Concept of Computer Programming

MIS210 – Homework and Project

Submitted to

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Submitted by

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Contents

Print Output

Print Line

Input:

```
public class HelloWorld {

   public static void main(String[] args) {

      String name = "Faiyaz Rahman";

      String id = "2021688030";


      System.out.println("Hello world, this is " + name + ", My id: " + id);

   }

};
```

Output-

```
Hello world, this is Faiyaz Rahman, My id: 2021688030
```

Scanner Output:

```
package Program1;
import java.util.Scanner;
public class Program1_0 {
public static void main(String args[])
{
Scanner input=new Scanner(System.in);
System.out.print("Please enter your first name: ");
String firstname=input.nextLine();
System.out.print("Please enter your last name: ");
String lastname=input.nextLine();
System.out.print("Please enter your address: Bashundhara");
String address=input.nextLine() ;
System.out.print("Please enter your cellphone: 01222689");
String cellphone=input.nextLine() ;
String message=String.format("\nBest of Luck %s %s %s %s", firstname, lastname, address, cellphon
e);
System.out.print(message);
}
}
```

Output:

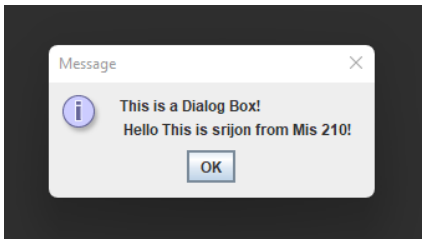
```
Please enter your first name: Faiyaz
Please enter your last name: Rahman
Please enter your address: Bashundhara
Please enter your cellphone number:
Best of luck, Faiyaz!
```

Dialog Box

Input:

```
package Program1;
import javax.swing.JOptionPane;
public class dialog {
public static void main(String[] args) {
// TODO Auto-generated method stub
JOptionPane.showMessageDialog(null,"This is a Dialog Box! \n\t Hello This is srijon from Mis 210!"
);
}
}
```

OutPut:



Interactive in Dialog Box

Input:

```
package Program1;
import javax.swing.JOptionPane;
public class Dialogbox2
public static void main(String[] args) {
// TODO Auto-generated method stub
String status=JOptionPane.showInputDialog(null,"Please enter your name and ID:");
String msg=String.format("Your ID is: %s", status); // %s generate spaces for string
JOptionPane.showMessageDialog(null, msg);
}
}
```

Output:

```
Hello, Faiyaz!
Your ID is: faiyaz
```

Arithmetic Operators

Integers by Java

Input:

```
package Program1;
import java.util.Scanner;
public class program2 {
public static void main(String args[]) {
Scanner input=new Scanner(System.in);
System.out.print("Enter first integer: ");
int number1=input.nextInt();
System.out.print("Enter second integer: ");
int number2=input.nextInt();
int sum = number1+number2;
System.out.printf("\nSum is %d%n", sum); //%d = make a space for %n=next line
}
    }
```

Output:

```
Enter first integer: 258
Enter second integer: 265

Sum is 523
```

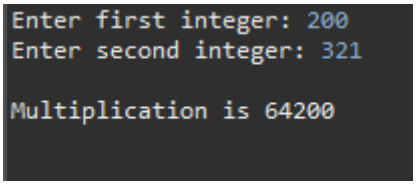
Multiplication of two integers by Java

Input:

```
package Program1;
import java.util.Scanner;
public class newnew {

public static void main(String[] args) {
// TODO Auto-generated method stub
Scanner input=new Scanner(System.in);
System.out.print("Enter first integer: ");
```

```
int number1= input.nextInt();

System.out.print("Enter second integer: ");
int number2= input.nextInt();
int multiplication = number1*number2;
System.out.printf("\nMultiplication is %d%n", multiplication);

}


}
```

Output:



Equation Solving by Java

Input:

```
package Program1;
import java.util.Scanner;
public class program4 {
public static void main(String[] args) {
// TODO Auto-generated method stub
{
Scanner input =new Scanner(System.in);
System.out.println("Enter value of a: ");
double a=input.nextDouble();
System.out.println("Enter value of b: ");
double b=input.nextDouble();
System.out.println("Enter value of c: ");
double c=input.nextDouble();
System.out.println("Enter value of d: ");
double d=input.nextDouble();
System.out.println("Enter value of e: ");
double e=input.nextDouble();
System.out.println("Enter value of f: ");
double f=input.nextDouble();
double result=(a*b)/f+(c*d)/b+(e*f)/d;
System.out.printf("Result of the function is %.4f",result);

}
}
}
```

Output:

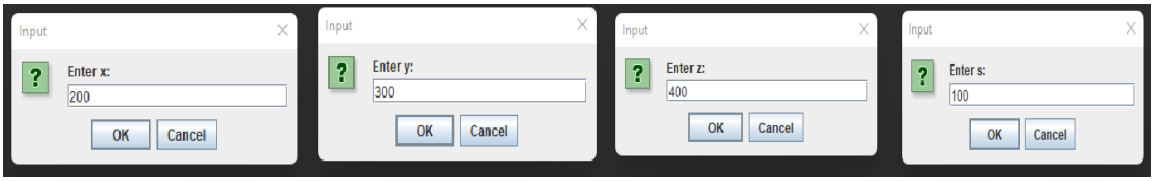
```
Enter value of a:
50
Enter value of b:
69
Enter value of c:
36
Enter value of d:
52
Enter value of e:
22
Enter value of f:
36
Result of the function is 138.1945
```

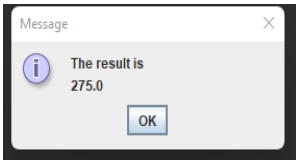
Calculation Through Dialog Box

Input:

```
package Program1;
import javax.swing.JOptionPane;
public class Dialogbox3 {
public static void main(String[] args) {
// TODO Auto-generated method stub
String a,b,c,d;
double x,y,z,s,Total;
a=JOptionPane.showInputDialog("Enter x: ");
x=Integer.parseInt(a);
b=JOptionPane.showInputDialog("Enter y: ");
y=Integer.parseInt(b);
c=JOptionPane.showInputDialog("Enter z: ");
z=Integer.parseInt(c);
d=JOptionPane.showInputDialog("Enter s: ");
s=Integer.parseInt(d);
Total=x+(y/z)*s;
javax.swing.JOptionPane.showMessageDialog(null,"The result is \n" + Total);
}
}
```

