Assignment 4

Q.1 Write the distance converter program that converts entered number into meter, kilometer, hectameter and decameter by using objects, methods and constructor.

distanceconverter.java

```java
import java.util.*;
public class distanceconverter {
Scanner s= new Scanner(System.in);
Double km,m,hm,dm;


    int convert(Double value){
        System.out.println("enter value in kilometre");
        System.out.println("enter value in metre");
        System.out.println("enter value in hectometre");
        System.out.println("enter value in decametre");
        return 0;
    }
    int kmToAll(Double km){
        System.out.println("VAlue in Meter ="+km*1000);
        System.out.println("VAlue in HectoMeter ="+km*10);
        System.out.println("VAlue in DecaMeter ="+km*100);
        return 0;
    }
    int mToAll(Double m){
        System.out.println("VAlue in kiloMeter ="+m/1000);
        System.out.println("VAlue in HectoMeter ="+m/100);
        System.out.println("VAlue in DecaMeter ="+m/10);
        return 0;
    }
    int hmToAll(Double hm){
        System.out.println("VAlue in kiloMeter ="+hm/10);
        System.out.println("VAlue in Meter ="+hm*100);
        System.out.println("VAlue in DecaMeter ="+hm*10);
        return 0;
    }
    int dmToAll(Double dm){
        System.out.println("VAlue in kiloMeter ="+dm/100);
        System.out.println("VAlue in Meter ="+dm*10);
        System.out.println("VAlue in hectoMeter ="+dm/10);
        return 0;
    }
```

distanceconverter.java

```java
public static void main(String[] args) {
distanceconverter d= new distanceconverter();
int choice ;
Scanner s = new Scanner(System.in);
System.out.println("Enter your choice");
System.out.println("Press 1 to convert from KM to All");
System.out.println("Press 2 to convert from M to All");
System.out.println("Press 3 to convert from HM to All");
System.out.println("Press 4 to convert from DM to All");
choice = s.nextInt();
      switch (choice) {
          case 1:
          System.out.println("Enter km value");
          Double km = s.nextDouble();
              d.kmToAll(km);
              break;
          case 2:
          System.out.println("Enter Metre value");
          Double m = s.nextDouble();
              d.mToAll(m);
              break;
          case 3:
          System.out.println("Enter HectoMe value");
          Double hm = s.nextDouble();
              d.hmToAll(hm);
              break;
          case 4:
          System.out.println("Enter decamtre value");
          double dm = s.nextDouble();
              d.dmToAll(dm);
              break;

          default:
              break;
      }
    }
}
```

```
C:\Users\asus\Desktop>cd "Java Program"

C:\Users\asus\Desktop\Java Program>javac distanceconverter.java

C:\Users\asus\Desktop\Java Program>java distanceconverter
Enter your choice
Press 1 to convert from KM to All
Press 2 to convert from M to All
Press 3 to convert from HM to All
Press 4 to convert from DM to All
3
Enter HectoMe value
6788
VAlue in kiloMeter =678.8
VAlue in Meter =678800.0
VAlue in DecaMeter =67880.0

C:\Users\asus\Desktop\Java Program>
```

Q.2 Define a class which represent the bank account of a person. Include data members like name of depositor, account number, type of account, balance amount in the account and perform following task:

- Assign Initial values to data members
- Deposit an amount
- Withdraw an amount after checking the balance

bankingdetails.java

```java
import java.util.*;
public class bankingdetails {
    private String accno;
    private String name;
    private String acc_type;
    private long balance;
    Scanner sc = new Scanner(System.in);
    //method to open new account
    public void openAccount() {
        System.out.print("Enter Account No: ");
        accno = sc.next();
        System.out.print("Enter Account type: ");
        acc_type = sc.next();
        System.out.print("Enter Name: ");
        name = sc.next();
        System.out.print("Enter Balance: ");
        balance = sc.nextLong();
    }
    //method to display account details
    public void showAccount() {
        System.out.println("Name of account holder: " + name);
        System.out.println("Account no.: " + accno);
        System.out.println("Account type: " + acc_type);
        System.out.println("Balance: " + balance);
    }
```

