01.

```
class Example{
 public static void printMyMethod(){
 System.out.println("Hello JAVA...");
 }
 public static void main(String[] args) {
 printMyMethod();
 }
}
```

02.

```
 class Example {

    public static void printNameAndBirthday() {
        System.out.println("Name: " + name);
        System.out.println("Birthday: " + birthday);
    }
    public static void main(String[] args) {
        printNameAndBirthday();
    }
}
```

03.

```
class Example {

    public static void printAlphabet() {
        for (char i = 'A'; i <= 'Z'; i++) {
            System.out.print(i+""+Character.toLowerCase(i)+" ");
        }
    }
    public static void main(String[] args) {
        printAlphabet();
    }
}
```

04.

```
import java.util.Scanner;
class Example {

    public static void getUserStringAndPrint() {
                    Scanner input = new Scanner(System.in);

        System.out.print("Enter a string : ");
        String uinput=input.nextLine();
        System.out.println("\n"+uinput);
```

```
        }
        public static void main(String[] args) {
      getUserStringAndPrint();
   }
}
```

05.

```
import java.util.Scanner;
class Example {

   public static void checkLeapYear() {
                Scanner input = new Scanner(System.in);

      System.out.print("Enter a year : ");
      int year=input.nextInt();

      if((year%4==0 && year%100 !=0)||(year%400==0)){
                        System.out.print("Leap year");
                }else{
                        System.out.print("Not a leap year");
                }
        }
        public static void main(String[] args) {
      checkLeapYear();
   }
}
```

06.

```
import java.util.Scanner;
class Example {

   public static void comparetwonumbers() {
                Scanner input = new Scanner(System.in);

      System.out.print("Enter number 1 : ");
      int num1=input.nextInt();

      System.out.print("Enter number 2 : ");
      int num2=input.nextInt();

      if(num1<num2){
                        System.out.print("\n"+num1+"<"+num2);
                }else{
                        System.out.print(num1+">"+num2);
                }
        }
```

```
        public static void main(String[] args) {
      comparetwonumbers();
   }
}
```

07.
i. printName();

ii.printName(name1, name2);

08.

```
import java.util.Scanner;
class Example {

   public static void checkFirstLetter(String word1, String word2) {
                  Scanner input = new Scanner(System.in);

      if (word1.charAt(0) == word2.charAt(0)) {
         System.out.println(true);
      } else {
         System.out.println(false);
      }
   }
         public static void main(String[] args) {
      checkFirstLetter("Icet", "Ict");
      checkFirstLetter("Panadura", "Colombo");
   }
}
```

09.

```
class Example {
   public static void roundToTwoDecimalPlaces(double number) {

                  String roundedNumber = String.format("%.2f", number);
      System.out.println(roundedNumber);
   }
    public static void main(String[] args) {
      roundToTwoDecimalPlaces(1.102245895);
      roundToTwoDecimalPlaces(10.265623232);
   }

}
```

10.

```
import java.util.Scanner;
```

```
class Example {

   public static void calculateDeposit(double monthlyInterest) {
                Scanner input = new Scanner(System.in);

                double annualInterestRate = 0.20;
      double monthlyInterestRate = annualInterestRate / 12;

      double depositAmount = monthlyInterest / monthlyInterestRate;

      System.out.printf("You have to deposit : %.2f\n",depositAmount);

        }

                public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      System.out.print("Enter monthly interest amount : ");
      double monthlyInterest = scanner.nextDouble();

      calculateDeposit(monthlyInterest);
   }
}
```

11.

```
import java.util.Scanner;
class Example {

   public static void convertCelsius(double celsius){
                Scanner input = new Scanner(System.in);

                double fahrenheit = (celsius * 9 / 5) + 32;
      double kelvin = celsius + 273.15;

      System.out.println(celsius + "C is equal to " + fahrenheit + "F");
      System.out.println(celsius + "C is equal to " + kelvin + "K");
   }

   public static void main(String[] args) {
      convertCelsius(0);
   }
}
```