Ouput:





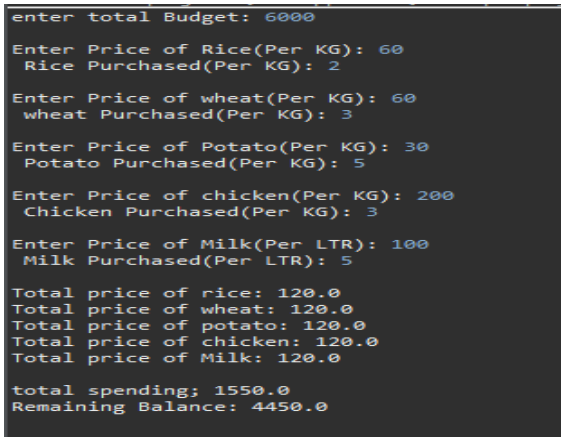
Total spending and remaining balance after purchasing:

Input:

```
package Program1;
import java.util.Scanner;
public class program5 {

public static void main(String[] args) {
// TODO Auto-generated method stub

{ Scanner input= new Scanner(System.in);
float u,v,w,x,y,a,b,c,d,e,z,t,r,m,n,o,p,q,g,h;

System.out.print("enter total Budget: ");
z=input.nextFloat();

System.out.print("\nEnter Price of Rice(Per KG): ");
u=input.nextFloat();
System.out.print(" Rice Purchased(Per KG): ");
a=input.nextFloat();
System.out.print("\nEnter Price of wheat(Per KG): ");
v=input.nextFloat();
System.out.print(" wheat Purchased(Per KG): ");
b=input.nextFloat();
System.out.print("\nEnter Price of Potato(Per KG): ");
w=input.nextFloat();
System.out.print(" Potato Purchased(Per KG): ");
c=input.nextFloat();
System.out.print("\nEnter Price of chicken(Per KG): ");
x=input.nextFloat();
System.out.print(" Chicken Purchased(Per KG): ");
d=input.nextFloat();
System.out.print("\nEnter Price of Milk(Per LTR): ");
y=input.nextFloat();
System.out.print(" Milk Purchased(Per LTR): ");
e=input.nextFloat();


 m=u*a;
 System.out.printf("\nTotal price of rice: "+m);
 n=v*b;
 System.out.printf("\nTotal price of wheat: "+m);
 o=w*c;
 System.out.printf("\nTotal price of potato: "+m);
 p=x*d;
 System.out.printf("\nTotal price of chicken: "+m);
```

```
 q=y*e;
 System.out.printf("\nTotal price of Milk: "+m);

 t=m+n+o+p+q;
 System.out.printf("\n\ntotal spending; "+t);
 r=z-t;
 System.out.print("\nRemaining Balance: "+r);
}
}

}
```

Output:



If purchase amount exceeds BDT 2500 the purchaser will be entitled to 20% discount on total purchase amount:

Input:

```
package Program1;
import java.util.Scanner;
public class NewVat {
public static void main(String[] args) {
// TODO Auto-generated method stub
Scanner input= new Scanner(System.in);
double u,v,w,x,y,a,b,c,d,e,f,g,z,t,r,m,n,o,p,q;
System.out.print("Enter Total Budget: ");
z=input.nextDouble();
System.out.print("\nEnter Price of Rice (Per KG): ");
u=input.nextDouble();
System.out.print("Rice Purchased (In KG): ");
a=input.nextDouble();
System.out.print("\nEnter Price of Wheat (Per KG): ");
v=input.nextDouble();
System.out.print("Wheat Purchased (In KG): ");
b=input.nextDouble();
System.out.print("\nEnter Price of Potato (Per KG): ");
```

```
w=input.nextDouble();
System.out.print("Potato Purchased (In KG): ");
c=input.nextDouble();
System.out.print("\nEnter Price of Chicken (Per KG): ");
x=input.nextDouble();
System.out.print("Chicken Purchased (In KG): ");
d=input.nextDouble();
System.out.print("\nEnter Price of Milk (In LTR): ");
y=input.nextDouble();
System.out.print("Milk Purchased (In LTR): ");
e=input.nextDouble();
m=u*a;
System.out.printf("\nTotal Price of Rice: "+m);
n=v*b;
System.out.printf("\nTotal Price of Wheat: "+n);
o=w*c;
System.out.printf("\nTotal Price of Potato: "+o);
p=x*d;
System.out.printf("\nTotal Price of Chicken: "+p);
q=y*e;
System.out.printf("\nTotal Price of Milk: "+q);
t=m+n+o+p+q;
if(t<2500)
{System.out.printf("\n\nTotal Spending: " +t);
r=z-t;
System.out.print("\nRemaining Balance:" +r);
}
else
{System.out.print("\n\nCongratulations! You are entitled to 20% discount.");
f=t-t*.20;
System.out.print("\n\nFinal Spending after 20% Discount: "+f);

g=z-f;
System.out.print("\nRemaining Balance: "+g);
}
}
}
```

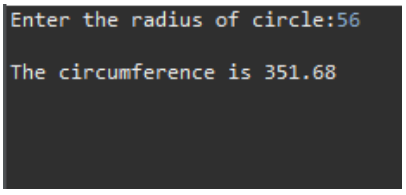
Output:

the circumference of a circle:

Input:

```
package Program1;
import java.util.Scanner;
public class circle {

public static void main(String[] args) {
// TODO Auto-generated method stub
Scanner input=new Scanner(System.in);
double pi=3.14;
System.out.print("Enter the radius of circle:");
double radius=input.nextDouble();
double circumference=2*pi*radius;
System.out.printf("\nThe circumference is %.2f", circumference);
}
}
```

Output:



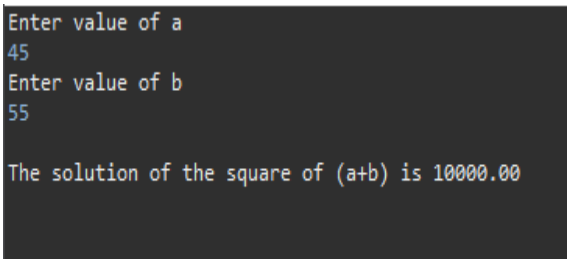
Square Formula UsingJava:

Input:

```
package Program1;
import java.util.Scanner;
public class Square {

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

```
// TODO Auto-generated method stub
Scanner input = new Scanner(System.in);
System.out.println("Enter value of a");
float a=input.nextFloat();
System.out.println("Enter value of b");
float b=input.nextFloat();
float x = ((a+b)*(a+b)) ;
System.out.printf("\nThe solution of the square of (a+b) is %.2f", x);
}

}
```

OutPut:

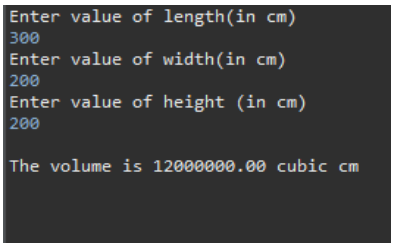


Volume of Rectangle:

Input:

```
package Program1;
import java.util.Scanner;
public class rectangle {

public static void main(String[] args) {
// TODO Auto-generated method stub
Scanner input = new Scanner(System.in);
System.out.println("Enter value of length(in cm)");
float  l=input.nextFloat();
System.out.println("Enter value of width(in cm)");
float w=input.nextFloat();
System.out.println("Enter value of height (in cm)");
float h=input.nextFloat();
float v = l * w * h;
System.out.printf("\nThe volume is %.2f cubic cm", v);

}
}
```

Output:

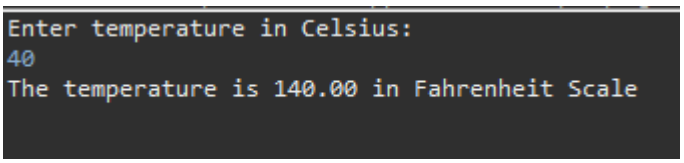


Temperature Calculation

Input:

```
package Program1;
import java.util.Scanner;
public class Temparature {

public static void main(String[] args) {
// TODO Auto-generated method stub
Scanner input = new Scanner(System.in);
System.out.println("Enter temperature in Celsius: ");
float a=input.nextFloat();
double b= 2.5;
double c= 40;
double f = ((a*b)+c) ;
System.out.printf("The temperature is %.2f in Fahrenheit Scale", f);
}

}
```

Output:



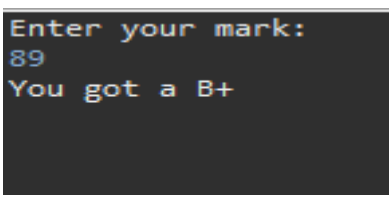
Condition (If-Else)

Grading Policy of Brac University:

Input:

```
package Program1;
import java.util.Scanner;
public class program6 {

public static void main(String[] args) {
// TODO Auto-generated method stub
{
 Scanner input= new Scanner(System.in);
        double x;
        System.out.println("Enter your mark:");
        x=input.nextDouble();
        if(x>=93)
            System.out.println("You got an A");
        else if (x>=90)
            System.out.println("You got an A-");
        else if (x>=87)
            System.out.println("You got a B+");
        else if (x>=83)
            System.out.println("You got a B");
        else if (x>=80)
            System.out.println("You got a B-");
        else if (x>=77)
            System.out.println("You got a C+");
        else if (x>=73)
            System.out.println("You got a C");
        else if (x>=70)
            System.out.println("You got a C-");
        else if (x>=67)
            System.out.println("You got a D+");
        else if (x>=60)
            System.out.println("You got a D");
        else if (x<60)
            System.out.println("You got a F");

}
}

}
```

Output:

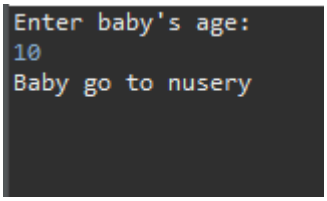


Baby Age

Input:

```
package Program1;
import java.util.Scanner;
public class program7 {

public static void main(String[] args) {
// TODO Auto-generated method stub
{

Scanner input= new Scanner(System.in);
double x;

System.out.println("Enter baby's age:");
x=input.nextDouble();

if(x<=1)
System.out.println("Baby Start to Crawl");

else if(x<=8)
System.out.println("Baby Start to Walk ");

else if(x<=9)
System.out.println("Baby Can run and play");

else if(x<=10)
System.out.println("Baby go to nusery");

else if(x<=11)
System.out.println("Baby go to kindergarten");

else if(x<=12)
System.out.println("Baby go to Class 1");

else
System.out.println ("He's not baby anymore");


}
}

}
```

Output:

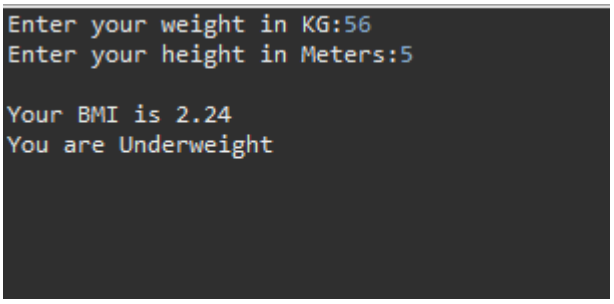


BMI Calculation Using Java

Input:

```
package Program1;
import java.util.Scanner;
public class program8 {
public static void main(String[] args) {
// TODO Auto-generated method stub



{
  Scanner input = new Scanner(System.in);
  System.out.print("Enter your weight in KG:");
      double weight = input.nextDouble();
      System.out.print("Enter your height in Meters:");
      double height = input.nextDouble();
      double BMI = weight / (height * height);
      System.out.printf("\nYour BMI is %.2f", BMI);
            if(BMI<18.5)
                  System.out.println("\nYou are Underweight");
            else if(BMI>18.5 && BMI<=25)
                  System.out.println("\nYou are Normal");
            else if(BMI>25 && BMI<=30)
                  System.out.println("\nYou are Overweight");
            else if(BMI>30)
                  System.out.println("\nYou are Obese");

}
}
}
```

Output:



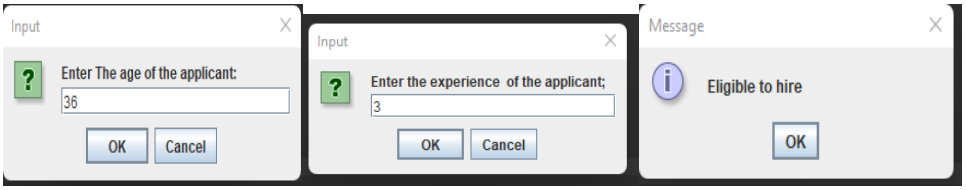
Hiring Process using java

Input:

```
package Program1;
 import java.util.Scanner;
```

```
import javax.swing.JOptionPane;
public class program9 {

public static void main(String[] args) {
// TODO Auto-generated method stub
{
String a,b;
int age, exp;

a=JOptionPane.showInputDialog("Enter The age of the applicant: ");
age=Integer.parseInt(a);

b=JOptionPane.showInputDialog("Enter the experience of the applicant; ");
exp=Integer.parseInt(b);

if( age>=30 && age<40 && exp>=5)
JOptionPane.showMessageDialog(null, "Eligible to hire");
else if(age>=40 && age<49 && exp>10)
   JOptionPane.showMessageDialog(null, "Eligible to hire");
else if(age>=50 && age<38 && exp>15)
JOptionPane.showMessageDialog(null, "Applicant is overqualified");

}
}

}
```

Output:

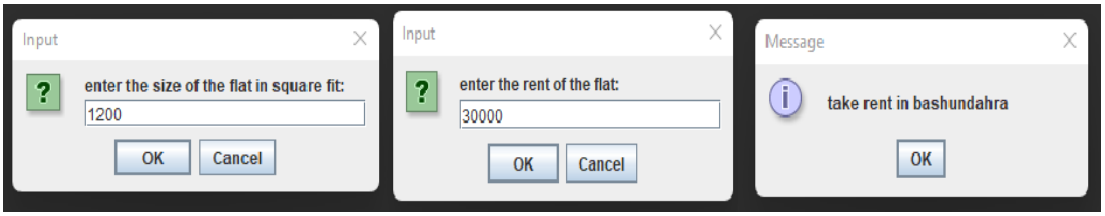


Choose between two alternatives of flat according to size and rent in a dialog box

Input:

```
package Program1;
import javax.swing.JOptionPane;
public class Mid22 {

public static void main(String[] args) {
// TODO Auto-generated method stub
String a,b;
int size, rent;
a=JOptionPane.showInputDialog("enter the size of the flat in square fit:");
size=Integer.parseInt(a);
b=JOptionPane.showInputDialog("enter the rent of the flat:");
rent=Integer.parseInt(b);
if(size<=1500 && rent<=25000)
JOptionPane.showMessageDialog(null, "take rent in banasre");
else if(size>1500 && rent<=25000)
JOptionPane.showMessageDialog(null, "take rent in basabo");
else
JOptionPane.showMessageDialog(null, "take rent in bashundahra");

}

}
```

Output:



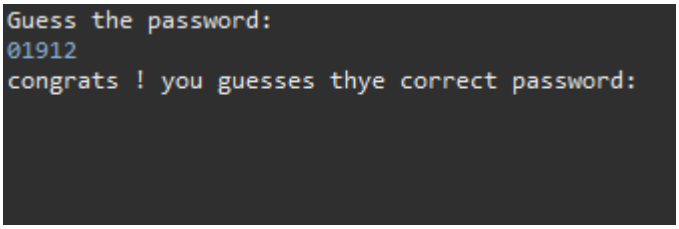
Condition (While)

A locker program using while logic

Input:

```
package Program1;
import java.util.Scanner;
public class mid24 {
public static void main(String[] args) {
// TODO Auto-generated method stub

String pass="01912";
String guess="";
Scanner input=new Scanner(System.in);
System.out.println("Guess the password: ");
guess=input.nextLine();
while(!guess.equals(pass))
{
System.out.println("Guess again: ");
guess=input.nextLine();
}
System.out.println("congrats ! you guesses thye correct password: ");
}

}
```

Output



A program that authenticates username with designated password:

Input:

```
package Program1;
import java.util.Scanner;
public class mid35 {

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

```
// TODO Auto-generated method stub
String user=""; //this string will store username
String pass=""; //this string will store password
String user1="srijon"; //username of user 1
String user2="Das"; //username of user 2
String p1="0789"; //password of user 1
String p2="8520"; //password of user 2
Scanner input=new Scanner(System.in);
System.out.println("Enter Username:");
user=input.nextLine();
if(user.equals(user1)) //user string will match given username
{
System.out.println("Enter Password:");
pass=input.nextLine();
while(!pass.equals(p1))
{
System.out.println("\nWrong Password!\nEnter Password Again:");
pass=input.nextLine();
}
System.out.println("Congrats ! You are authorized.");
}
else if(user.equals(user2)) //user string will match given username
{
System.out.println("Enter Password:");
pass=input.nextLine();
while(!pass.equals(p2))
{
System.out.println("\nWrong Password!\nEnter Password Again:");
pass=input.nextLine();
}
System.out.println("Congrats ! You are authorized.");
}
else //if the typed username does not match the assigned username as strings
{
System.out.println("You are not authorized. Please contact your administrator.");
}
}

}
```

Output:

```
Enter Username:
srijon
Enter Password:
0789
Congrats ! You are authorized.
```

Math Function

Floor and ceiling value of an integer using math function:

Input:

```
package Program1;
import java.util.Scanner;
public class mid25 {

public static void main(String[] args) {
// TODO Auto-generated method stub
double a=26.5;
System.out.println("Floor value:");
System.out.println(Math.floor(a));
System.out.println("Celling value:");
System.out.println(Math.ceil(a));
}

}
```

Output:

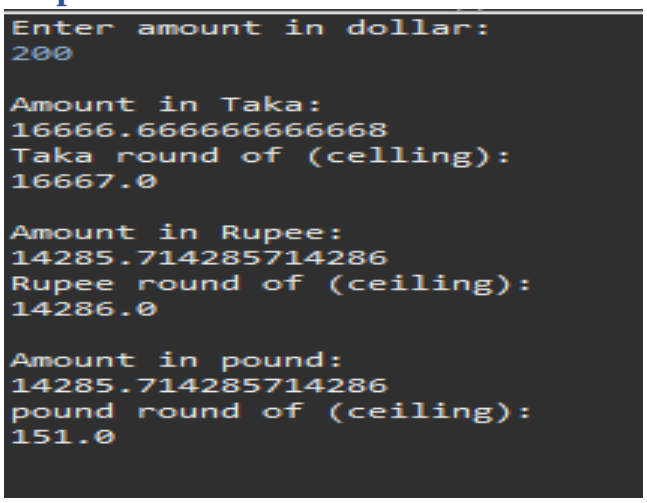
```
Floor value:
26.0
Celling value:
27.0
```