- To display name and balance.

```java
    //method to deposit money
    public void deposit() {
        long amt;
        System.out.println("Enter the amount you want to deposit: ");
        amt = sc.nextLong();
        balance = balance + amt;
    }
    //method to withdraw money
    public void withdrawal() {
        long amt;
        System.out.println("Enter the amount you want to withdraw: ");
        amt = sc.nextLong();
        if (balance >= amt) {
            balance = balance - amt;
            System.out.println("Balance after withdrawal: " + balance);
        } else {
            System.out.println("Your balance is less than " + amt + "\tTransaction failed...!!" );
        }
    }
    //method to search an account number
    public boolean search(String ac_no) {
        if (accno.equals(ac_no)) {
            showAccount();
            return (true);
        }
        return (false);
    }

}
class bankservices{
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        //create initial accounts
        System.out.print("How many number of customers do you want to input? ");
        int n = sc.nextInt();
        bankingdetails C[] = new bankingdetails[n];
        for (int i = 0; i < C.length; i++) {
```

```
            C[i] = new bankingdetails();
            C[i].openAccount();
        }
        // loop runs until number 5 is not pressed to exit
        int ch;
        do {
            System.out.println("\n BANK SERVICES");
            System.out.println("1. Display all account details \n 2. Search by Account number\n
            3. Deposit the amount \n 4. Withdraw the amount \n 5.Exit ");
            System.out.println("Enter your choice: ");
            ch = sc.nextInt();
                switch (ch) {
                    case 1:
                        for (int i = 0; i < C.length; i++) {
                            C[i].showAccount();
                        }
                        break;
                    case 2:
                        System.out.print("Enter account no. you want to search: ");
                        String ac_no = sc.next();
                        boolean found = false;
                        for (int i = 0; i < C.length; i++) {
                            found = C[i].search(ac_no);
                            if (found) {
                                break;
                            }
                        }
                        if (!found) {
                            System.out.println("Search failed! Account doesn't exist..!!");
                        }
                        break;
                    case 3:
                        System.out.print("Enter Account no. : ");
                        ac_no = sc.next();
                        found = false;
```

```
                    for (int i = 0; i < C.length; i++) {
                        found = C[i].search(ac_no);
                        if (found) {
                            C[i].deposit();
                            break;
                        }
                    }
                    if (!found) {
                        System.out.println("Search failed! Account doesn't exist..!!");
                    }
                    break;
                case 4:
                    System.out.print("Enter Account No : ");
                    ac_no = sc.next();
                    found = false;
                    for (int i = 0; i < C.length; i++) {
                        found = C[i].search(ac_no);
                        if (found) {
                            C[i].withdrawal();
                            break;
                        }
                    }
                    if (!found) {
                        System.out.println("Search failed! Account doesn't exist..!!");
                    }
                    break;
                case 5:
                    System.out.println("See you soon...");
                    break;
                }
            }
            while (ch != 5);
        }
    }

```

```
How many number of customers do you want to input? 2
Enter Account No: 222
Enter Account type: s
Enter Name: aarish
Enter Balance: 20000
Enter Account No: 333
Enter Account type: s
Enter Name: akatsuki
Enter Balance: 4000

 ***Banking System Application***
1. Display all account details
 2. Search by Account number
 3. Deposit the amount
 4. Withdraw the amount
 5.Exit
Enter your choice:
3
Enter Account no. : 333
Name of account holder: akatsuki
Account no.: 333
Account type: s
Balance: 4000
Enter the amount you want to deposit:
5000

 ***Banking System Application***
1. Display all account details
 2. Search by Account number
 3. Deposit the amount
 4. Withdraw the amount
 5.Exit
Enter your choice:
```

Q.3 A bookshop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, price, publisher and stock position. Whenever the customer wants a book, the sales person inputs the title and author, and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then the system displays the book details and request for the number of copies required. If requested copies are available, the total cost of requested copies is displayed, otherwise the message “Required Copies not in Stock” is displayed.

