**Program:**

**File name : Greet.java**

```
import java.io.*;
import java.util.Scanner;
public class Greet
{
public static void main(String args[])
{
Scanner in=new Scanner(System.in);
System.out.println();
System.out.print("Please type your name here : ");
String name=in.nextLine();
System.out.println();
System.out.println("Hai "+name+", Welcome to My First Java Program !");
}
}
```

**OUTPUT**

```
D:\E DRIVE\OOP Java\LAB\UCS1312 LAB\JAVA PROGRAMS>javac Greet.java

D:\E DRIVE\OOP Java\LAB\UCS1312 LAB\JAVA PROGRAMS>java Greet

Please type your name here : James

Hai James, Welcome to My First Java Program !
```

## PROGRAM

**File Name : Grade.java**

```
import java.io.*;
import java.util.*;


class Grade
{
public static void main(String args[])
          {
            String name;
            int m1,m2,m3,m4,m5;
        float Avg;
        Scanner in=new Scanner(System.in);
        System.out.print(" Student Name  :  ");
            name=in.nextLine();
System.out.print(" Enter mark for subject1 :  ");
m1=in.nextInt();
System.out.print(" Enter mark for subject2 :  ");
m2=in.nextInt();
System.out.print(" Enter mark for subject3 :  ");
m3=in.nextInt();
System.out.print(" Enter mark for subject4 :  ");
m4=in.nextInt();
System.out.print(" Enter mark for subject5 :  ");
m5=in.nextInt();
            Avg=(m1+m2+m3+m4+m5)/5;
```

```
 if(Avg>95 &&Avg<=100)
        System.out.println("Grade of "+name+" is O");
else if(Avg>90 &&Avg<=95)
        System.out.println("Grade of "+name+" is O");
else if(Avg>80 &&Avg<=90)
        System.out.println("Grade of "+name+" is S");
else if(Avg>70 &&Avg<=80)
        System.out.println("Grade of "+name+" is B");
else if(Avg>60 &&Avg<=70)
        System.out.println("Grade of "+name+" is C");
else if(Avg>50 &&Avg<=60)
        System.out.println("Grade of "+name+" is D");
else
        System.out.println("Grade of "+name+" is U");
}
}
```

**OUTPUT**

```
D:\JAVA>javac Grade.java

D:\JAVA>java Grade

Student Name  :  GOSLING

 Enter mark for subject1 :  98

 Enter mark for subject2 :  100

 Enter mark for subject3 :  80

 Enter mark for subject4 :  89

 Enter mark for subject5 :  91

Grade of GOSLING is O
```

**// CURRENCY CONVERTER**

**PROGRAM**

```
import java.io.*;
import java.util.Scanner;

public class CurrencyConv
{

public static double yen,inr,euro,Y,D,E;

CurrencyConv()
{
Y=0.57;
D=83;
E=91;
}

public static void toINR(double yen,double dollar,double euro)
{
double rs_y,rs_d,rs_e;
rs_y= yen *  Y ;
rs_d= dollar * D;
rs_e= euro * E ;
System.out.println();
System.out.println("Rupees equivalent of " + yen + " Yen is \t :Rs."+ rs_y);
System.out.println("Rupees equivalent of " + dollar + " Dollar is \t :Rs."+ rs_d);
System.out.println("Rupees equivalent of " + euro + " Euro is \t :Rs."+ rs_e);
}

public static void inrTo(double inr)
{
double y,d,e;
y=inr/Y;
d= inr/D;
e=inr/E;
System.out.println();
System.out.println("Yen equivalent of " + inr +" rupees is \t:¥."+ String.format("%.2f",y));
System.out.println("Dollar equivalent of " + inr +" rupees is \t:$."+ String.format("%.2f",d));
System.out.println("Euro equivalent of " + inr +" rupees is \t:€."+String.format("%.2f",e));
}




public static void main(String args[])
```

```
{
CurrencyConv C=new CurrencyConv();
Scanner in=new Scanner(System.in);
double yen=0, dollar=0, euro = 0, i=0;
System.out.println("Currency Conversion (Yen, Dollar, Euro to INR)");
System.out.println("~~~~~~~~ ~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~");
System.out.print("Enter the YEN     :  ");
yen=in.nextInt();
System.out.print("Enter the DOLLAR  :  ");
dollar=in.nextInt();
System.out.print("Enter the EURO    :  ");
euro=in.nextInt();

toINR(yen, dollar,euro);

System.out.println("Currency Conversion (INR to Yen, Dollar, Euro)");
System.out.println("~~~~~~~~ ~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~");
System.out.print("Enter the Indian Ruppes - INR  :  ");
i=in.nextInt();

inrTo(i);

}

}
```

## OUTPUT

```
D:\Amudha\OOP JAVA 2023\UCS1312 LAB\JAVA PROGRAMS>javac CurrencyConv.java

D:\Amudha\OOP JAVA 2023\UCS1312 LAB\JAVA PROGRAMS>java CurrencyConv

Currency Conversion (Yen, Dollar, Euro to INR)
~~~~~~~~ ~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~
Enter the YEN    :  3
Enter the DOLLAR  :  5
Enter the EURO    :  2
Rupees equivalent of 3.0 Yen is          :Rs.1.71
Rupees equivalent of 5.0 Dollar is       :Rs.415.0
Rupees equivalent of 2.0 Euro is         :Rs.182.0