Converts Dollars into Taka, Rupee, Ringgit, Pound and rounds off at ceiling value

Input:

```
package Program1;
import java.util.Scanner;
public class mid26 {

public static void main(String[] args) {
// TODO Auto-generated method stub

Scanner input=new Scanner(System.in);
double dollar;
double taka =0.012;
double rupee=0.014;
double pound=1.33;
System.out.println("Enter amount in dollar:");
dollar=input.nextDouble();
double d2t=dollar/taka;
System.out.println("\nAmount in Taka:");
System.out.println(d2t);
System.out.println("Taka round of (celling):");
System.out.println(Math.ceil(d2t));
double d2r=dollar/rupee;
System.out.println("\nAmount in Rupee:");
System.out.println(d2r);
System.out.println("Rupee round of (ceiling):");
System.out.println(Math.ceil(d2r));
double d2p=dollar/pound;
System.out.println("\nAmount in pound:");
System.out.println(d2r);
System.out.println("pound round of (ceiling):");
System.out.println(Math.ceil(d2p));

}
}
```

Output:



Switch

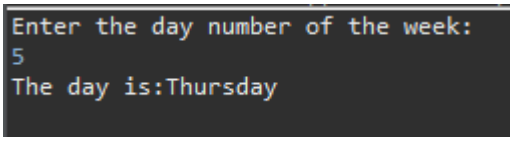
Show name of a week day after providing the day number as an input by Java:

Input:

```
package Program1;
import java.util.Scanner;
public class mid23 {

public static void main(String[] args) {
// TODO Auto-generated method stub
int week;
 String day;
```

```
Scanner input=new Scanner (System.in);
System.out.println("Enter the day number of the week:");
week=input.nextInt();
switch(week) {
case 1:
day="Sunday";
break;
case 2:
day="Monday";
break;
case 3:
day="Teusday";
break;
case 4:
day="wednesday";
break;
case 5:
day="Thursday";
break;
case 6:
day="Friday";
break;
case 7:
day="Saturday";
break;
default:
day="invalid day";
break;}
System.out.println("The day is:" + day);

}

}
```

Output:



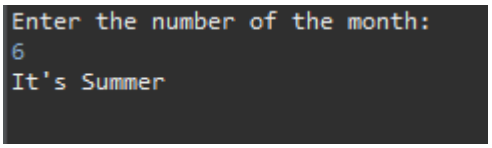
Show name of the season after providing the number of a month in a year by JAVA:

Input:

```
package Program1;
import java.util.Scanner;
```

```
public class season {

public static void main(String[] args) {
// TODO Auto-generated method stub
Scanner input=new Scanner(System.in);
int month;
String name;
System.out.println("Enter the number of the month: ");
month=input.nextInt();
switch(month){
case 12:
case 1:
case 2:
name="It's Winter";
break;
case 3:
case 4:
case 5:
name="It's Spring";
break;
case 6:
case 7:
case 8:
name="It's Summer";
break;
case 9:
case 10:
case 11:
name=("It's Autumn");
break;
default:
name="Invalid Month";
break;}
System.out.println(name);
}

}
```

Output:



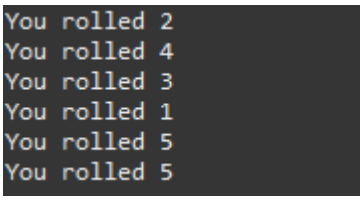
Random

Random Number Generator

Input:

```
package Program1;
import java.util.Random;
public class random {

public static void main(String[] args) {
// TODO Auto-generated method stub
Random dice=new Random();
int number;
for(int c=1;c<=6;c++)
{number=1+dice.nextInt(6);
System.out.println("You rolled " +number);}
}

}
```

Output:



Random Telephone Number

Input:

```
package Program1;
import java.util.Random;
public class randomtelephone {

public static void main(String[] args) {
// TODO Auto-generated method stub
System.out.println("Telephone number for Canada: ");
System.out.println();
Random randomnumber1=new Random();
int usa;
for(int counter=1; counter<90; counter++)
{
usa=70 +randomnumber1.nextInt(11);
System.out.printf("%d", usa);
if (counter %5==0)
System.out.println();
```

```
}
}
}
```

Output:

```
Telephone number for Canada:

7770737777
7272717572
7878737277
8072757375
7374797680
7472707776
8074797777
7072727475
7973747380
7471747573
7575777377
7374787570
7073807271
8076787579
7773777271
7877777780
7078747971
78777974
```

Mobile Number Generator

Input:

```
package Program1;
import java.util.Random;
public class number {

public static void main(String[] args) {
// TODO Auto-generated method stub
int num1, num2, num3;
int set2, set3;
Random generator= new Random ();
num1=generator.nextInt(8)+1;
num2=generator.nextInt(8);
num3=generator.nextInt(8);
set2=generator.nextInt(699)+100;
set3=generator.nextInt(8999)+1000;
{System.out.println("The number is: ");
}
System.out.println("("+num1+""+num2+""+num3+")"+"-"+set2+"-"+set3); }}
```

Output:

```
The number is:
(170)-722-5827
```

Citizen Tracker Using Java

Input:

```
package Program1;
import java.util.Random;
public class mid32 {

public static void main(String[] args) {
// TODO Auto-generated method stub
System.out.println("Citizen Tracker Number for Dhaka Citizens:\n");
Random rn1 = new Random();
int Dhaka;
for (int counter = 1; counter <= 90; counter++) {
Dhaka = 10 + rn1.nextInt(10);
System.out.printf("%d", Dhaka);
if (counter % 5 == 0)
System.out.println();
}
{
System.out.println("\nCitizen Tracker Number for Barishal Citizens:\n");
}

Random rn2 = new Random();
int Barishal;
for (int counter = 1; counter <= 90; counter++) {
Barishal = 20 + rn2.nextInt(10);
System.out.printf("%d", Barishal);
if (counter % 5 == 0)
System.out.println();
}
{
System.out.println("\nCitizen Tracker Number for Sylhet Citizens:\n");}

Random rn3 = new Random();
int Sylhet;
for (int counter = 1; counter <= 90; counter++) {
Sylhet = 30 + rn3.nextInt(10);
System.out.printf("%d", Sylhet);
if (counter % 5 == 0)
System.out.println();
}

}

}
```

