java program to implement single level inheritance.	27/02/23	
11	Write a java program to implement method overriding	27/02/23	
12	Create a package, Add the necessary classes and import the package in java class.	28/02/23	
13	Write a java program to add two matrices and print the resultant matrix.	28/02/23	
14	Write a java program to implement the vectors.	01/03/23	
15	Design a AWT program to print the factorial for an input value.	01/03/23	

1a) Write a Java program that takes a number as input and prints its multiplication table upto 10.

```
public class Main{
    public static void main(String[] args){
        int num = 5, mult;
        for(int i = 1; i <= 10; i++){
            mult = num * i;
            System.out.println("5x" + i + "=" + mult);
        }}}
```

Output:

```
5x1=5
5x2=10
5x3=15
5x4=20
5x5=25
5x6=30
5x7=35
5x8=40
5x9=45
5x10=50
```

1b) Write a Java program to display the following pattern.

*****
****
***
**
*

```
public class pattern{
public static void main(String[] args){
int rows=5;
for (int i=rows;i>=1;--i){
for(int j=1;j<=i;++j){
System.out.print("* ");
}
System.out.println();
}}}
```

1c) Write a Java program to print the area and perimeter of a circle.

```
class perimeter{
public static void main(String[] args){
double pi=3.142;
int r=5;
double areaCircle=pi*r*r;
System.out.println("Area of circle:"+areaCircle);
double perimeterCircle=2*pi*r;
System.out.println("Perimeter of circle:"+perimeterCircle);
}}
```

Output:

```
Area of circle:78.55
Perimeter of circle:31.419999999999998
```

2a) Write a Java program to add two binary numbers.

```
import java.util.Scanner;
public class add{
public static void main(String[] args)
{
 long binary1, binary2;
 int i = 0, remainder = 0;
 int[] sum = new int[20];
 Scanner in = new Scanner(System.in);
 System.out.print("Input first binary number: ");
 binary1 = in.nextLong();
 System.out.print("Input second binary number: ");
 binary2 = in.nextLong();
 while (binary1 != 0 || binary2 != 0)
 {
 sum[i++] = (int)((binary1 % 10 + binary2 % 10 + remainder) % 2);
 remainder = (int)((binary1 % 10 + binary2 % 10 + remainder) / 2);
 binary1 = binary1 / 10;
 binary2 = binary2 / 10;
 }
 if (remainder != 0) {
 sum[i++] = remainder;
 }
 --i;
 System.out.print("Sum of two binary numbers: ");
 while (i >= 0) {
 System.out.print(sum[i--]);
 }
 System.out.print("\n");
}}
```

Output:

```
Input first binary number: 110
Input second binary number: 10
Sum of two binary numbers: 1000
```

2b) Write a Java program to convert a decimal number to binary number

```
class Main {
  public static void main(String[] args) {
    int decimal = 91;
    String binary = Integer.toBinaryString(decimal);
    System.out.println(decimal + " in decimal = " + binary + " in binary.");
  }}
```

Output:

```
91 in decimal = 1011011 in binary.
```

2c) Write a Java program to reverse a string.

```
import java .util.*;
import java.util.Scanner.*;
public class reverse{
public static void main(String args[]){
String s,t=" ";
Scanner in = new Scanner(System.in);
System.out.println("Enter string");
s=in.nextLine();
int length=s.length();
for(int i=length-1;i>=0;i--){
t=t+s.charAt(i);
}
System.out.println("Reverse "+t);
}}
```

Output:

```
Enter string
Hello World
Reverse  dlroW olleH
```

3a) Write a Java program to count the letters, spaces, numbers and other characters of an input string.

```
import java.util.Scanner;
public class lettercount{
    public static void main(String[] args){
        String test = "Aa kiu, I swd skieo 236587.GH kiu: sien?? 25.33";
        count(test);
    }
    public static void count(String x){
        char[] ch = x.toCharArray();
        int letter = 0;
        int num = 0;
        int space = 0;
        int other = 0;
        for (int i = 0; i < x.length(); i++){
            if(Character.isLetter(ch[i])){
                letter++;
            }
            else if(Character.isDigit(ch[i])){
                num++;
            }
            else if(Character.isSpaceChar(ch[i])){
                space++;
            }
            else {
                other++;
            }
        }
        System.out.println("The string is:" + x);
        System.out.println("Letter=" + letter);
        System.out.println("Number=" + num);
        System.out.println("space=" + space);
        System.out.println("Other=" + other);
    }}
```