Currency Conversion (INR to Yen, Dollar, Euro)
~~~~~~~~ ~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~
Enter the Indian Ruppes - INR  :  100
Yen equivalent of 100.0 rupees is        :¥.175.44
Dollar equivalent of 100.0 rupees is      :$.1.20
Euro equivalent of 100.0 rupees is        :€.1.10
```

**PROGRAM //DISTANCE CONVERTER**

```
import java.io.*;
import java.util.Scanner;
public class DistConv
{
public static double x;
public static double y;
DistConv()
{
x=1000;          //1000 meter = 1 km
y=1.61;          //1 mile = 1.61 km
}

public static void toKM(double meter,double miles)
{
double km1,km2;
km1= meter/x;        // meter/1000
km2= miles*y ;       // miles*1.61

System.out.println();
System.out.println(meter + " meters is equivalent to "+km1+" Kilometers");
System.out.println(miles + " miles is equivalent to "+km2+" Kilometers");

}

public static void kmTo(double km)
{
System.out.println();
System.out.println(km + " kilometers is equivalent to "+ (km*x) +" meters");
System.out.println(km + " kilometers is equivalent to "+ (km/y) +" miles");
}

public static void main(String args[])
{
DistConv  D=new DistConv();
Scanner in=new Scanner(System.in);
double m1,m2,km;
System.out.println("Distance Conversion (meters and miles to Kilometers)");
```

```
System.out.println("~~~~~~~~~ ~~~~~~~~~~~
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~");
System.out.print("Enter the meters     :  ");
m1=in.nextInt();
System.out.print("Enter the miles :  ");
m2=in.nextInt();


toKM(m1,m2);

System.out.println("Distance Conversion (Kilometers to meters and miles)");
System.out.println("~~~~~~~~~ ~~~~~~~~~~~
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~");
System.out.print("Enter the Kilometers :  ");
km=in.nextInt();
kmTo(km);

}

}
```

**OUTPUT**

```
D:\JAVA PROGRAMS>javac DistConv.java
D:\JAVA PROGRAMS>java DistConv
Distance Conversion (meters and miles to Kilometers)
~~~~~~~~~ ~~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Enter the meters     :  2000
Enter the miles :  100

2000.0 meters is equivalent to 2.0 Kilometers
100.0 miles is equivalent to 161.0 Kilometers
Distance Conversion (Kilometers to meters and miles)
~~~~~~~~~ ~~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Enter the Kilometers :  3

3.0 kilometers is equivalent to 3000.0 meters
3.0 kilometers is equivalent to 1.8633540372670807 miles
```

**PROGRAM**

```
import java.io.*;
import java.util.Scanner;
class MyTime
{
public static double h;
public static double m;
public static double s;

MyTime()
{
h=0;
m=0;
s=0;
}

public static void toHour()
{
System.out.println();
System.out.println(m + " Minutes is equivalent to  " + String.format("%.2f",m/60) +" Hours " );
System.out.println(s+ " Seconds is equivalent to  " + String.format("%.2f",s/360) +" Hours " );

}

public static void hourTo()
{
System.out.println();
System.out.println(h+ " Hours is equivalent to " + h*60 + "\tMinutes ");
System.out.println(h+ " Hours is equivalent to " + h*360 + "\tSeconds " );
}
} // End of class TimeConv

public class TimeConv
{
public static void main(String args[])
{
MyTime  D=new MyTime();
Scanner in=new Scanner(System.in);
System.out.println("My Time Conversion Program");
System.out.println("Time Conversion (Minutes and Seconds to Hours)");
System.out.println("~~~~ ~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~");
System.out.print("Enter the minutes :  ");
D.m=in.nextInt();
System.out.print("Enter the seconds :  ");
D.s=in.nextInt();

D.toHour();
```

```
System.out.println("Time Conversion (Hours to Minutes and Seconds)");
System.out.println("~~~~ ~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~");
System.out.print("Enter the Hours :  ");
D.h=in.nextInt();
D.hourTo();

}

} //End of class TimeConv
```

**OUTPUT**

```
D:\ JAVA PROGRAMS>javac TimeConv.java

D:\ JAVA PROGRAMS>java TimeConv
My Time Conversion Program
Time Conversion (Minutes and Seconds to Hours)
~~~~ ~~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Enter the minutes :  360
Enter the seconds :  7200

360.0 Minutes is equivalent to  6.00 Hours
7200.0 Seconds is equivalent to  20.00 Hours
Time Conversion (Hours to Minutes and Seconds)
~~~~ ~~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Enter the Hours :  2

2.0 Hours is equivalent to 120.0        Minutes
2.0 Hours is equivalent to 720.0        Seconds
```

**PROGRAM**

**File Name : MatMul.java**

```
import java.io.*;

public class MatMul
{
public static void main(String args[])
{
int a[][]={{1,1,1},{2,2,2},{3,3,3}};
int b[][]={{1,1,1},{2,2,2},{3,3,3}};

int c[][]=new int[3][3];

System.out.println("Matrix A");
System.out.println("--------");

for(int i=0;i<3;i++)
{
for(int j=0;j<3;j++)
{
System.out.print(a[i][j]+"\t");
}
System.out.println("");
}
System.out.println();

System.out.println("Matrix B");
System.out.println("--------");

for(int i=0;i<3;i++)
{
for(int j=0;j<3;j++)
{
System.out.print(b[i][j]+"\t");
}
System.out.println("");
}
System.out.println();
```

```
//PRODUCT OF 2 MATRICES
System.out.println("Matrix C [PRODUCT OF 2 MATRICES]");
System.out.println("--------------------------------");



for(int i=0;i<3;i++)
{
for(int j=0;j<3;j++)
{
c[i][j]=0;
for(int k=0;k<3;k++)
{
    c[i][j]+=a[i][k]*b[k][j];
}
System.out.print(c[i][j]+"\t");
}
System.out.println();
}
}   //End of main
}   //End of class
```