12.

```
import java.util.Scanner;

class Example {
   public static void calculateSector() {
                    Scanner input = new Scanner(System.in);

            System.out.print("Enter the radius : ");
      double radius=input.nextDouble();

      System.out.print("Enter the angle : ");
      double angle=input.nextDouble();

      double area = (angle / 360.0)*Math.PI*radius*radius;

      double arcLength = (angle / 360.0) * 2 * Math.PI * radius;
      double perimeter = 2 * radius + arcLength;

      System.out.printlnf(area);
      System.out.printlnf( perimeter);
   }
   public static void main(String[] args) {
      calculateSector();
   }
}
```

13.

```
import java.util.Scanner;

class Example {
   public static void findQuadraticEquation() {
                    Scanner input = new Scanner(System.in);

            System.out.print("Enter first root : ");
      int a=input.nextInt();

      System.out.print("Enter second root : ");
      int b=input.nextInt();

      int coefficientX = a+b;
      int constant = a*b;

      System.out.println("x^2 - " + coefficientX + "x + " +constant+ " = 0");
   }

   public static void main(String[] args) {
      findQuadraticEquation();
```

```
    }
}
```

14.

```
import java.util.Scanner;

public class Calculator{

    public static int add(int a, int b) {
        return a+b;
    }
    public static int subtraction(int a, int b) {
        return a-b;
    }
    public static int multiplication(int a, int b) {
        return a*b;
    }
    public static int dividend(int a, int b) {
        return a / b;
    }
    public int reminder(int a, int b) {
        return a % b;
    }
    public int power(int a, int b) {
        return (int) Math.pow(a, b);
    }
    public static void main(String[] args) {

        Scanner input=new Scanner(System.in);
        Calculator calc = new Calculator();

        System.out.print("Enter first number : ");
        int num1=input.nextInt();

        System.out.print("Enter second number : ");
        int num2=input.nextInt();

        System.out.print("Enter the operator (+,-,*,/,%,^) :");
        char operator=input.next().charAt(0);

        int result=0;

        switch (operator) {
            case '+':
                result = calc.add(num1, num2);
                break;
            case '-':
```

```
            result = calc.subtraction(num1, num2);
            break;
        case '*':
            result = calc.multiplication(num1, num2);
            break;
        case '/':
            result = calc.dividend(num1, num2);
            break;
        case '%':
            result = calc.reminder(num1, num2);
            break;
        case '^':
            result = calc.power(num1, num2);
            break;
      }
      System.out.println("Answer = " + result);
   }
}
```

15.

```
public class Example {
   public static void main(String[] args) {
      int num1=10;
      int num2=20;

      System.out.println(num1+" "+num2);

      num1 = num1 + num2;
      num2 = num1 - num2;
      num1 = num1 - num2;

      System.out.println( num1+" "+num2);
   }
}
```

16.

```
import java.util.Scanner;

public class Example{

    public static boolean isPerfectNumber(int num) {
        int sum = 0;

        for (int i=1;i<=num/2;i++) {
            if (num%i==0){
                sum+=i;
            }
        }
        return sum == num;
    }
     public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter a number : ");
        int number = input.nextInt();

        if (isPerfectNumber(number)) {
            System.out.println("Perfect number");
        } else {
            System.out.println("Not a perfect number");
        }
    }
}
```

17.

```
import java.util.Scanner;

public class Example{

    public static int gethowmanymultiples(int num, int lower, int upper){

        int count=0;

        for(int i=lower;i<=upper;i++){
                        if(i%num==0){
                                count++;
                        }
                }return count;
            }
                public static void main(String args[]){
                        Scanner input=new Scanner(System.in);
```

```
                        System.out.print("Enter a number : ");
                            int num = input.nextInt();

                        System.out.print("The lower bound of the range : ");
                            int lower = input.nextInt();

                        System.out.print("The upper bound of the range : ");
                            int upper = input.nextInt();

                        int multiplesCount =gethowmanymultiples(num, lower, upper);

      System.out.println("Multiples of " + num + " between " + lower + " and " + upper + " = " +
multiplesCount);
   }
}
```

18.

```
Line 1 = Legal
Line 2 = Illegal
Line 3 = Legal
Line 4 = Illegal
Line 5 = Illegal
Line 6 = Legal
Line 7 = Legal
Line 8 = Illegal
Line 9 = Legal
Line 10 = Illegal
Line 11 = Legal
```