Output:

```
The string is:Aa kiu, I swd skieo 236587.GH kiu: sien?? 25.33
Letter=23
Number=10
space=8
Other=6
```

3b) Find the smallest and largest element from the array

```
public class findSmallLarge{
    public static void main(String[] args){
        int numbers[] = new int[] {55,32,45,98,82,11,9,29,50};
        int smallest = numbers[0];
        int largest = numbers[0];

        for (int i=1; i < numbers.length; i++ ){
            if(numbers[i] > largest){
                largest = numbers[i];
            }
            else if (numbers[i] < smallest){
                smallest = numbers[i];
            } }

        System.out.println("Largest number is:" + largest);
        System.out.println("Smallest number is:" + smallest);
    }}
```

Output:

```
Largest number is:98
Smallest number is:9
```

4a) Designed a class SortData that contains the method asec() and desc().

```
public class SortData {
public static void main(String[] args) {
int [] arr = new int [] {5, 2, 8, 7, 1};
int temp = 0;
System.out.println("Elements of original array: ");
for (int i = 0; i < arr.length; i++) {
System.out.print(arr[i] + " ");
        }
for (int i = 0; i < arr.length; i++) {
for (int j = i+1; j < arr.length; j++) {
         if(arr[i] < arr[j]) {
                  temp = arr[i];
                  arr[i] = arr[j];
                  arr[j] = temp;
}}}
System.out.println();
 System.out.println("Elements of array sorted in descending order: ");
        for (int i = 0; i < arr.length; i++) {
            System.out.print(arr[i] + " ");
    }}}
```

```
Elements of original array:
5 2 8 7 1
Elements of array sorted in descending order:
8 7 5 2 1
```

4b) Designed a class that demonstrates the use of constructor and destructor.

```
class constructorexample{
  private String name;
  constructorexample() {
    System.out.println("Constructor Called:");
    name = "Programiz";
  }
  public static void main(String[] args) {
   constructorexample obj = new constructorexample();
    System.out.println("The name is " + obj.name);
  }}
```

```
Constructor Called:
The name is Programiz
```

4c) Write a java program to demonstrate the implementation of abstract class.

```
abstract class Bike{
Bike(){
System.out.println("bike is created");}
abstract void run();
void changeGear(){System.out.println("gear changed");}
 }
 class Honda extends Bike{
 void run(){System.out.println("running safely..");}
 }
 class Main{
 public static void main(String args[]){
  Bike obj = new Honda();
  obj.run();
  obj.changeGear();
 }  }
```

```
bike is created
running safely..
gear changed
```

5a) Write a java program to implement single level inheritance.

```
class Animal{
void eat(){
System.out.println("Eating...");}}
class Dog extends Animal{
void bark(){
System.out.println("Barking");
}}
class testInheritance{
```

```
public static void main(String[] args){
Dog d = new Dog();
d.bark();
d.eat();
}}
```

```
Barking
Eating...
```

5b) Write a java program to implement method overriding.

```
class Animal {
  public void displayInfo() {
    System.out.println("I am an animal.");
  }}
class Lion extends Animal {
    public void displayInfo() {
    System.out.println("I am a lion.");
  }}
class Main {
  public static void main(String[] args) {
    Lion d1 = new Lion();
    d1.displayInfo();
  }}
```

```
I am a lion.
```

5c) Write a java program to implement multiple inheritance.

```
interface animaleat{
void eat();
}
interface animaltravel{
void travel();
}
class Animal implements animaleat, animaltravel{
public void eat(){
System.out.println("Animal is eating.");
}
public void travel(){
System.out.println("Animal is travelling");
}
}
public class multipleinheritance{
public static void main(String[] args){
Animal a = new Animal();
a.eat();
a.travel();
}}
```

```
Animal is eating.
Animal is travelling
```