**OUTPUT**

```
Matrix A
--------
1       1       1
2       2       2
3       3       3

Matrix B
--------
1       1       1
2       2       2
3       3       3

Matrix C [PRODUCT OF 2 MATRICES]
---------------------------------
6       6       6
12      12      12
18      18      18
```

**PROGRAM**
**File Name: StringManip.java**

```
import java.util.*;
import java.io.*;

public class StringManip
{
public static void main(String args[]) throws IOException
{
ArrayList<String> list1 = new ArrayList<String>();
DataInputStream in=new DataInputStream(System.in);
int c,ch;
int i,j;
String str,str1;
do
{
System.out.println("STRING MANIPULATION");
System.out.println("************************");
System.out.println("1. Append at end \t 2.Insert at particular index \t 3.Search \t");
System.out.println("4. List string that starts with letter \t");
System.out.println("5. Size \t 6.Remove \t 7.Sort \t 8.Display\t" );

System.out.println("Enter the choice ");
c=Integer.parseInt(in.readLine());

switch(c)
{

case 1:
System.out.println("Enter a string ");
str=in.readLine();
list1.add(str);
break;

case 2:
System.out.println("Enter the string ");
str=in.readLine();
System.out.println("Specify the index/position to insert");
i=Integer.parseInt(in.readLine());
list1.add(i-1,str);
System.out.println("The array list has following elements:"+list1);
break;

case 3:
System.out.println("Enter the string to search ");
```

```
str=in.readLine();
j=list1.indexOf(str);
if(j==-1)
   System.out.println("Element not found");
else
   System.out.println("Index of "+str+"is "+(j+1));
break;

case 4:
System.out.println("Enter the character to List string that starts with specified character");
str=in.readLine();
for(i=0;i<(list1.size()-1);i++)
{
str1=list1.get(i);
if(str1.startsWith(str))
    System.out.println(str1);
}
break;

case 5:
System.out.println("Size of the list "+list1.size());
break;
case 6:
System.out.println("Enter the string to be removed");
str=in.readLine();
if(list1.remove(str))
          System.out.println("Element Removed"+str);
else
          System.out.println("Element not present");
break;
case 7:
Collections.sort(list1);
System.out.println("The array list has following elements:"+list1);
break;
case 8:
System.out.println("The array list has following elements:"+list1);
break;
}
System.out.println("Please Enter 0 to break and 1 to continue");
ch=Integer.parseInt(in.readLine());

}while(ch==1);
}  //End of main
}  //End of class
```

## OUTPUT

```
D:\JAVA PROGRAMS>javac StringManip.java
D:\JAVA PROGRAMS>java StringManip
STRING MANIPULATION
************************
1. Append at end        2.Insert at particular index    3.Search
4. List string that starts with letter
5. Size         6.Remove        7.Sort          8.Display
Enter the choice
1
Enter a string
Apple
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
************************
1. Append at end        2.Insert at particular index    3.Search
4. List string that starts with letter
5. Size         6.Remove        7.Sort          8.Display
Enter the choice
1
Enter a string
Banana
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
************************
1. Append at end        2.Insert at particular index    3.Search
4. List string that starts with letter
5. Size         6.Remove        7.Sort          8.Display
Enter the choice
1
Enter a string
Carrot
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
************************
1. Append at end        2.Insert at particular index    3.Search
4. List string that starts with letter
5. Size         6.Remove        7.Sort          8.Display
Enter the choice
1
Enter a string
Egg
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
************************
1. Append at end        2.Insert at particular index    3.Search
```

4. List string that starts with letter
5. Size 6.Remove 7.Sort 8.Display
Enter the choice
1
Enter a string
Grapes
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
**********
1. Append at end 2.Insert at particular index 3.Search
4. List string that starts with letter
5. Size 6.Remove 7.Sort 8.Display
Enter the choice
2
Enter the string
Honey
Specify the index/position to insert
2
The array list has following elements:[Apple, Honey, Banana, Carrot, Egg, Grapes]
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
**********
1. Append at end 2.Insert at particular index 3.Search
4. List string that starts with letter
5. Size 6.Remove 7.Sort 8.Display
Enter the choice
3
Enter the string to search
Carrot
Index of Carrot is 4
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
**********
1. Append at end 2.Insert at particular index 3.Search
4. List string that starts with letter
5. Size 6.Remove 7.Sort 8.Display
Enter the choice
4
Enter the character to List string that starts with specified character
E
Egg
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
**********
1. Append at end 2.Insert at particular index 3.Search
4. List string that starts with letter
5. Size 6.Remove 7.Sort 8.Display