Output:

```
Citizen Tracker Number for Dhaka Citizens:

1611101718
1117181317
1716101819
1718121614
1319141016
1212131117
1113191816
1511151019
1419171911
1111131712
1717191413
1915101511
1311161413
1419101012
1711191217
1717141518
1313151412
1410171713

Citizen Tracker Number for Barishal Citizens:

2328272527
2720262826
2620282727
2125222424
2925242727
2727242420
2723282721
2724282923
2829262226
2923222229
2725272326
2824252421
2022202025
2223262424
2629262029
2421222525
2422272224
2127282920

Citizen Tracker Number for Sylhet Citizens:

3739343030
3334393238
3536363835
3837333035
3631343731
3930333536
3637333830
```

Array Function

Assign even number in value of for index of 10 number in a sequential manner:

Input:

```
package Program1;

public class arry1 {
public static void main(String args[]) {

final int ARRAY_LENGTH=10;
int [] array = new int[ARRAY_LENGTH];
for (int counter=0; counter<array.length; counter++)
{array[counter]=2+4*counter;}
System.out.printf("%s%8s%n", "Index", "Value");
for (int counter=0; counter<array.length; counter++)
{System.out.printf("%5d%8d%n", counter, array[counter]);; }}
}
```

Output:

```
Index   Value
    0       2
    1       6
    2      10
    3      14
    4      18
    5      22
    6      26
    7      30
    8      34
    9      38
```

Assign shelf number for particular book in a library by Java:

Input:

```
package Program1;

public class bookshelf {
```

```
public static void main(String[] args) {
// TODO Auto-generated method stub
int s[]= {0,65,96,43,98,31,32};
String c[]= {"a","Introduction to Mathmatics",
"Principle of Management",
"Supply Chain Management",
"Introductory Statistics",

"Corporate Finance",
"Investment Theory"};
System.out.printf("Book Storage Information\nSeptember 17, 2020\n\n");
System.out.printf("%s%19s%17s\n",
"Serial Number",
"Shelf  Number",
"Book Name");
for(int i=1;i<s.length;i++)
{System.out.println(" "+i+"\t\t\t"+s[i]+"\t\t"+c[i]); }
}

}
```

Output:

```
Book Storage Information
September 17, 2020

Serial Number        Shelf Number         Book Name
 1                       65               Introduction to Mathmatics
 2                       96               Principle of Management
 3                       43               Supply Chain Management
 4                       98               Introductory Statistics
 5                       31               Corporate Finance
 6                       32               Investment Theory
```

Aisle with Array Function

Input:

```
package Program1;

public class aisle {

public static void main(String[] args) {
// TODO Auto-generated method stub

int s[]= {0,45,49,52,54,64 };
String c[]= {"a", "Fruits", "Vegetable", "Dairy", "Chickens", "Snacks"};
System.out.printf("Aisle Information\n May 8 2021\n\n");
System.out.printf("%s%22s%21s\n",
```

```
"Serial No",
"Aisle Number",
"Product Type");
for (int i=1;i<s.length;i++)
{
System.out.println(" "+i+"\t\t\t"+s[i]+" \t\t"+c[i]);

}

}}
```

Output:

```
Aisle Information
 May 8 2021

Serial No          Aisle Number         Product Type
 1                      45               Fruits
 2                      49               Vegetable
 3                      52               Dairy
 4                      54               Chickens
 5                      64               Snacks
```

Depreciation

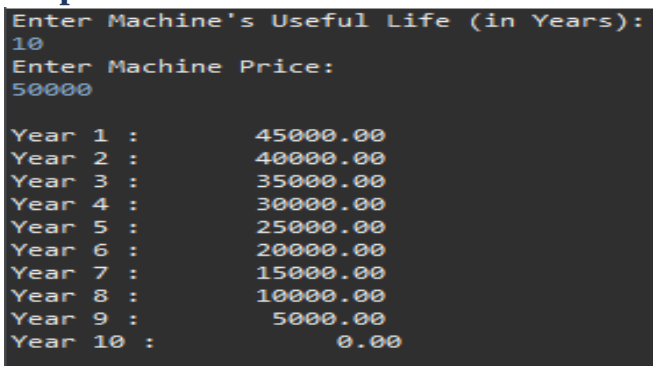
Depreciation chart of a machine that you have bought for a garment's factory for any price and useful life years by Java

Input:

```
package Program1;
import java.util.Scanner;
public class depreciation {

public static void main(String[] args) {
// TODO Auto-generated method stub
Scanner input=new Scanner(System.in);
int ty;
float mp;
System.out.println("Enter Machine's Useful Life (in Years): ");
ty=input.nextInt();
System.out.println("Enter Machine Price: ");
mp=input.nextFloat();
float pypb=(mp/ty), mpb=mp;
for(int cy=1;cy<=ty;cy++)
{mpb=mp-(pypb*cy);
```

```
System.out.printf("\n");
System.out.printf("Year %d :%15.2f",cy,mpb); }
}
}
```

Output:



Atomization

Loan Amortization Using Java

Input:

```
package Program1;
import java.text.DecimalFormat;
public class atomization {

public static void main(String[] args) {
// TODO Auto-generated method stub
double loan_amount=100000, interest_rate=0.10, loan_year=1;
double monthly_interest, principle, loan_balance=loan_amount;
double term=Math.pow((1+interest_rate/12),(12*loan_year));

double payment=(loan_amount*interest_rate/12*term)/(term-1);
double number_of_payment=loan_year*12;
DecimalFormat number=new DecimalFormat ("#,##0.00000");
System.out.println("Montly Payment:"+number.format(payment));
System.out.println("\nMonth\t\t Interest\t\t Principle\t\t Balance");
for(int month=1; month<=number_of_payment; month++)
{monthly_interest=interest_rate/12*loan_balance;
if(month!=number_of_payment)
{principle=payment-monthly_interest;}
else
{principle=loan_balance;
payment=loan_balance+monthly_interest;}
loan_balance-=principle;
System.out.println(month
+"\t\t"+number.format(monthly_interest)
```

```
+"\t\t"+number.format(principle)
+"\t\t"+number.format(loan_balance)); }
```