inventory.java

```java
import java.util.*;
public class inventory{

        float price ;
        int stock ;
        String authorname ,title,publisher ;
    inventory(String t,String an,int st,String pub,float p)
    {
        price= p;
        stock=st ;
        authorname=an ;
        title=t ;
        publisher=pub ; ;
    }

public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    inventory c1=new inventory("Computer Fundamentals","Deepak",200,"prakashan",300) ;
    inventory c2=new inventory("data structures and algorithms using c++","Adam",150,"drodzek",200) ;
    inventory c3=new inventory("The object oriented thought process","matt",200,"weisfeld",320) ;
    inventory c4=new inventory("the development of arab mathematics: b/w arithematic and algebra","roshdi",120,"rashed",230) ;
    System.out.println("Enter Title ") ;
    String ti=sc.nextLine() ;
    System.out.println("Enter Author ") ;
    String Au=sc.nextLine() ;
    if((c1.title).equalsIgnoreCase(ti) && (c1.authorname).equalsIgnoreCase(Au) )
    {
        System.out.println("Book Details ") ;
        System.out.println("Title: "+c1.title) ;
        System.out.println("Author: "+c1.authorname) ;
        System.out.println("Publisher: "+c1.publisher) ;
        System.out.println("Price: "+c1.price) ;
        System.out.println("Stock: "+c1.stock) ;
        System.out.println("Enter req copies ") ;
        float r=sc.nextFloat() ;
        if(c1.stock -(int)r>=0)
        {r=r*c1.price;
```

inventory.java

```
38          System.out.println("Total price: "+r) ;
39          }
40          else
41          System.out.println("Required copies currently unavailable") ;
42      }
43      else if((c2.title).equalsIgnoreCase(ti) && (c2.authorname).equalsIgnoreCase(Au) )
44      {
45          System.out.println("Book Details ") ;
46          System.out.println("Title: "+c2.title) ;
47          System.out.println("Author: "+c2.authorname) ;
48          System.out.println("Publisher: "+c2.publisher) ;
49          System.out.println("Price: "+c2.price) ;
50          System.out.println("Stock: "+c2.stock) ;
51
52          System.out.println("Enter req copies ") ;
53          float r=sc.nextFloat() ;
54          if(c2.stock -(int)r>=0)
55          {r=r*c2.price;
56          System.out.println("Total price: "+r) ;
57          }
58          else
59          System.out.println("Required copies not in stock") ;
60      }
61      else if((c3.title).equalsIgnoreCase(ti) && (c3.authorname).equalsIgnoreCase(Au) )
62      {
63     System.out.println("Book Details ") ;
64          System.out.println("Title: "+c3.title) ;
65          System.out.println("Author: "+c3.authorname) ;
66          System.out.println("Publisher: "+c3.publisher) ;
67          System.out.println("Price: "+c3.price) ;
68          System.out.println("Stock: "+c3.stock) ;
69
70          System.out.println("Enter req copies ") ;
71          float r=sc.nextFloat() ;
72          if(c3.stock -(int)r>=0)
73          {r=r*c3.price;
74          System.out.println("Total price: "+r) ;
```

```
74              System.out.println("Total price: "+r) ;
75              }
76              else
77              System.out.println("Required copies not in stock") ;
78          }
79          else if((c4.title).equalsIgnoreCase(ti) && (c4.authorname).equalsIgnoreCase(Au) )
80          {
81              System.out.println("Book Details ") ;
82              System.out.println("Title: "+c4.title) ;
83              System.out.println("Author: "+c4.authorname) ;
84              System.out.println("Publisher: "+c4.publisher) ;
85              System.out.println("Price: "+c4.price) ;
86              System.out.println("Stock: "+c4.stock) ;
87
88              System.out.println("Enter req copies ") ;
89              float r=sc.nextFloat() ;
90              if(c4.stock -(int)r>=0)
91              {r=r*c4.price;
92              System.out.println("Total price: "+r) ;
93              }
94              else
95              System.out.println("Required copies not in stock") ;
96          }
97          else
98          System.out.println("Book Not found ") ;
99
100 }
101 }
102
103
104
105
106
107
108
109
110
```

Command Prompt

```
C:\Users\asus\Desktop\Java Program>javac inventory.java

C:\Users\asus\Desktop\Java Program>java inventory
Enter Title
DBMS
Enter Author
Korth
Book Not found

C:\Users\asus\Desktop\Java Program>java inventory
Enter Title
Computer Fundamentals
Enter Author
Deepak
Book Details
Title: Computer Fundamentals
Author: Deepak
Publisher: prakashan
Price: 300.0
Stock: 200
Enter req copies
20
Total price: 6000.0

C:\Users\asus\Desktop\Java Program>
```

Q.4 Define a class which represents management of books in Library. Include data members like unique id, title, author of each book and unique_id to a member. Include member function which provide facilities to Issue or reissue books, Return Books and track therecord of the book, fine calculation.