Enter the choice
5
Size of the list 6
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
**********
1. Append at end 2.Insert at particular index 3.Search
4. List string that starts with letter
5. Size 6.Remove 7.Sort 8.Display
Enter the choice
6
Enter the string to be removed
Banana
Element RemovedBanana
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
**********
1. Append at end 2.Insert at particular index 3.Search
4. List string that starts with letter
5. Size 6.Remove 7.Sort 8.Display
Enter the choice
8
The array list has following elements:[Apple, Honey, Carrot, Egg, Grapes]
Please Enter 0 to break and 1 to continue
1
STRING MANIPULATION
**********
1. Append at end 2.Insert at particular index 3.Search
4. List string that starts with letter
5. Size 6.Remove 7.Sort 8.Display
Enter the choice
7
The array list has following elements:[Apple, Carrot, Egg, Grapes, Honey]
Please Enter 0 to break and 1 to continue
0

**PROGRAM**
**File Name : BoxConstructor.java**

```
class Box
{
double width, height, depth;

Box(double w, double h, double d)
{
 width=w; height=h; depth=d;
}
Box()
{
width=height=depth=0;
}

Box(double length)
{
width=height=depth=length;
}

double volume()
{
return width*height*depth;
}

}

public class BoxConstructor
{

public static void main(String args[])
{
Box b1=new Box();
Box b2=new Box(10,20,15);
Box b3=new Box(7);
double vol;
vol=b1.volume();
System.out.println("Volume of box b1 is "+vol);
System.out.println("Volume of box b2 is "+b2.volume());
System.out.println("Volume of box b3 is "+b3.volume());
}
}
```

**OUTPUT**

D:\ JAVA PROGRAMS>javac BoxConstructor.java

D:\ \JAVA PROGRAMS>java BoxConstructor
Volume of box b1 is 0.0
Volume of box b2 is 3000.0
Volume of box b3 is 343.0

**PROGRAM**

**File Name :**

```
import java.io.*;
import java.util.*;


class Car
{
double price, tax, totalprice;
String carname;
double taxrate=12.5;

void Totalprice(double price,String carname)
{
tax=(price/100)*12.5;
totalprice=price+tax;
System.out.println("The total price of car " +carname +" is "+totalprice);
}

public static void main(String args[])
{
 Car c1=new Car();
 Scanner in=new Scanner(System.in);
 String model1,model2;
 double cost1,cost2;
 System.out.println("CAR 1");
 model1="Nissan";
 System.out.println("Model :\t "+model1);

 System.out.print("Cost :\t ");
 cost1=in.nextDouble();
 // c1.Totalprice(700000,"Nissan");
 c1.Totalprice(cost1,model1);

 Car c2 =new Car();
 System.out.println("CAR 2");
model2="Hyundai Creta";
System.out.println("Model :\t "+model2);

 System.out.print("Cost :\t ");
 cost2=in.nextDouble();
 c2.Totalprice(cost2,model2);
 //c2.Totalprice(110000,"Hyundai Creta");
}
}
```

## OUTPUT

```
D:\JAVA PROGRAMS>javac Car.java

D:\JAVA PROGRAMS>java Car
CAR 1
Model :  Nissan
Cost :   700000
The total price of car Nissan is 787500.0
CAR 2
Model :  Hyundai Creta
Cost :   1100000
The total price of car Hyundai Creta is 1237500.0
```

## PROGRAM

```
import java.io.*;

class Book
{
BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
String bname;
int isbn;
String author;
String publisher;

Book()
{
bname="Java 2 : The Complete Reference";
isbn=1234567;
author="Herbert Schildt";
publisher="Tata Mc Graw Hills";
}

Book(String s1,int n,String s2,String s3)
{
this.bname=s1;
this.isbn=n;
this.author=s2;
this.publisher=s3;
}

public void displayInfo()
{
System.out.println("\n Book name "+bname);
System.out.println("\n ISBN number "+isbn);
System.out.println("\n Author name "+author);
System.out.println("\n Publisher name "+publisher);
}
}

public class TestBook
{
public static void main(String [] args) throws IOException
{
String book_name,book_author,book_publisher;
int book_isbn;
BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
Book [] book = new Book [30];
int i=0;
System.out.print(" How many books info you want to store : ");
int n = Integer.parseInt(br.readLine());
book[0]=new Book();
System.out.println("BOOK 1 CREATED : Default - Constructor");
System.out.println("**************************************");
```

```
book[0].displayInfo();
System.out.println("****************************************");
for(i=1;i<n;i++)
{
System.out.printf("\n Enter book %d Details\n",i+1);
System.out.print("Enter book name : ");
book_name = br.readLine();
System.out.print("Enter book isbn : ");
book_isbn = Integer.parseInt(br.readLine());
System.out.print("Enter book author: ");
book_author = br.readLine();
System.out.print("Enter book publisher: ");
book_publisher= br.readLine();

book[i]=new Book(book_name,book_isbn,book_author,book_publisher);
}

System.out.println("****************************************");
System.out.println("************  PRINT BOOKS ************");
System.out.println("****************************************");
for(i=0;i<n;i++)
{
book[i].displayInfo();
System.out.println("****************************************");
}
}
}
```