19.

```
import java.util.*;

 class Example {

   private static String[] group1 = {
      "Business & Accounting", "Geography", "Citizenship Education", "Entrepreneurship
studies",
      "2nd Language Sinhala", "2nd Language Tamil", "Foreign Languages - Arabic",
      "Foreign Languages - Hindi", "Foreign Languages - French", "Foreign Languages -
Japan"
   };
   private static  String[] group2 = {
      "Art", "Tamil Literature", "English Literature", "Sinhala Literature",
      "Music", "Dancing"
   };
   private static  String[] group3 = {
      "Information & Technology", "Agriculture", "Home Economics",
      "Health Science", "Art & Craft", "Media"
```

```
    };

    public static void selectSubjects(String studentName) {
        Random random = new Random();


        String selectedSubjectGroup1 = group1[random.nextInt(group1.length)];
        String selectedSubjectGroup2 = group2[random.nextInt(group2.length)];
        String selectedSubjectGroup3 = group3[random.nextInt(group3.length)];


        System.out.println("Student Name: " + studentName);
        System.out.println("Selected Subjects = "+"\n");
        System.out.println("\tGroup 01 : " + selectedSubjectGroup1);
        System.out.println("\tGroup 02 : " + selectedSubjectGroup2);
        System.out.println("\tGroup 03 : " + selectedSubjectGroup3);
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter student name: ");
        String studentName = scanner.nextLine();

        selectSubjects(studentName);
    }
}
```

20.
Line 2
Demo d = new Demo();
d.testMethod2();

21.
a
f
k
l

22.

```
import java.util.Scanner;
        class Example{

                public static double convertMetersPerSecond(double speedKmh){
                        return speedKmh / 3.6;
    }
                public static void main(String[] args) {
```

```
                        Scanner input = new Scanner(System.in);

                        System.out.print("Enter speed in km/h: ");
                        double speedKmh = input.nextDouble();

                        double speedMs = convertMetersPerSecond(speedKmh);
                        System.out.println("Speed in m/s: " + speedMs);
                }
}
```

23.

```
import java.util.Scanner;
  class Example {

     public static int countVowels(String input) {
       int vowelCount = 0;
       for (int i = 0; i < input.length(); i++) {
          char c = input.charAt(i);

          if (c =='a' || c =='e' || c =='i' || c =='o' || c =='u' ||
             c =='A' || c =='E' || c =='I' || c =='O' || c =='U') {
             vowelCount++;
          }
       }
       return vowelCount;
   }
   public static void main(String[] args) {
      Scanner input = new Scanner(System.in);

   System.out.print("Enter  string : ");
      String uinput = input.nextLine();

      int count = countVowels(uinput);
      System.out.println("Vowel in the string : " + count);
   }
}
```

24.

```
import java.util.Scanner;
class Example{

   public static double calculateVolumeInLiters(double radius, double height) {
      double volumeInCubicMeters = Math.PI * Math.pow(radius, 2)*height;
      double volumeInLiters = volumeInCubicMeters * 1000;
      return volumeInLiters;
   }
```

```
    public static void main(String[] args) {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter radius : ");
        double radius=input.nextDouble();
        System.out.print("Enter height : ");
        double height=input.nextDouble();

        double volume = calculateVolumeInLiters(radius, height);
        System.out.printf("Volume = %.2f ", volume);
    }
}
```

25.

```
import java.util.Scanner;
  class Example{

    public static double calculateSphereVolumeFromCube(double length) {
        double radius = length / 2;
        double volume = (4.0 / 3.0) * Math.PI * Math.pow(radius, 3);
        return volume;
    }
    public static void main(String args[]){
                    Scanner input=new Scanner(System.in);

        System.out.print("Enter legth : ");
        double length=input.nextDouble();

        double sphereVolume = calculateSphereVolumeFromCube(length);
        System.out.printf("Volume = %.2f", sphereVolume);
    }
}
```