library.java

```java
import java.util.Arrays;
import java.util.Scanner;
public class library{
        String authorname ,title,publisher ;
        String issue;
    library(String t,String an,String pub,String id)
    {
        authorname=an ;
        title=t ;
        publisher=pub ;
        issue=id ;
    }
    library(String t,String an,String pub)
    {
        authorname=an ;
        title=t ;
        publisher=pub ;
        issue="Null" ;
    }
    void issuebook()
    {

    }

public static void main(String[] args) {
    library [] c ;
    c = new library[17];
    Scanner sc = new Scanner(System.in);
     c[1]=new library("Fundamentals of c","Deepak","Balaji") ;
     c[2]=new library("Fundamentals of c++","Dheeraj","Balaji") ;
     c[3]=new library("Concepts of Java","Lalu","Balaji","20c3029") ;
     c[4]=new library("Easy Cp","Bhiya","Balaji","20c3022") ;
     c[5]=new library("Concepts of c","janvi","Retry","20c2011") ;
    c[6]=new library("getting ready for CS","Shastri","Cengage") ;
    c[7]=new library("HTMl the basics","Abhishek","Cengage") ;
    c[8]=new library("Oops made easy","vivek","Balaji") ;
    c[9]=new library("Fundamentals of Node","Deepak","Balaji") ;
```

library.java

```
38      c[10]=new library("Starting with cp","Dheeraj & Bhiyu","Arihant") ;
39      c[11]=new library("DS in Java","Lata parikh","Balaji") ;
40      c[12]=new library("Algorithms CLRS","CLRS","pearson") ;
41      c[13]=new library("SQL Database","Joseph","ReLearn","203001") ;
42      c[14]=new library("Concepts of CSS","Deepak","Cengage") ;
43      c[15]=new library("Wed Dev basics","Ahirvar","Balaji","20c30058") ;
44      c[16]=new library("Oops advanced","vivek","pearson") ;
45
46      System.out.println("Enter your ID ") ;
47      String id=sc.nextLine() ;
48      System.out.println("Enter title of book you want to issue ") ;
49      String T=sc.nextLine() ;
50          for(int i=1;i<17;i++)
51      {   if((c[i].issue).equalsIgnoreCase(id))
52          {System.out.println("A book is Already issued by your Id "+c[i].title) ;
53          break ;
54          }
55          else if((c[i].title).equalsIgnoreCase(T) && c[i].issue=="Null")
56          {
57              c[i].issue=id ;
58              System.out.println("Book issued by "+id);
59          }
60
61      }
62  System.out.println("Want to Return a Book? ") ;
63  Scanner s=new Scanner(System.in);
64  String t=s.nextLine() ;
65  if(t.equalsIgnoreCase("y"))
66  {  System.out.println("Enter title of book you want to return ") ;
67
68  String R=s.nextLine() ;
69  System.out.println("Enter No. of Days late: ") ;
70  int n=s.nextInt();
71  System.out.println("Fine: "+n*5) ;
```

```
72
73  for(int i=1;i<17;i++)
74      {
75          if((c[i].title).equalsIgnoreCase(R))
76          {
77              c[i].issue="Null" ;
78          }
79      }
80  }
81
82  System.out.println("The Book Record is :") ;
83  for(int i=1;i<17;i++)
84  {
85      System.out.println("Title: "+c[i].title);
86      System.out.println("Author: "+c[i].authorname);
87      System.out.println("Publisher: "+c[i].publisher);
88      System.out.println("Issued by "+c[i].issue);
89      System.out.println() ;
90
91  }
92
93  }
94  }
95
96
97
98
99
100
101
102
103
104
105
```

Command Prompt

```
C:\Users\asus\Desktop\Java Program>javac library.java

C:\Users\asus\Desktop\Java Program>java library
Enter your ID
4
Enter title of book you want to issue
Fundamentals of c
Book issued by 4
Want to Return a Book?
y
Enter title of book you want to return
fundamentals of c
Enter No. of Days late:
0
Fine: 0
The Book Record is :
Title: Fundamentals of c
Author: Deepak
Publisher: Balaji
Issued by Null

Title: Fundamentals of c++
Author: Dheeraj
Publisher: Balaji
Issued by Null

Title: Concepts of Java
Author: Lalu
Publisher: Balaji
Issued by 20c3029

Title: Easy Cp
Author: Bhiya
Publisher: Balaji
Issued by 20c3022

Title: Concepts of c
Author: janvi
Publisher: Retry
Issued by 20c2011

Title: getting ready for CS
Author: Shastri
Publisher: Cengage
Issued by Null
```

Q.5 Write a program to find area and perimeter of Square, Rectangle, Circle , Cone , Parallelogram . Use the concept of method overriding.