## OUTPUT

```
D:\E DRIVE\OOP Java\LAB\UCS1312 LAB\JAVA PROGRAMS>javac TestBook.java

D:\E DRIVE\OOP Java\LAB\UCS1312 LAB\JAVA PROGRAMS>java TestBook

How many books info you want to store : 3


BOOK 1 CREATED : Default - Constructor
**************************************

 Book name Java 2 : The Complete Reference

 ISBN number 1234567

 Author name Herbert Schildt

 Publisher name Tata Mc Graw Hills
**************************************

 Enter book 2 Details
Enter book name : Object Oriented Programming
Enter book isbn : 7654321
Enter book author: Balagurusamy
Enter book publisher: Pearson

Enter book 3 Details
Enter book name : Data Structures
Enter book isbn : 11112222
Enter book author: Mark Allen Weiss
Enter book publisher: Tata Mc Graw Hill


**************************************
**********  PRINT BOOKS **********
**************************************

 Book name Java 2 : The Complete Reference

 ISBN number 1234567

 Author name Herbert Schildt

 Publisher name Tata Mc Graw Hills
**************************************
```

Book name Object Oriented Programming

ISBN number 7654321

Author name Balagurusamy

Publisher name Pearson

**********

Book name Data Structures

ISBN number 11112222

Author name Mark Allen Weiss

Publisher name Tata Mc Graw Hill

**********

**PROGRAM**
**File Name : DateCheck.java**

```
import java.io.*;
import java.util.Scanner;

class InvalidDayException extends Exception
{
 public InvalidDayException(String message)
 {
   super(message);
 }
}

class InvalidMonthException extends Exception
{
 public InvalidMonthException(String message)
 {
   super(message);
 }
}

class DateCheck
{
public static int day;
public static int month;
public static int year;
int flag=1;
DateCheck()
{
day=1;
month=1;
year=2023;
}


public static void dateFormat1(int d, int m, int y)
{
System.out.println("The given date is (dd/mm/yyyy) " +d + "/"+m+"/"+y);
}


public static void dateFormat2(int d,String m,int y)
{
System.out.println("The given date is (dd-MONTH-yyyy) " +d + "-"+m+"-"+y);
}
```

```
public static void main(String args[])throws Exception
{
Scanner in=new Scanner(System.in);
int flg=1;
String array[]={ "", "January", "February", "March", "April", "May", "June", "July", "August", "September",
"October", "November", "December" };
System.out.print("Enter the DATE :  ");
day=in.nextInt();
System.out.print("Enter the MONTH:  ");
month=in.nextInt();
System.out.print("Enter the YEAR :  ");
year=in.nextInt();

if(day<1 || day>31)
{
flg=0;
throw new InvalidDayException("Your day is invalid ! ");
}
if(month<1 || month>12)
{
flg=0;
throw new InvalidMonthException("Your month is invalid ! ");
}
if(flg==1)
{
System.out.print("Date in integral format : ");
dateFormat1(day,month,year);
System.out.print("Date in String format : ");
dateFormat2(day,array[month],year);
}

}

}
```

## OUTPUT

```
D:\JAVA PROGRAMS>javac DateCheck.java

Run#1

D:\JAVA PROGRAMS>java DateCheck
Enter the DATE :  34
Enter the MONTH:  3
Enter the YEAR :  1987
Exception in thread "main" InvalidDayException: Your day is invalid !
        at DateCheck.main(DateCheck.java:57)

Run#2

D:\JAVA PROGRAMS>java DateCheck
Enter the DATE :  12
Enter the MONTH:  15
Enter the YEAR :  1987
Exception in thread "main" InvalidMonthException: Your month is invalid !
        at DateCheck.main(DateCheck.java:62)

Run#3

D:\JAVA PROGRAMS>java DateCheck
Enter the DATE :  17
Enter the MONTH:  9
Enter the YEAR :  2023
Date in integral format : The given date is (dd/mm/yy) 17/9/2023
Date in String format : The given date is (dd-MONTH-yy) 17-September-2023
```

**PROGRAM**
**File Name : FileDemo.java**

```
import java.io.*;
import java.util.*;

class FileDemo
{
public static void main(String args[])
{
String fname;
Scanner s=new Scanner(System.in);
System.out.print("Enter the file name : ");
fname=s.nextLine();
File f1=new File(fname);
System.out.println("*****************************");
System.out.println("\t\tFILE INFORMATION");
System.out.println("*****************************");
System.out.println("NAME OF THE FILE :\t"+f1.getName());
System.out.println("PATH OF THE FILE :\t"+f1.getAbsolutePath());
System.out.println("PARENT  : \t\t"+f1.getParent());
if(f1.exists())
System.out.println("THE FILE EXISTS ");
else
System.out.println("THE FILE DOES NOT EXIST ");
if(f1.canRead())
System.out.println("THE FILE CAN BE READ ");
else
System.out.println("THE FILE CANNOT BE READ ");
if(f1.canWrite())
System.out.println("WRITE OPERATION IS PERMITTED");
else
System.out.println("WRITE OPERATION IS NOT PERMITTED");
if(f1.isDirectory())
System.out.println("IT IS A DIRECTORY ");
else
System.out.println("NOT A DIRECTORY");
if(f1.isFile())
System.out.println("IT IS A FILE ");
else
System.out.println("NOT A FILE");

SimpleDateFormat sdf = new SimpleDateFormat("dd/MM/yyyy HH:mm:ss");
System.out.println("File last modified on  : \t "+ sdf.format(f1.lastModified()));

System.out.println("LENGTH OF THE FILE : \t"+f1.length() + " bytes " );
System.out.println("FILE DELETED ! "+f1.delete());
}
}
```

## INPUT FILE

**File Name :** *Story.txt*
Story Name : The Golden Egg
A farmer had a goose that laid one golden egg a day. He would sell the golden eggs, and they enjoyed a comfortable life. However, the farmer became greedy and wanted more than one egg a day. His wife foolishly agreed to his idea. The next day the farmer cut open the goose after it laid the golden egg. He could only find blood and guts. He realised his mistake. He now had no source of income, and the couple became poorer every day.