6a) Create a package, Add the necessary classes and import the package in java class.

```
package mypack;
public class Add
 { public void add(double a,double b)
{ System.out.println("Addition :" + (a+b));
} }
package mypack;
import java.util.*;
public class Factorial
 { int i,fact=1;
public void fact(int number)
 { for(i=1;i<=number;i++)
{ fact=fact*i; }
System.out.println("Factorial of "+number+" is: "+fact);
} }
```

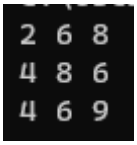
Compiling Java Package: javac -d .Add.java
Compiling Java Package: javac -d .Factorial.java

```
import java.util.Scanner;
 import mypack.Factorial;
import mypack.Addition;
class TestPackage
{ public static void main(String arg[])
 { Factorial f=new Factorial();
System.out.println("enter number to find out factorial ");
Scanner sc=new Scanner(System.in);
int n=sc.nextInt(); f.fact(n);
 System.out.println("Enter 2 numbers: ");
Add a=new Add();
double p=sc.nextDouble();
double q=sc.nextDouble(); a.add(p,q); } }
```

```
enter number to find out factorial
5
Factorial of 5 is: 120
Enter 2 numbers:
3
2
Addition :5.0
```

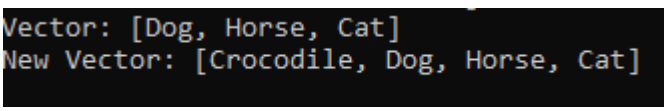
6b) Write a java program to add two matrices and print the resultant matrix.

```
public class matrixadd{
public static void main(String[] args){
int a[][]={{1,3,4},{2,4,3},{3,4,5}};
int b[][]={{1,3,4},{2,4,3},{1,2,4}};
int c[][]=new int[3][3];
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
c[i][j]=a[i][j]+b[i][j];
System.out.print(c[i][j]+" ");
}
System.out.println();
}}}
```



7) Write a program to implement the vectors.

```
import java.util.Vector;
class Main {
 public static void main(String[] args) {
Vector<String> mammals= new Vector<>();
mammals.add("Dog");
mammals.add("Horse");
mammals.add(2, "Cat");
System.out.println("Vector: " + mammals);
Vector<String> animals = new Vector<>();
animals.addAll(mammals);
System.out.println("New Vector: " + animals);
   }}
```



8) Design a AWT program to print the factorial for an input value.

```
import java.awt.*;
import java.awt.event.*;

class Factorial extends Frame implements ActionListener
{
	TextField tf;
	Button b;
	Label n, l, r;
	Factorial()
	{
		n = new Label("AWT Factorial Program");
		l = new Label("Enter number");
		r = new Label();
		tf = new TextField();
		b = new Button("Factorial");
		n.setBounds(30, 40, 200, 20);
		l.setBounds(30, 70, 150, 20);
		r.setBounds(30, 170, 200, 20);
		tf.setBounds(30, 90, 190, 30);
		b.setBounds(30, 130, 190, 30);

		add(n);
		add(l);
		add(r);
		add(tf);
		add(b);

		setSize(250,210);
		setLayout(null);
		setVisible(true);

		b.addActionListener(this);

		addWindowListener(new WindowAdapter()
		{
	 public void windowClosing(WindowEvent e)
	 {
	    dispose();
	 }
	});
	  }
	  public void actionPerformed(ActionEvent e)
	  {
		if(e.getSource()==b)
		{
			int num = Integer.parseInt(tf.getText());
			r.setText("Factorial of "+num+" is "+getFactorial(num));
```

```
        }}

public int getFactorial(int x)
{
        int rsl = 1;
        for(int i = x; i > 0; --i)
        {
                rsl *= i;
        }
        return(rsl);
}
public static void main(String[] args)
{
        Factorial factorial = new Factorial();
}}
```