Output:

```
Montly Payment:8,791.58872

Month            Interest              Principle             Balance
1                833.33333             7,958.25539           92,041.74461
2                767.01454             8,024.57418           84,017.17043
3                700.14309             8,091.44564           75,925.72479
4                632.71437             8,158.87435           67,766.85044
5                564.72375             8,226.86497           59,539.98547
6                496.16655             8,295.42218           51,244.56329
7                427.03803             8,364.55070           42,880.01260
8                357.33344             8,434.25528           34,445.75731
9                287.04798             8,504.54075           25,941.21657
10               216.17680             8,575.41192           17,365.80465
11               144.71504             8,646.87368           8,718.93096
12               72.65776              8,718.93096           0.00000
```

Salary Hierarchy

Input:

```
package Program1;
import java.util.Scanner;

public class salary {

public static void main(String[] args) {
// TODO Auto-generated method stub

Scanner input = new Scanner(System.in);
int Basic, Housing, Transport, Medical, Pension, Tax, Total;
System.out.println("Basic Salary: ");
Basic=input.nextInt();
Housing=Basic*40/100;
System.out.printf("\nHousing Allowance: %d", Housing);
Transport=Basic*30/100;
System.out.printf("\nTransport Allowance: %d", Transport);
Medical=Basic*20/100;
System.out.printf("\nMedical Allowance: %d", Medical);
Pension=Basic*10/100;
System.out.printf("\nPension Allowance: %d",Pension);
Tax=Basic*5/100;
System.out.printf("\nTax: %d",Tax);
Total=Basic+Housing+Transport-(Pension+Tax);
System.out.printf("\nTotal Salary: %d",Total);
}

}
```

Output:

```
Basic Salary:
45000

Housing Allowance: 18000
Transport Allowance: 13500
Medical Allowance: 9000
Pension Allowance: 4500
Tax: 2250
Total Salary: 69750
```

Body Mass Index

Input:

```
static void println(String string) {
System.out.println(string); }
static void print(String string) {
System.out.print(string); }
private static void printBMIResult(float bmi) {
String result = "";
if (bmi < 18.5) {
result = "underweight"; }
else if (bmi < 25) {
result = "normal"; }
else if (bmi < 30) {
result = "overweight"; }
else {
result = "obese"; }
println("Your BMI is " + bmi + " and that means " + result); }
private static void calculateBMImethodOne() {
Scanner scanner = new Scanner(System.in);
println("Enter weight in Pounds : ");
float weight = scanner.nextFloat();
println("Enter Height in inches : ");
float height = scanner.nextFloat();
float bmi = (weight * 703) / (height * height);
printBMIResult(bmi); }
private static void calculateBMImethodTwo() {
Scanner scanner = new Scanner(System.in);
println("Enter weight in Kilogram : ");
float weight = scanner.nextFloat();
println("Enter Height in Meters : ");
float height = scanner.nextFloat();
float bmi = (weight) / (height * height);
printBMIResult(bmi); }
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
float weight;
```

```
float height;
println("You can calculate BMI by entering weight in pounds and height in inches or Weight in Kilograms and Height in Meter.");
while (true) {
println("");
println("Enter 1 for entering weight/height in pounds/inches OR 2 for kilogram/meters : ");
int userInput;
userInput = sc.nextInt();
if (userInput == 1) {
calculateBMImethodOne();
break;}
else if (userInput == 2) {
calculateBMImethodTwo();
break; }
else {
println("Invalid Input !!!");
continue; }}}}
```

Output:

```
Enter 1 for entering weight/height in pounds/inches OR 2 for kilogram/meters :
2
Enter weight in Kilogram :
50
Enter Height in Meters :
20
Your BMI is 0.125 and that means underweight
```

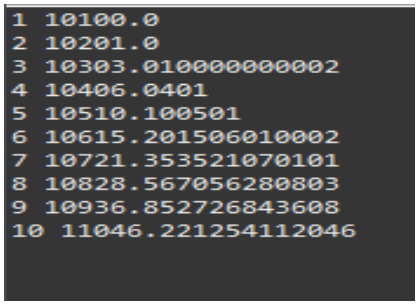
Banking Scheme:

The amount on deposit for 10,000 principles with 1% simple interest for 10 years

Input:

```
package Program1;
public class Loop11 {

public static void main(String[] args) {
// TODO Auto-generated method stub

double amount;
double principle=10000;
double rate=.01;
for (int day=1; day<=10; day++) {
amount=principle*Math.pow(1+rate, day);
System.out.println(day+ " "+amount); }}
}
```

Output:



The amount on deposit for any number of years, principle and interest amount

Input:

```
package Program1;
import java.util.Scanner;
public class loop111 {

public static void main(String[] args) {
// TODO Auto-generated method stub

Scanner input=new Scanner(System.in);
double a,p,r,rate;
int y;
System.out.println("Enter the principle amount: ");
p=input.nextDouble();
System.out.println("Enter interest rate: ");
r=input.nextDouble();
System.out.println("Enter number of years: ");
y=input.nextInt();
```

```
rate=r/100;
System.out.printf("%s%20s\n","Year","Amount on Deposit");
for(int year=1;year<=y;year++)
{a=p*Math.pow(1+rate,year);
System.out.printf("%2d%,18.2f\n",year,a); }
}

}
```

Output:

```
Enter the principle amount:
500000
Enter interest rate:
.12
Enter number of years:
6
Year    Amount on Deposit
 1          500,600.00
 2          501,200.72
 3          501,802.16
 4          502,404.32
 5          503,007.21
 6          503,610.82
```

Simple Interest Using Java

Input:

```
package Program1;
import java.util.Scanner;
public class bank3 {
public static void main(String[] args) {
// TODO Auto-generated method stub
float p, r, t, sinterest;
 Scanner scan = new Scanner(System.in);
 System.out.print("Enter the Principal : ");
 p = scan.nextFloat();
 System.out.print("Enter the Rate of interest : ");
 r = scan.nextFloat();
 System.out.print("Enter the Time period : ");
 t = scan.nextFloat();
 scan.close();
 sinterest = (p * r * t) / 100;
 System.out.print("Simple Interest is: " +sinterest);
}

}
```

Output:

```
Enter the Principal : 50000
Enter the Rate of interest : 5
Enter the Time period : 6
Simple Interest is: 15000.0
```