26.

```
x : 100
x : 101
x : 100
x : 101
```

27.

```
import java.util.Scanner;
  class Example{

    public static boolean DigitsareEvenornot(int num) {
        num=Math.abs(num);
```

```
        while(num>0){
                        int digit=num%10;
                        if(digit%2!=0){
                                return false;
                        }
                        num/=10;
                }
                return true;
          }

    public static void main(String args[]){
                Scanner input=new Scanner(System.in);

        System.out.print("Enter integer : ");
        int integer =input.nextInt();

        boolean result=DigitsareEvenornot(integer);
        System.out.println(result);
    }
}
```

28.
B
C
D
F
G

29.

```
import java.util.Scanner;

 class Example {

    public static void DaysInMonth(String month) {
        int days;
        switch (month.toLowerCase()) {
            case "january":
            case "march":
            case "may":
            case "july":
            case "august":
            case "october":
            case "december":
                days = 31;
                break;
            case "april":
            case "june":
```

```
            case "september":
            case "november":
                days = 30;
                break;
            case "february":
                days = 28;
                break;
            default:
                System.out.println("month name incorrect...");
                return;
        }
        System.out.println("Days : "+days);
    }
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the month :  ");
        String monthInput = scanner.nextLine();

        DaysInMonth(monthInput);
    }
}
```

30.

```
import java.util.Scanner;

 class Example {
    public static void separateEvenOdd(int num) {
        StringBuilder oddDigits = new StringBuilder();
        StringBuilder evenDigits = new StringBuilder();

        while (num>0){
            int digit=num%10;
            if (digit%2==0) {
                evenDigits.append(digit);
            } else {
                oddDigits.append(digit);
            }
            num/= 10;
        }
        oddDigits.reverse();
        evenDigits.reverse();

        System.out.println(oddDigits.toString() + " " + evenDigits.toString());
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
```

```
        System.out.print("Enter a positive integer: ");
        int userinp = input.nextInt();

        if (userinp > 0) {
            separateEvenOdd(userinp);
        } else {
            System.out.println("Please enter a positive integer.");
        }
    }
}
```

31.

```
import java.util.Random;

public class Example {
    public static void DiceRolls() {
        Random input = new Random();
        int dice1;
        int dice2;
        int rollCount = 0;

        do {
            dice1 = input.nextInt(6) + 1;
            dice2 = input.nextInt(6) + 1;

            System.out.println(dice1 + " " + dice2);
            rollCount++;
        } while (dice1 != dice2);

        System.out.println("Dice roll = " + rollCount + " times");
    }
    public static void main(String[] args) {
        DiceRolls();
    }
}
```

32. A

33.
C
D
E
F
H
K
O

34.

```
import java.util.Scanner;

public class Example {

    public static long factorial(int num) {
        long result = 1;
        for (int i = 1; i <= num; i++) {
            result *= i;
        }
        return result;
    }
    public static long calculateGroups(int n, int r) {
        return factorial(n) / (factorial(n - r) * factorial(r));
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the number of children : ");
        int n = input.nextInt();

        System.out.print("Enter the number of group members : ");
        int r = input.nextInt();

        if (n >= r) {
            long numberOfGroups = calculateGroups(n, r);
            System.out.println("The number of groups: " + numberOfGroups);
        } else {
            System.out.println("The number of group members cannot be greater than the
number of children.");
        }
    }
}
```

35.

```
import java.util.Scanner;

public class Example {
   public static void main(String[] args) {
      Scanner input = new Scanner(System.in);

      System.out.print("Enter the number : ");
      int num = input.nextInt();

      int result = SmallestMultiple(num);
      System.out.println("Smallest number divisible by all numbers is = " + result);
   }
   public static int SmallestMultiple(int n){
      int l = 1;
      for (int i = 2; i <= n; i++) {
         l = l(l, i);
      }
      return l;
   }
   public static int l(int a, int b) {
      return a * (b / gcd(a, b));
   }
   public static int gcd(int a, int b) {
      if (b == 0) {
         return a;
      }
      return gcd(b, a % b);
   }
}
```