Moral: Think before you act.

## OUTPUT

```
D:\ UCS1312 LAB\JAVA PROGRAMS>javac FileDemo.java

D:\ UCS1312 LAB\JAVA PROGRAMS>java FileDemo
Enter the file name : Story.txt
**************************
       FILE INFORMATION
**************************
NAME OF THE FILE :      Story.txt
PATH OF THE FILE :      D:\UCS1312 LAB\JAVA PROGRAMS\Story.txt
PARENT  :               null
THE FILE EXISTS
THE FILE CAN BE READ
WRITE OPERATION IS PERMITTED
NOT A DIRECTORY
IT IS A FILE
File last modified on  :        05/09/2023 09:48:52
LENGTH OF THE FILE :    495 bytes
FILE DELETED ! true
```

**PROGRAM**
**File Name : StudentData.java**

```
import java.io.*;
class StudentData
{
BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

public void addRecords() throws IOException
{

PrintWriter pw = new PrintWriter(new BufferedWriter(new FileWriter("Records.txt",true)));

String name, dept, fname, mname, address;
int age;
String s;
Long phoneno;
boolean addMore = false;

do
{
System.out.print("\nEnter name: ");
name = br.readLine();
System.out.print("Father's Name: ");
fname = br.readLine();
System.out.print("Mother's Name: ");
mname = br.readLine();
System.out.print("Address: ");
address = br.readLine();
System.out.print("Age: ");
age = Integer.parseInt(br.readLine());
System.out.print("\nEnter Department: ");
dept = br.readLine();
System.out.print("Telephone No.: ");
phoneno = Long.parseLong(br.readLine());
pw.println(name);
pw.println(fname);
pw.println(mname);
pw.println(address);
pw.println(age);
pw.println(dept);
pw.println(phoneno);

System.out.print("\nRecords added successfully !\n\nDo you want to add more records ? (y/n) : ");
s = br.readLine();
}
while(s.equalsIgnoreCase("y"));
pw.close();
showMenu();
}
```

```
public void readRecords() throws IOException
{
try
{
BufferedReader file = new BufferedReader(new FileReader("Records.txt"));
String name;
int i=1;
while((name = file.readLine()) != null)
{
System.out.println("*****************************");
System.out.println("Record.No. : " +(i++));
System.out.println("*****************************");
System.out.println("\nName: " +name);
System.out.println("Father's Name : "+file.readLine());
System.out.println("Mother's Name : "+file.readLine());
System.out.println("Address: "+file.readLine());
System.out.println("Age: "+Integer.parseInt(file.readLine()));
System.out.println("Dept: "+file.readLine());
System.out.println("Tel. No.: "+Long.parseLong(file.readLine()));
System.out.println();
}
file.close();
showMenu();
}
catch(FileNotFoundException e)
{
System.out.println("\nERROR : File not Found !!!");
}
}

public void clear() throws IOException
{
// Create a blank file
PrintWriter pw = new PrintWriter(new BufferedWriter(new FileWriter("Records.txt")));
pw.close();
System.out.println("\nAll Records cleared successfully !");
for(int i=0;i<999999999;i++); // Wait for some time
showMenu();
}

public void showMenu() throws IOException
{
System.out.print("1 : Add Records\n2 : Display Records\n");
System.out.print("3 : Clear All Records\n4 : Exit\n\nYour Choice : ");
int choice = Integer.parseInt(br.readLine());
switch(choice)
{
case 1:
addRecords();
break;
```

```
case 2:
readRecords();
break;
case 3:
clear();
break;
case 4:
System.exit(1);
break;
default:
System.out.println("\nInvalid Choice !");
break;
}
}
public static void main(String args[]) throws IOException
{
StudentData s = new StudentData();
s.clear();
s.showMenu();
}
}
```

## OUTPUT

```
D:\JAVA PROGRAMS>javac StudentData.java
D:\JAVA PROGRAMS>java StudentData

1 : Add Records
2 : Display Records
3 : Clear All Records
4 : Exit

Your Choice : 1

Enter name: Bob
Father's Name: John
Mother's Name: Monika
Address: Coimbatore
Age: 18

Enter Department: CSE
Telephone No.: 1234567890

Records added successfully !

Do you want to add more records ? (y/n) : Y

Enter name: Pooja
Father's Name: Rakesh
Mother's Name: Nirmala
Address: New Delhi
Age: 17

Enter Department: CSE
Telephone No.: 9876543210

Records added successfully !

Do you want to add more records ? (y/n) : Y

Enter name: Manisha
Father's Name: Anil Kumar
Mother's Name: Geeta
Address: Haryana
Age: 18

Enter Department: ECE
Telephone No.: 6789054321

Records added successfully !
```

Do you want to add more records ? (y/n) : Y

Enter name: Jitender
Father's Name: Ganesh
Mother's Name: Sita
Address: Bangalore
Age: 17

Enter Department: Mech
Telephone No.: 1111222233

Records added successfully !

