CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

DEVANG PATEL INSTITUTE OF ADVANCE TECHNOLOGY & RESEARCH

Department of Computer Science & Engineering

Subject Name: Java Programming
Semester: 3
Subject Code: CSE201
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PART – 3 (Object Oriented Programming: Classes, Methods, Constructors)

No.	Aim of the Practical

12.	Imagine you are developing a currency conversion tool for a travel agency. This tool should be able to convert an amount in Pounds to Rupees. For simplicity, we assume the conversion rate is fixed: 1 Pound = 100 Rupees. The tool should be able to take input both from command-line arguments and interactively from the user.
	
	PROGRAM CODE:
	class pra12
	{
	public static void main(String[ ] args)
	{
	int a = Integer.parseInt(args[0]);
	// 1 Pound = 100;
	int c = a*100;
	System.out.println("Pounds To Rupess :" + c);
	System.out.println("23DCS030_Shreya Garasia");
	}
	}

OUTPUT:

```
C:\Users\shrey\OneDrive\Desktop\3SEM JAVA>java pra12 11
Pounds To Rupess :1100
23DCS030_Shreya Garasia
```

CONCLUSION:

In This Practical We Learnt About command-line arguments With This Convert Pound to Rupess.

13. Create a class called Employee that includes three pieces of information as instance variables—a first name (type String), a last name (type String) and a monthly salary (double). Your class should have a constructor that initializes the three instance variables. Provide a set and a get method for each instance variable. If the monthly salary is not positive, set it to 0.0. Write a test application named EmployeeTest that demonstrates class Employee's capabilities. Create two Employee objects and display each object's yearly salary. Then give each Employee a 10% raise and display each Employee's yearly salary again.

PROGRAM CODE :

```
import java.util.Scanner;
//PRATICAL 13
class Employee
{
   String firstName;
   String lastName;
   double monthlySalary;

   public Employee(String firstName, String lastName, double monthlySalary)
{
      this.firstName = firstName;
      this.lastName = lastName;
      setMonthlySalary(monthlySalary);
}
```

```
   public void setfirstName(String firstName)
{
      this.firstName = firstName;
}

   public void setlastName(String lastName)
{
      this.lastName = lastName;
}

   public void setMonthlySalary(double monthlySalary)
{
      if (monthlySalary > 0)
{
         this.monthlySalary = monthlySalary;
 }
else
{
         this.monthlySalary = 0.0;
 }
   }

   public String getfirstName()
{
      return firstName;
 }

   public String getlastName()
{
      return lastName;
 }

   public double getMonthlySalary()
{
      return monthlySalary;
 }
```

```
   public double getYearlySalary()
{
      return monthlySalary * 12;
}

 public void raiseSalary(double percentage)
{
      double raiseAmount = monthlySalary * (percentage / 100);
      setMonthlySalary(monthlySalary + raiseAmount);
   }
}

 class EmployeeTest
{
   public static void main(String[] args)
{
     Employee emp1 = new Employee("Khushi", "Patel", 5000);
     Employee emp2 = new Employee("Riya", "Patel", 6000);

    System.out.println("Employee 1: " + emp1.getfirstName());

      System.out.println("yearly salary for Employee 1: " + emp1.getYearlySalary());
System.out.println("Employee 2: " + emp2.getfirstName());



      System.out.println("yearly salary for Employee 2: " + emp2.getYearlySalary());
      emp1.raiseSalary(10);
      emp2.raiseSalary(10);
      System.out.println("After a 10% raise:");
      System.out.println("Employee 1 (yearly salary): " + emp1.getYearlySalary());
      System.out.println("Employee 2 (yearly salary): " + emp2.getYearlySalary());
      System.out.println("23DCS030_Shreya Garasia");
      }
   }
```

OUTPUT:

```
Employee 1: Khushi
yearly salary for Employee 1: 60000.0
Employee 2: Riya
yearly salary for Employee 2: 72000.0
After a 10% raise:
Employee 1 (yearly salary): 66000.0
Employee 2 (yearly salary): 79200.0
23DCS030_Shreya Garasia
```

CONCLUSION:

In This Practical We Perform a set and a get method for each instance variable to display each Employee's yearly salary .

14. Create a class called Date that includes three pieces of information as instance variables—a month (type int), a day (type int) and a year (type int). Your class should have a constructor that initializes the three instance variables and assumes that the values provided are correct. Provide a set and a get method for each instance variable. Provide a method displayDate that displays the month, day and year separated by forward slashes (/). Write a test application named DateTest that demonstrates class Date's capabilities.