Methodoverloading.java

```java
import java.util.Arrays;
import java.util.Scanner;
public class Methodoverloading{
        void areaandperi(float a) {
            System.out.println("Area of Square is : "+ Math.pow(a,2));
            System.out.println("Perimeter of Square is : "+ 4*a);
            System.out.println();
        }
        void areaandperi(float a,float b){
            System.out.println("Area of Rectangle is : "+a*b);
            System.out.println("Perimeter of Rectangle is : "+ 2*(a+b));
            System.out.println();
        }
        void areaandperi(double a){
            System.out.println("Area of Circle is : "+ 3.14*(Math.pow(a,2)));
            System.out.println("Perimeter of Circle is : "+ 3.14*2*a);
            System.out.println();
        }
        void areaandperi(double a,double b){
            System.out.println("Area of Cone is : "+ 3.14*a*(a+b));
            System.out.println("Perimeter of Cone is : "+ 3.14*2*a);
            System.out.println();
        }
        void areaandperi(float a,float b,double h){
            System.out.println("Area of parallelogram is : "+ b*h);
            System.out.println("Perimeter of Parallelogram is : "+ 2*(a+b));
            System.out.println();
        }
public static void main(String[] args) {
    Methodoverloading a=new Methodoverloading() ;
    a.areaandperi(3) ;
    a.areaandperi(12,4) ;
    a.areaandperi(5.0) ;
    a.areaandperi(5.0,3.0) ;
    a.areaandperi(4,2,7.0) ;
}
}
```

Command Prompt

```
C:\Users\asus\Downloads>cd ../Desktop

C:\Users\asus\Desktop>cd "Java Program"

C:\Users\asus\Desktop\Java Program>javac Methodoverloading.java

C:\Users\asus\Desktop\Java Program>java Methodoverloading
Area of Square is : 9.0
Perimeter of Square is : 12.0

Area of Rectangle is : 48.0
Perimeter of Rectangle is : 32.0

Area of Circle is : 78.5
Perimeter of Circle is : 31.400000000000002

Area of Cone is : 125.60000000000001
Perimeter of Cone is : 31.400000000000002

Area of parallelogram is : 14.0
Perimeter of Parallelogram is : 12.0


C:\Users\asus\Desktop\Java Program>
```

Q.6 Define a class for rectangle objects defined by two points, the top left and bottom right corners of the rectangle. Include a constructor to copy a rectangle, a method to return a rectangle object that encloses the current object and the rectangle passed as an argument and method to display the defining points of a rectangle. Test the class by creating for rectangles and combining these cumulatively to end up with a rectangle enclosing them all. Output the defining points of all these rectangle you create.