36.

```
import java.util.Scanner;

public class Example {

   public static void QuadrantAndDistance(double x, double y) {

      if (x>0&&y>0) {
         System.out.println("\nIn Quadrant I");
      } else if (x<0&&y>0) {
         System.out.println("\nIn Quadrant II");
      } else if (x<0&&y<0) {
         System.out.println("\nIn Quadrant III");
      } else if (x>0&&y<0) {
         System.out.println("\nIn Quadrant IV");
      } else if (x==0&&y == 0) {
```

```
            System.out.println("\nIs at the Origin");
        } else if (x==0) {
            System.out.println("\nLies on the Y-axis");
        } else if (y==0) {
            System.out.println("\nLies on the X-axis");
        }
        double distance = Math.sqrt(x * x + y * y);
        System.out.printf("The distance from the origin :%.2f",distance);
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the X coordinate: ");
        double x = input.nextDouble();

        System.out.print("Enter the Y coordinate: ");
        double y = input.nextDouble();

        QuadrantAndDistance(x, y);
    }
}
```

37.

```
import java.util.Scanner;

public class Example {
    public static double GetPerimeteroftriangle(double x, double y, double z) {
        if (x+y>z&&x+z>y&&y+z>x) {
            double perimeter =x+y+z;
            return perimeter;
        } else {
            System.out.println("Triangle is not valid");
            return 0;
        }
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the length of side x : ");
        double x = input.nextDouble();

        System.out.print("Enter the length of side y : ");
        double y = input.nextDouble();

        System.out.print("Enter the length of side z : ");
        double z = input.nextDouble();
```

```
        double perimeter = GetPerimeteroftriangle(x, y, z);

        if (perimeter > 0) {
            System.out.println("The triangle is valid, and its perimeter is: " + perimeter);
        }
    }
}
```

38.

```
import java.util.Scanner;

public class Example {
    public static double[] DivisionPoint(double xA, double yA, double xB, double yB, double
lambda, double mu) {
        double xC = (lambda*xB+mu*xA)/(lambda+mu);
        double yC = (lambda*yB+mu*yA)/(lambda+mu);

        return new double[]{xC,yC};
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the x-coordinate of point A : ");
        double xA = input.nextDouble();
        System.out.print("Enter the y-coordinate of point A : ");
        double yA = input.nextDouble();

        System.out.print("Enter the x-coordinate of point B : ");
        double xB = input.nextDouble();
        System.out.print("Enter the y-coordinate of point B : ");
        double yB = input.nextDouble();

        System.out.print("Enter the value of lambda : ");
        double lambda = input.nextDouble();
        System.out.print("Enter the value of mu : ");
        double mu = input.nextDouble();

        double[] pointC = DivisionPoint(xA, yA, xB, yB, lambda, mu);
        System.out.printf("The coordinates of the dividing point C are :(%.2f, %.2f)%n",
pointC[0], pointC[1]);

    }
}
```

39.

```
import java.util.Scanner;

public class Example {
   public static void printSum(int a, int b) {
      int sum = a + b;
      System.out.println("\n\tThe sum of integers is : " + sum);
   }
   public static void printSum(double a, double b) {
      double sum = a + b;
      System.out.println("\n\tThe sum of doubles is: " + sum);
   }
   public static void printSum(String a, String b) {
      String concatenated = a + b;
      System.out.println("\n\tThe concatenated string is: " + concatenated);
   }
   public static void main(String[] args) {
      Scanner input = new Scanner(System.in);

      System.out.print("Enter first integer : ");
      int int1 = input.nextInt();
      System.out.print("Enter second integer : ");
      int int2 = input.nextInt();
      printSum(int1, int2);

      System.out.print("\nEnter first double : ");
      double double1 = input.nextDouble();
      System.out.print("Enter second double : ");
      double double2 = input.nextDouble();
      printSum(double1, double2);

      input.nextLine();
      System.out.print("\nEnter first string : ");
      String str1 = input.nextLine();
      System.out.print("Enter second string : ");
      String str2 = input.nextLine();
      printSum(str1, str2);

   }
}
```

40.

```
public class Example {

   public static void main(String[] args) {

      int intDiffe = absDifference(10,20);
      double doubleDiffe = absDifference(10.5,20.5);

      System.out.println("Absolute difference between integers : " + intDiffe);
      System.out.println("Absolute difference between doubles : " + doubleDiffe);
   }

   public static int absDifference(int a, int b) {
      return Math.abs(a-b);
   }
   public static double absDifference(double a, double b) {
      return Math.abs(a-b);
   }
}
```