PROGRAM CODE :

```
import java.util.Scanner;

// PRACTICAL14
class Date
{
   int day;
   int month;
   int year;

   public Date(int day, int month, int year)
{
       this.day = day;
       this.month = month;
       this.year = year;
 }
```

```
   public void setDay(int day)
{
      this.day = day;
 }

   public void setMonth(int month)
{
      this.month = month;
 }

   public void setYear(int year)
{
      this.year = year;
 }

   public int getDay()
{
      return day;
 }

   public int getMonth()
{
      return month;
 }

   public int getYear()
 {
      return year;
  }

   public void displayDate()
{
      System.out.println(day + "/" + month + "/" + year);
  }
}
```

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

       System.out.println("Enter the day:");
       int day = s.nextInt();

       System.out.println("Enter the month:");
       int month = s.nextInt();

       System.out.println("Enter the year:");
       int year = s.nextInt();

       Date date = new Date(day, month, year);

       date.displayDate();
       System.out.println("23DCS030_Shreya Garasia");

   }
}
```

OUTPUT:

```
Enter the day:
11
Enter the month:
11
Enter the year:
24
11/11/24
23DCS030_Shreya Garasia
```

CONCLUSION:

In This Practical we Print date with the order of day, month and year.

15. Write a program to print the area of a rectangle by creating a class named 'Area' taking the values of its length and breadth as parameters of its constructor and having a method named 'returnArea' which returns the area of the rectangle. Length and breadth of rectangle are entered through keyboard.

PROGRAM CODE :

```
import java.util.Scanner;
//PRACTICAL 15
class Area
{
   int length;
   int breadth;

   Area()
{
       Scanner scanner = new Scanner(System.in);
       System.out.println("Enter The Length of The Rectangle: ");
       //this.length = scanner.nextInt();
       System.out.print("Enter The Breadth Of The rectangle: ");
       this.breadth = scanner.nextInt();
   }

   Area(int len, int bre)
{
       this.length = len;
       this.breadth = bre;
 }

     int returnArea()
{
       return length * breadth;
   }
}

public class Test
```

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

      System.out.println("Enter details for the first rectangle:");
      Area R1 = new Area();

      System.out.println("Enter details for the second rectangle:");
      Area R2 = new Area();

      System.out.println("The area of the first rectangle is: " + R1.returnArea());
      System.out.println("The area of the second rectangle is: " + R2.returnArea());
      System.out.println("23DCS030_Shreya Garasia");
   }
}
```

OUTPUT:

```
First Rectangle:
Enter The Length of The Rectangle:
11
Enter The Breadth Of The rectangle: 10
Second Rectangle:
Enter The Length of The Rectangle:
9
Enter The Breadth Of The rectangle: 3
The area of the first rectangle is: 110
The area of the second rectangle is: 27
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```

CONCLUSION:

In This Practical We Find Area Of Rectangle.

16. Print the sum, difference and product of two complex numbers by creating a class named 'Complex' with separate methods for each operation whose real and imaginary parts are entered by user.

PROGRAM CODE :

```
import java.util.Scanner;
// PRACTICAL 16
class Comp {
    int real;
    int imag;

    Comp(int real, int imag) {
        this.real = real;
        this.imag = imag;
    }

    static Comp add(Comp c1, Comp c2) {
        return new Comp(c1.real + c2.real, c1.imag + c2.imag);
    }

    static Comp subtract(Comp c1, Comp c2) {
        return new Comp(c1.real - c2.real, c1.imag - c2.imag);
    }

    static Comp multiply(Comp c1, Comp c2) {
        int realPart = c1.real * c2.real - c1.imag * c2.imag;
        int imagPart = c1.real * c2.imag + c1.imag * c2.real;
        return new Comp(realPart, imagPart);
    }

    void display() {
        if (imag >= 0) {
            System.out.println(real + " + " + imag + "i");
        } else {
            System.out.println(real + " - " + (-imag) + "i");
        }
    }
}
```

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

      System.out.print("Enter the real part: ");
      int real1 = scanner.nextInt();
      System.out.print("Enter the imaginary part: ");
      int imag1 = scanner.nextInt();
      Comp c1 = new Comp(real1, imag1);

      System.out.print("Enter the real part: ");
      int real2 = scanner.nextInt();
      System.out.print("Enter the imaginary part: ");
      int imag2 = scanner.nextInt();
      Comp c2 = new Comp(real2, imag2);

      Comp sum = Comp.add(c1, c2);
      Comp difference = Comp.subtract(c1, c2);
      Comp product = Comp.multiply(c1, c2);

      System.out.print("Sum: ");
      sum.display();
      System.out.print("Difference: ");
      difference.display();
      System.out.print("Product: ");
      product.display();

      System.out.println("23DCS030_Shreya Garasia");
   }
}
```

OUTPUT:

```
Enter the real part: 3
Enter the imaginary part: 4
Enter the real part: 2
Enter the imaginary part: 4
Sum: 5 + 8i
Difference: 1 + 0i
Product: -10 + 20i
23DCS030_Shreya Garasia
```

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CONCLUSION:

In This Practical We performed the sum, difference and product of two complex numbers.