Rectangle.java

```java
import java.util.Arrays;
import java.util.Scanner;
class coordinates{
public int x ;
public int y ;
};
public class Rectangle{
        Scanner sc= new Scanner(System.in) ;
        coordinates bl=new coordinates() ;
        coordinates br=new coordinates() ;
        coordinates tl=new coordinates() ;
        coordinates tr=new coordinates() ;
        void cords()
        {
            System.out.println("Enter the coords of Bottom left corner : ") ;
            System.out.print("x: ") ;
            bl.x=sc.nextInt() ;
            System.out.print("y: ") ;
            bl.y=sc.nextInt() ;
            System.out.println("Enter the coords of Top Right corner : ") ;
            System.out.print("x: ") ;
            tr.x=sc.nextInt() ;
            System.out.print("y: ") ;
            tr.y=sc.nextInt() ;
        }
        Rectangle()
        {
            cords() ;
            tl.x=bl.x ;
            tl.y=tr.y ;
            br.x=tr.x ;
            br.y=bl.y ;
        }

        Rectangle(int a)
        {
        }
```

```
        void Displayc()
        {
            System.out.print("Bottom left : ("+bl.x+","+bl.y+")"+"Top right : ("+tr.x+","+tr.y+")") ;
        }
        Rectangle(Rectangle a,Rectangle b,Rectangle c,Rectangle d)
        { int p=0 ;
          Rectangle e=new Rectangle(p) ;
            e.bl.x=Math.min(a.bl.x,b.bl.x) ;
            e.bl.x=Math.min(e.bl.x,c.bl.x) ;
            e.bl.x=Math.min(e.bl.x,d.bl.x) ;
            e.tl.x=e.bl.x ;
            e.bl.y=Math.min(a.bl.y,b.bl.y) ;
            e.bl.y=Math.min(e.bl.y,c.bl.y) ;
            e.bl.y=Math.min(e.bl.y,d.bl.y) ;
            e.br.y=e.bl.y ;
            e.tr.x=Math.max(a.tr.x,b.tr.x) ;
            e.tr.x=Math.max(e.tr.x,c.tr.x) ;
            e.tr.x=Math.max(e.tr.x,d.tr.x) ;
            e.br.x=e.tr.x ;
            e.tr.y=Math.max(a.tr.y,b.tr.y) ;
            e.tr.y=Math.max(e.tr.y,c.tr.y) ;
            e.tr.y=Math.max(e.tr.y,d.tr.y) ;
            e.tl.y=e.tr.y;
            e.Displayc();
            }

public static void main(String[] args) {
    Rectangle a=new Rectangle() ;
    Rectangle b=new Rectangle() ;
    Rectangle c=new Rectangle() ;
    Rectangle d=new Rectangle() ;
    System.out.println("The Defining points of Enclosing Rectangle are :");
    Rectangle e=new Rectangle(a,b,c,d) ;
}
}
```

Command Prompt

```
C:\Users\asus\Desktop\Java Program>javac Rectangle.java

C:\Users\asus\Desktop\Java Program>java Rectangle
Enter the coords of Bottom left corner :
x: 4
y: 4
Enter the coords of Top Right corner :
x: 5
y: 6
Enter the coords of Bottom left corner :
x: 3
y: 4
Enter the coords of Top Right corner :
x: 5
y: 8
Enter the coords of Bottom left corner :
x: 5
y: 3
Enter the coords of Top Right corner :
x: 3
y: 4
Enter the coords of Bottom left corner :
x: 4
y: 3
Enter the coords of Top Right corner :
x: 8
y: 9
The Defining points of Enclosing Rectangle are :
Bottom left : (3,3)Top right : (8,9)
C:\Users\asus\Desktop\Java Program>
```

Q.7 Define a class, mcmlength, to represent a length measured in meters, centimeters, and millimeters, each stored as integer. Include methods to add and subtract objects, to multiply and divide object by an integer value, to calculate and area resulting from the product of the two objects, and to compare objects. Include constructors that accept three arguments, which creates an object with length set to zero. Check the class by creating some objects and testing the class operation.

mcmlength.java

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

import javax.lang.model.util.ElementScanner14;

public class mcmlength {

        int m,cm,mm,r ;
        mcmlength(int a,int b,int c)
        {
            m=a ;
            cm=b ;
            mm=c ;
            r=(m*1000 )+ (cm*10)+ mm ;
        }
        mcmlength(int h)
        {
            int m,cm,mm,r ;
        }
        void backto(int n)
        {
            int M=n/1000 ;
            n=n%1000 ;
            int Ce=n/10 ;
            n=n%10 ;
            m=M ;
            cm=Ce ;
            mm=n ;
        }
        void Display(mcmlength a)
        {
            System.out.println(a.m+" meter "+a.cm+" centimeter "+a.mm+" milimeter ") ;
        }
        void subs(mcmlength a1,mcmlength a2)
        { int p= 0 ;
            mcmlength y=new mcmlength(p) ;
            y.r=a1.r - a2.r ;
```