Do you want to add more records ? (y/n) : n
1 : Add Records
2 : Display Records
3 : Clear All Records
4 : Exit

Your Choice : 2

**********
Record.No. : 1
**********

Name: Bob
Father's Name : John
Mother's Name : Monika
Address: Coimbatore
Age:18
Dept: CSE
Tel. No.: 1234567890
**********
Record.No. : 2
**********

Name: Pooja
Father's Name : Rakesh
Mother's Name : Nirmala
Address: New Delhi
Age: 17
Dept: CSE
Tel. No.: 9876543210

**********
Record.No. : 3
**********

Name: Manisha
Father's Name : Anil Kumar
Mother's Name : Geeta

Address: Haryana
Age: 18
Dept: ECE
Tel. No.:  6789054321

**********
Record.No. : 4
**********

Name: Jitender
Father's Name : Ganesh
Mother's Name : Sita
Address: Bangalore
Age: 17
Dept: Mech
Tel. No.:  1111222233

1 : Add Records
2 : Display Records
3 : Clear All Records
4 : Exit

Your Choice : 3

All Records cleared successfully !

1 : Add Records
2 : Display Records
3 : Clear All Records
4 : Exit

Your Choice : 4

**PROGRAM**

**File Name : UsedCar.java**

```
import java.io.*;
import java.util.*;


interface secSalesItem
{
void getRetailPrice();
}


class UsedCar implements secSalesItem
{
String vehicleNumber, model;
int year, kmTravelled;
public long price;
public static Scanner s=new Scanner(System.in);


public  void getVehicleNumber()
{
System.out.print("Type the vehicle number: ");
vehicleNumber=s.nextLine();
}


public  void getModel()
{
System.out.print("Type the car model : ");
model=s.nextLine();
System.out.print("Type the year of purchase : ");
year=s.nextInt();
System.out.print("Type the Kilometers Travelled : ");
kmTravelled=s.nextInt();
}
public  void getPrice()
{
System.out.print("Type the price of the car : ");
price=s.nextLong();
}


public void getRetailPrice()
{
```

```
int yrcr=2023-year;
int kmcr=0;
double resalecost;
int yearcredit[]={10,9,8,7,6,5,4,3,2,1};
if(kmTravelled>100000)
kmcr=0;
else if(kmTravelled>80000)
kmcr=1;
else if(kmTravelled>60000)
kmcr=2;
else if(kmTravelled>50000)
kmcr=3;
else if(kmTravelled>40000)
kmcr=4;
else if(kmTravelled<=40000)
kmcr=5;
int kmcredit[]={1,2,3,4,5,6,7,8,9,10};
resalecost=(price/100)*kmcredit*yearcredit[yrcr];
System.out.println("Resale value of your car is : Rs."+resalecost);
}


public static void main(String[] args)
{
System.out.println("*** USED CAR SALES ***");
UsedCar c1=new UsedCar();
c1.getModel();
c1.getPrice();
c1.getRetailPrice();
}

}
```

**OUTPUT:**

```
D:\JAVA PROGRAMS>javac UsedCar.java

D:\JAVA PROGRAMS>java UsedCar
*** USED CAR SALES ***
Type the car model : Santro
Type the year of purchase : 2020
Type the Kilometers Travelled : 60000
Type the price of the car : 300000
Resale value of your car is : Rs. 63000.0
```

**PROGRAM**

```
import java.io.*;

class ThreadDemo implements Runnable
{

   private Thread t;
   private String threadName;

   ThreadDemo( String name)
   {
      threadName = name;
      System.out.println("Creating " +  threadName );
   }

   public void run()
   {

     System.out.println("Running " +  threadName );
      try
      {
         for(int i = 4; i > 0; i--)
         {
            System.out.println("Thread: " + threadName + ", " + i);
            Thread.sleep(50);
         }
      }
      catch (InterruptedException e)
      {
         System.out.println("Thread " +  threadName + " interrupted.");
       }
      System.out.println("Thread " +  threadName + " exiting.");
   }

   public void start ()
  {
      System.out.println("Starting " +  threadName );
      if (t == null) {
         t = new Thread (this, threadName);
         t.start ();
   }
  }
}


public class TestThread
```

```
{
  public static void main(String args[])
  {
    ThreadDemo R1 = new ThreadDemo( "Thread-1");
    R1.start();

    ThreadDemo R2 = new ThreadDemo( "Thread-2");
    R2.start();

    ThreadDemo R3 = new ThreadDemo( "Thread-3");
    R3.start();
  }
}
```

**OUTPUT**

D:\JAVA PROGRAMS>javac TestThread.java

D:\ JAVA PROGRAMS>java TestThread

Creating Thread-1
Starting Thread-1
Creating Thread-2
Starting Thread-2
Running Thread-1
Creating Thread-3
Running Thread-2
Starting Thread-3
Running Thread-3
Thread: Thread-3, 4
Thread: Thread-1, 4
Thread: Thread-2, 4
Thread: Thread-3, 3
Thread: Thread-1, 3
Thread: Thread-2, 3
Thread: Thread-3, 2
Thread: Thread-2, 2
Thread: Thread-1, 2
Thread: Thread-3, 1
Thread: Thread-2, 1
Thread: Thread-1, 1
Thread Thread-2 exiting.
Thread Thread-3 exiting.
Thread Thread-1 exiting.