41.

```
import java.util.Scanner;

public class Example {

   public static double calculatePerimeter(double radius) {
      return 2*Math.PI*radius;
   }
   public static double calculatePerimeter(double length, double width) {
      return 2*(length+width);
   }
   public static int calculatePerimeter(int side) {
      return 4*side;
   }
   public static double calculatePerimeter(double side1, double side2, double side3) {
                  return side1 + side2 + side3;
   }
   public static void main(String[] args) {
      Scanner input = new Scanner(System.in);

      System.out.print("Enter the radius of the circle : ");
      double radius = input.nextDouble();
      double circlePerimeter = calculatePerimeter(radius);
      System.out.printf("\tThe perimeter of the circle is : %.2f%n", circlePerimeter);

      System.out.print("\nEnter the length of the rectangle: ");
      double length = input.nextDouble();
```

```
        System.out.print("Enter the width of the rectangle : ");
        double width = input.nextDouble();
        double rectanglePerimeter = calculatePerimeter(length, width);
        System.out.printf("\tThe perimeter of the rectangle is : %.2f%n", rectanglePerimeter);

        System.out.print("\nEnter the side length of the square: ");
        int side = input.nextInt();
        int squarePerimeter = calculatePerimeter(side);
        System.out.print("\tThe perimeter of the square is : "+squarePerimeter);

        System.out.print("Enter the length of side 1 of the triangle : ");
        double side1 =input.nextDouble();
        System.out.print("Enter the length of side 2 of the triangle : ");
        double side2 = input.nextDouble();
        System.out.print("Enter the length of side 3 of the triangle : ");
        double side3 = input.nextDouble();
        double trianglePerimeter = calculatePerimeter(side1, side2, side3);
        System.out.printf("\n\tThe perimeter of the triangle is: %.2f%n", trianglePerimeter);

    }
}
```

42.

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

    public static boolean isPalindrome(int number) {
        int originalNum = number;
        int reversedNum = 0;

        while (number > 0) {
            int digit = number % 10;
            reversedNum = reversedNum * 10 + digit;
            number /= 10;
        }
        return originalNum == reversedNum;
    }
    public static boolean isPalindrome(String word) {
        int left = 0;
        int right = word.length() - 1;

        while (left<right) {
            if (word.charAt(left)!=word.charAt(right)) {
                return false;
            }
            left++;
```

```
            right--;
        }
        return true;
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter an integer number : ");
        int number = input.nextInt();
        if (isPalindrome(number)) {
            System.out.println("\n\t  palindrome number");
        } else {
            System.out.println("\n\t Not a palindrome number");
        }
        input.nextLine();
        System.out.print("\nEnter a word : ");
        String word = input.nextLine();
        if (isPalindrome(word)) {
            System.out.println("\n\t Palindrome word");
        } else {
            System.out.println("\n\t Not a palindrome word");
        }

    }
}
```

43.

```
import java.util.Scanner;
  class Example {

    public String convertToBase(int decimal) {
        return Integer.toBinaryString(decimal);
    }
        public String convertToBase(int decimal, int base) {
        switch (base) {
            case 8:
                return Integer.toOctalString(decimal);
            case 16:
                return Integer.toHexString(decimal).toUpperCase();
            default:
                return "Invalid base.";
        }
    }
    public static void main(String[] args) {
                    Scanner input = new Scanner(System.in);
                    Example converter = new Example();
```

```
                System.out.print("Enter a decimal number : ");
        int decimal = input.nextInt();

        System.out.print("Enter the base : ");
        int base = input.nextInt();

         switch (base) {
            case 1:
               System.out.println("Binary : " + converter.convertToBase(decimal));
               break;
            case 2:
               System.out.println("Octal : " + converter.convertToBase(decimal, 8));
               break;
            case 3:
               System.out.println("Hexadecimal : " + converter.convertToBase(decimal, 16));
               break;
        }

    }
}
```

44.

```
import java.util.Scanner;
  class Example {

    public static int factorial(int num) {
        if(num==0 || num==1);{
    }
        int result=1;
        for(int i=2;i<=num;i++){
                                result*=i;
                }return result;
            }
    public static void main(String[] args) {
                Scanner input = new Scanner(System.in);

                System.out.print("Enter a integer : ");
        int num = input.nextInt();

                System.out.println("Factorial = "+factorial(num));
                        }
    }
```

45.