```
38              y.backto(y.r) ;
39              Display(y) ;}
40          void add(mcmlength a1,mcmlength a2)
41          { int p= 0 ;
42              mcmlength y=new mcmlength(p) ;
43              y.r=a1.r + a2.r ;
44              y.backto(y.r) ;
45              Display(y) ;
46          }
47          void Mul(mcmlength a1,int n)
48          {
49              mcmlength y=new mcmlength(n*a1.m,n*a1.cm,n*a1.mm) ;
50              y.backto(y.r);
51              Display(y);
52              }
53          void Div(mcmlength a1,int n)
54          {
55              int p=0 ;
56              mcmlength y=new mcmlength(p) ;
57              y.r=(a1.r /n) ;
58              y.backto(y.r) ;
59              Display(y);
60          }
61          void area(mcmlength a1,mcmlength a2)
62          {
63              int p=0 ;
64              mcmlength y=new mcmlength(p) ;
65              y.r=(a1.r)*(a2.r) ;
66              System.out.println("Area is: "+y.r+" sq mm");
67          }
68          void compare(mcmlength a1,mcmlength a2)
69          {
70              if(a1.r>a2.r)
71              {
72              System.out.print("Object "+a1.m+"m "+a1.cm+"cm "+a1.mm+"mm is bigger than "+a2.m+"m "+a2.cm+"cm "+a2.mm+"mm") ;
73              }
```

```
            else
            {
                System.out.print("Object "+a2.m+"m "+a2.cm+"cm "+a2.mm+"mm is bigger than "+a1.m+"m "+a1.cm+"cm "+a1.mm+"mm ") ;
            }
        }
public static void main(String[] args) {
    Scanner sc= new Scanner(System.in) ;
    int m1,m2,cm1,cm2,mm1,mm2 ;
    System.out.println("Enter value for object 1 in Meter ,Centimeter,Millimeter ") ;
    m1=sc.nextInt() ;
    cm1=sc.nextInt() ;
    mm1=sc.nextInt() ;
    System.out.println("Enter value for object 2 in Meter ,Centimeter,Millimeter ") ;
    m2=sc.nextInt() ;
    cm2=sc.nextInt() ;
    mm2=sc.nextInt() ;
    mcmlength a1=new mcmlength(m1,cm1,mm1) ;
    mcmlength a2=new mcmlength(m2,cm2,mm2) ;
    System.out.print("Ans of addition is : ") ;
    a1.add(a1,a2) ;
    System.out.print("Ans of substraction is : ") ;
    a1.subs(a1,a2) ;
    System.out.print("Enter no. thorugh which Multiplication is to ber performed with object1 ") ;
    m1=sc.nextInt() ;
    System.out.print("Ans of Mulitiplication is : ") ;
    a1.Mul(a1, m1) ;
    System.out.print("Enter no. thorugh which Division is to ber performed with object1 ") ;
    m1=sc.nextInt() ;
    System.out.print("Ans of Division is : ") ;
    a1.Div(a1, m1) ;
    System.out.print("Ans of area enclosed by object 1 and object 2 is : ") ;
    a1.area(a1, a2);
    System.out.print("Ans of Comparison is : ") ;
    a1.compare(a1, a2);
}
}
```