## PROGRAM

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.util.*;
import javax.swing.event.*;

class Calc extends JFrame implements ActionListener
{
   JFrame f;
   JTextField t;
   JButton b1,b2,b3,b4,b5,b6,b7,b8,b9,b0,bdiv,bmul,bsub,badd,bdec,beq,bdel,bclr;

   static double a=0,b=0,result=0;
   static int operator=0;

   Calc()
   {
      f=new JFrame("My Personal Calculator");
      t=new JTextField();
      b1=new JButton("1");
      b2=new JButton("2");
      b3=new JButton("3");
      b4=new JButton("4");
      b5=new JButton("5");
      b6=new JButton("6");
      b7=new JButton("7");
      b8=new JButton("8");
      b9=new JButton("9");
      b0=new JButton("0");
      bdiv=new JButton("/");
      bmul=new JButton("*");
      bsub=new JButton("-");
      badd=new JButton("+");
      bdec=new JButton(".");
      beq=new JButton("=");
      bdel=new JButton("BackSpace");
      bclr=new JButton("Clear");

      t.setBounds(30,40,280,30);
      b7.setBounds(40,100,50,40);
      b8.setBounds(110,100,50,40);
      b9.setBounds(180,100,50,40);
      bdiv.setBounds(250,100,50,40);
```

```
b4.setBounds(40,170,50,40);
b5.setBounds(110,170,50,40);
b6.setBounds(180,170,50,40);
bmul.setBounds(250,170,50,40);

b1.setBounds(40,240,50,40);
b2.setBounds(110,240,50,40);
b3.setBounds(180,240,50,40);
bsub.setBounds(250,240,50,40);

bdec.setBounds(40,310,50,40);
b0.setBounds(110,310,50,40);
beq.setBounds(180,310,50,40);
badd.setBounds(250,310,50,40);

bdel.setBounds(60,380,100,40);
bclr.setBounds(180,380,100,40);


badd.setBackground(Color.pink);
bsub.setBackground(Color.pink);
bmul.setBackground(Color.pink);
bdiv.setBackground(Color.pink);
bdel.setBackground(Color.blue);
bclr.setBackground(Color.white);
f.add(t);
f.add(b7);
f.add(b8);
f.add(b9);
f.add(bdiv);
f.add(b4);
f.add(b5);
f.add(b6);
f.add(bmul);
f.add(b1);
f.add(b2);
f.add(b3);
f.add(bsub);
f.add(bdec);
f.add(b0);
f.add(beq);
f.add(badd);
f.add(bdel);
f.add(bclr);

f.setLayout(null);
f.setVisible(true);
```

```
    f.setSize(350,500);
    f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    f.setResizable(false);

    b1.addActionListener(this);
    b2.addActionListener(this);
    b3.addActionListener(this);
    b4.addActionListener(this);
    b5.addActionListener(this);
    b6.addActionListener(this);
    b7.addActionListener(this);
    b8.addActionListener(this);
    b9.addActionListener(this);
    b0.addActionListener(this);
    badd.addActionListener(this);
    bdiv.addActionListener(this);
    bmul.addActionListener(this);
    bsub.addActionListener(this);
    bdec.addActionListener(this);
    beq.addActionListener(this);
    bdel.addActionListener(this);
    bclr.addActionListener(this);
}

public void actionPerformed(ActionEvent e)
{
    if(e.getSource()==b1)
        t.setText(t.getText().concat("1"));
    if(e.getSource()==b2)
        t.setText(t.getText().concat("2"));

    if(e.getSource()==b3)
        t.setText(t.getText().concat("3"));
    if(e.getSource()==b4)
        t.setText(t.getText().concat("4"));

    if(e.getSource()==b5)
        t.setText(t.getText().concat("5"));
   if(e.getSource()==b6)
        t.setText(t.getText().concat("6"));

    if(e.getSource()==b7)
        t.setText(t.getText().concat("7"));
    if(e.getSource()==b8)
        t.setText(t.getText().concat("8"));
```

```
if(e.getSource()==b9)
   t.setText(t.getText().concat("9"));
if(e.getSource()==b0)
   t.setText(t.getText().concat("0"));

if(e.getSource()==bdec)
   t.setText(t.getText().concat("."));


if(e.getSource()==badd)
{
   a=Double.parseDouble(t.getText());
   operator=1;
   t.setText("");
}

if(e.getSource()==bsub)
{
   a=Double.parseDouble(t.getText());
   operator=2;
   t.setText("");
}

if(e.getSource()==bmul)
{
   a=Double.parseDouble(t.getText());
   operator=3;
   t.setText("");
}

if(e.getSource()==bdiv)
{
   a=Double.parseDouble(t.getText());
   operator=4;
   t.setText("");
}
```

```
      if(e.getSource()==beq)
       {
          b=Double.parseDouble(t.getText());

          switch(operator)
          {
             case 1: result=a+b;
                break;

             case 2: result=a-b;
                break;

             case 3: result=a*b;
                break;

             case 4: result=a/b;
                break;

             default: result=0;
          }

          t.setText(""+result);
       }

       if(e.getSource()==bclr)
          t.setText("");

       if(e.getSource()==bdel)
       {
          String s=t.getText();
          t.setText("");
          for(int i=0;i<s.length()-1;i++)
          t.setText(t.getText()+s.charAt(i));
       }
    }
}
class SwingCalculator
{
   public static void main(String[] args)
   {
      Calc frame = new Calc();
      frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      frame.setVisible(true);
   }
}
```

**OUTPUT**