```
import java.util.Scanner;
```

```
 class Example {

  public static String reverse(String str) {
     if (str.isEmpty()) {
         return str;
      }
     return reverse(str.substring(1)) + str.charAt(0);
   }
   public static void main(String[] args) {
                   Scanner input = new Scanner(System.in);

                   System.out.print("Enter a string : ");
      String orginl =input.nextLine();

      String reversedString = reverse(orginl);
      System.out.println("Reversed String : " + reversedString);

   }
}
```

46.

```
import java.util.Scanner;
 class Example {

  public static void GeometricSeries(int a, int r, int term, int n){

     if (term > n) {
         return;
      }

                   System.out.print(a + " ");

                   GeometricSeries(a * r, r, term + 1, n);
   }
   public static void main(String[] args) {
                   Scanner input = new Scanner(System.in);

                   System.out.print("Enter the first term : ");
      int a = input.nextInt();

      System.out.print("Enter the common ratio : ");
      int r = input.nextInt();

      System.out.print(" Geometric series = ");
      GeometricSeries(a, r, 1, 10);
   }
}
```

47.

```
import java.util.Scanner;
  class Example {

   public static int power(int base, int exponent) {

     if (exponent == 0) {
         return 1;
       }
                return base * power(base, exponent - 1);
   }
   public static void main(String[] args) {
                Scanner input = new Scanner(System.in);

                System.out.print("Enter the base : ");
      int base = input.nextInt();

      System.out.print("Enter the exponent : ");
      int exponent =input.nextInt();

      int result = power(base, exponent);
      System.out.println("Power = " + result);

   }
}
```

48.

```
import java.util.Scanner;
  class Example {

   public static int sumOfDigits(int num) {

     if (num == 0) {
         return 0;
       }
                return (num % 10) + sumOfDigits(num/10);
   }
   public static void main(String[] args) {
                Scanner input = new Scanner(System.in);

                System.out.print("Enter an integer: ");
      int num = input.nextInt();

      int sum = sumOfDigits(num);
      System.out.println("Sum of digits = " + sum);
```

```
   }
}
```

49.

```
import java.util.Scanner;
import java.util.Random;

  class Example {

    public static void main(String[] args) {
       Scanner input = new Scanner(System.in);
       Random random = new Random();

    int randomNum = random.nextInt(101);
       int maxAttemp = 5;

       System.out.println("I have generated a random number between 0 and 100");
       System.out.println("You have " + maxAttemp + " attempts to guess it");

                  for (int attempt = 1; attempt <= maxAttemp; attempt++) {
          System.out.print("\n\tAttempt " + attempt + "- Enter your guess : ");
          int Guess = input.nextInt();

          if (Guess == randomNum) {
             System.out.println("Correct! The number was " + randomNum + ".");
             break;
          } else if (Guess > randomNum) {
             System.out.println("Too high, try again");
          } else {
             System.out.println("Too low, try again");
          }

       }
    }

 }
```

50.

```
import java.util.Scanner;
import java.util.Random;

  class Me {

    private static final String PASSWORD = "122333";
    private static int attemptCount = 0;
```

```
    public void checkPassword() {
        Scanner input = new Scanner(System.in);

        while (attemptCount < 3) {
            System.out.print("Enter the password : ");
            String userInput = input.nextLine();

            if (userInput.equals(PASSWORD)) {
                System.out.println("Password correct ! ");
                displayDetails();
                return;
            } else {
                attemptCount++;
                System.out.println("Incorrect password ");

                if (attemptCount < 3) {
                    System.out.print("Do you want to continue (Yes/No)? ");
                    String response = input.nextLine();

                    if (response.equalsIgnoreCase("No")) {
                        System.out.println("Exiting the program.");
                        return;
                    }
                }
            }
        }
        System.out.println("Maximum attempts reached ");
    }
    public void displayDetails() {
        System.out.println("\tDisplaying user details ");
        System.out.println("\tName : ICET");
        System.out.println("\tAge : 20+");
        System.out.println("\tAddress :Panadura");
    }
    public static void main(String[] args) {
        Me me = new Me();
    }
}
```