```
C:\Users\asus\Desktop\Java Program>javac mcmlength.java

C:\Users\asus\Desktop\Java Program>java mcmlength
Enter value for object 1 in Meter ,Centimeter,Millimeter
45
34
56
Enter value for object 2 in Meter ,Centimeter,Millimeter
3
4
6
Ans of addition is : 48 meter 44 centimeter 2 milimeter
Ans of substraction is : 42 meter 35 centimeter 0 milimeter
Enter no. thorugh which Multiplication is to ber performed with object1
5
Ans of Mulitiplication is : 226 meter 98 centimeter 0 milimeter
Enter no. thorugh which Division is to ber performed with object1 6
Ans of Division is : 7 meter 56 centimeter 6 milimeter
Ans of area enclosed by object 1 and object 2 is : Area is: 138276216 sq mm
Ans of Comparison is : Object 45m 34cm 56mm is bigger than 3m 4cm 6mm
C:\Users\asus\Desktop\Java Program>
```

Q.8 Define a class, tkgweight to represent a weight in tons, kilograms, and grams and include a similar range of methods and constructors as the previous question. Demonstrate this class by creating and operating some objects of the class.

tkgweight.java

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

import javax.lang.model.util.ElementScanner14;

public class tkgweight {

        int t,kg,g ;
         int r ;
         tkgweight(int a,int b,int c)
        {
            t=a ;
            kg=b ;
            g=c ;
            r=(t*1000000 )+ (kg*1000)+ g ;
        }
        tkgweight(int h)
        {
            int t,kg,g ;
             int r ;
        }
        void backto( int n)
        {
            int M=n/1000000 ;
            n=n%1000000 ;
            int Ce=n/1000 ;
            n=n%1000 ;
            t=M ;
            kg=Ce ;
            g=n ;
        }
        void Display(tkgweight a)
        {
            System.out.println(a.t+" tons "+a.kg+" kilograms "+a.g+" grams ") ;
        }
        void subs(tkgweight a1,tkgweight a2)
        { int p= 0 ;
```

```
37          { int p= 0 ;
38              tkgweight y=new tkgweight(p) ;
39              y.r=a1.r - a2.r ;
40              y.backto(y.r) ;
41              Display(y) ;}
42          void add(tkgweight a1,tkgweight a2)
43          { int p= 0 ;
44              tkgweight y=new tkgweight(p) ;
45              y.r=a1.r + a2.r ;
46              y.backto(y.r) ;
47              Display(y) ;
48          }
49          void Mul(tkgweight a1,int n)
50          {
51              tkgweight y=new tkgweight(n*a1.t,n*a1.kg,n*a1.g) ;
52              y.backto(y.r);
53              Display(y);
54              }
55          void Div(tkgweight a1,int n)
56          {
57              int p=0 ;
58              tkgweight y=new tkgweight(p) ;
59              y.r=(a1.r /n) ;
60              y.backto(y.r) ;
61              Display(y);
62          }
63          void compare(tkgweight a1,tkgweight a2)
64          {
65              if(a1.r>a2.r)
66              {
67              System.out.print("Object "+a1.t+"ton "+a1.kg+"kg "+a1.g+"g is bigger than "+a2.t+"ton "+a2.kg+"kg "+a2.g+"g") ;
68              }
69              else
70              {
71                  System.out.print("Object "+a2.t+"ton "+a2.kg+"kg "+a2.g+"g is bigger than "+a1.t+"ton "+a1.kg+"kg "+a1.g+"g ") ;
72              }
73          }
```

```
74  public static void main(String[] args) {
75      Scanner sc= new Scanner(System.in) ;
76      int m1,m2,cm1,cm2,mm1,mm2 ;
77      System.out.println("Enter value for object 1 in ton ,kilogram,gram ") ;
78      m1=sc.nextInt() ;
79      cm1=sc.nextInt() ;
80      mm1=sc.nextInt() ;
81      System.out.println("Enter value for object 2 in ton ,kilogram,gram ") ;
82      m2=sc.nextInt() ;
83      cm2=sc.nextInt() ;
84      mm2=sc.nextInt() ;
85      tkgweight a1=new tkgweight(m1,cm1,mm1) ;
86      tkgweight a2=new tkgweight(m2,cm2,mm2) ;
87      System.out.print("Ans of addition is : ") ;
88      a1.add(a1,a2) ;
89      System.out.print("Ans of substraction is : ") ;
90      a1.subs(a1,a2) ;
91      System.out.print("Enter no. thorugh which Multiplication is to ber performed with object1 ") ;
92      m1=sc.nextInt() ;
93      System.out.print("Ans of Multiplication is : ") ;
94      a1.Mul(a1, m1) ;
95      System.out.print("Enter no. thorugh which Division is to ber performed with object1 ") ;
96      m1=sc.nextInt() ;
97      System.out.print("Ans of Division is : ") ;
98      a1.Div(a1, m1) ;
99      System.out.print("Ans of Comparison is : ") ;
100     a1.compare(a1, a2);
101 }
102 }
103
104
105
```

Command Prompt

```
C:\Users\asus\Desktop\Java Program>javac tkgweight.java

C:\Users\asus\Desktop\Java Program>java tkgweight
Enter value for object 1 in ton ,kilogram,gram
4
6
7
Enter value for object 2 in ton ,kilogram,gram
8
7
6
Ans of addition is : 12 tons 13 kilograms 13 grams
Ans of substraction is : -4 tons 0 kilograms -999 grams
Enter no. thorugh which Multiplication is to ber performed with object1 65
Ans of Multiplication is : 260 tons 390 kilograms 455 grams
Enter no. thorugh which Division is to ber performed with object1 443
Ans of Division is : 0 tons 9 kilograms 42 grams
Ans of Comparison is : Object 8ton 7kg 6g is bigger than 4ton 6kg 7g
C:\Users\asus\Desktop\Java Program>
```