Compound Interest Using Java

Input:

```
package Program1;
import java.util.Scanner;
public class bank4 {

public static void main(String[] args) {
// TODO Auto-generated method stub

Scanner input = new Scanner(System.in);
 System.out.print("Enter the principal: ");
 double principal = input.nextDouble();
 System.out.print("Enter the rate: ");
 double rate = input.nextDouble();
 System.out.print("Enter the time: ");
 double time = input.nextDouble();
 System.out.print("Enter number of times interest is compounded: ");
 int number = input.nextInt();
 double interest = principal * (Math.pow((1 + rate/100), (time * number))) - principal;
 System.out.println("Principal: " + principal);
 System.out.println("Interest Rate: " + rate);
 System.out.println("Time Duration: " + time);
 System.out.println("Number of Time interest Compounded: " + number);
 System.out.println("Compound Interest: " + interest);
}
}
```

Output:

```
Enter the principal: 500000
Enter the rate: 0.5
Enter the time: 10
Enter number of times interest is compounded: 4
Principal: 500000.0
Interest Rate: 0.5
Time Duration: 10.0
Number of Time interest Compounded: 4
Compound Interest: 110397.11824339698
```

Saving Account Using Loop Function

Input:

```
package Program1;
import java.util.Scanner;
public class Scheme5 {
public static void main(String[] args) {
// TODO Auto-generated method stub
Scanner input=new Scanner(System.in);
System.out.print("Please enter your name: ");
String name=input.nextLine();
{
double amount;
double principle= 50000;
double rate= 0.15;
double days= 30;
for (int day=1; day<=30; day++) {
amount=principle*Math.pow(1+rate, day);
System.out.println(day+" "+ amount);
}
{
String message=String.format("\nThank you for banking with us, %s ",name);
System.out.print(message);}}}}
```

Output:

```
Please enter your name: Srijon Das
1 57499.99999999999
2 66124.99999999999
3 76043.74999999999
4 87450.31249999997
5 100567.85937499997
6 115653.03828124996
7 133000.99402343744
8 152951.14312695304
9 175893.81459599597
10 202277.88678539533
11 232619.56980320462
12 267512.5052736853
13 307639.3810647381
14 353785.28822444874
15 406853.08145811607
16 467881.0436768334
17 538063.2002283584
18 618772.6802626121
19 711588.5823020039
20 818326.8696473044
21 941075.9000943999
22 1082237.2851085598
23 1244572.8778748438
24 1431258.8095560702
25 1645947.6309894808
26 1892839.7756379028
27 2176765.741983588
28 2503280.603281126
29 2878772.6937732943
30 3310588.5978392884

Thank you for banking with us, Srijon Das
```

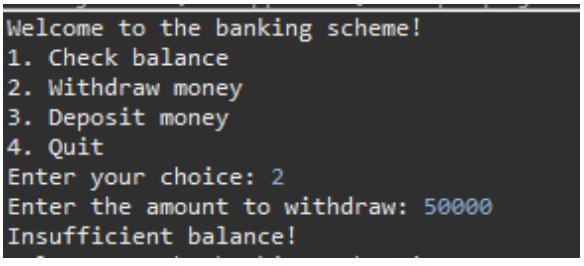
Banking Scheme usingjava

Input:

```
package Program1;
import java.util.Scanner;
public class BankingScheme {

public static void main(String[] args) {
// TODO Auto-generated method stub
   // Create a Scanner object to read input from the user
   Scanner scanner = new Scanner(System.in);

   // Initialize the account balance to 0
   double balance = 0;

   // Run the banking scheme in an infinite loop
   while (true) {
     // Print the main menu
     System.out.println("Welcome to the banking scheme!");
     System.out.println("1. Check balance");
     System.out.println("2. Withdraw money");
     System.out.println("3. Deposit money");
     System.out.println("4. Quit");
     System.out.print("Enter your choice: ");

     // Read the user's choice
     int choice = scanner.nextInt();

     // Act on the user's choice
     switch (choice) {
       case 1:
         // Print the current balance
         System.out.println("Your balance is: " + balance);
         break;
       case 2:
         // Read the amount to withdraw
         System.out.print("Enter the amount to withdraw: ");
         double amount = scanner.nextDouble();

         // Make sure the amount is not negative
         if (amount < 0) {
         System.out.println("Invalid amount!");
```

```
            break;
          }

          // Make sure the user has enough money in the account
          if (amount > balance) {
          System.out.println("Insufficient balance!");
            break;
          }

          // Update the balance and print a success message
          balance -= 50000;
          System.out.println("Withdrawal successful. Your new balance is: " + balance);
          break;
        case 3:
          // Read the amount to deposit
          System.out.print("Enter the amount to deposit: ");
          amount = scanner.nextDouble();

          // Make sure the amount is not negative
          if (amount < 0) {
          System.out.println("Invalid amount!");
          break;
          }

          // Update the balance and print a success message
          balance += amount;
          System.out.println("Deposit successful. Your new balance is: " + balance);
          break;
        case 4:
          // Quit the program
          System.out.println("Thank you for using our banking scheme. Goodbye!");
          return;
        default:
          // Invalid choice
          System.out.println("Invalid choice. Please try again.");
          break;
      }
    }
  }

}
```

Output:

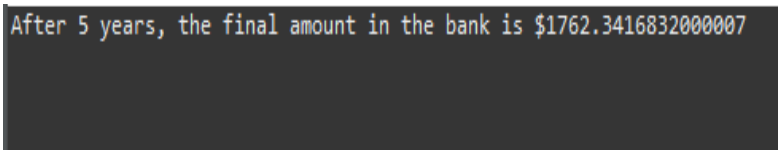


Interest rate Calculator:

Input:

```
package Program1;

public class InterestRateCalculator {

public static void main(String[] args) {
// TODO Auto-generated method stub
 // Initialize variables
   double principal = 1000.0; // Initial amount of money in the bank
   double interestRate = 0.12; // Interest rate of 5%
   int numYears = 5; // Number of years to calculate interest for

   // Calculate and print the amount of money in the bank after numYears
   double finalAmount = principal * Math.pow(1 + interestRate, numYears);
   System.out.println("After " + numYears + " years, the final amount in the bank is $" + finalAmount
);
}

}
```

Output:



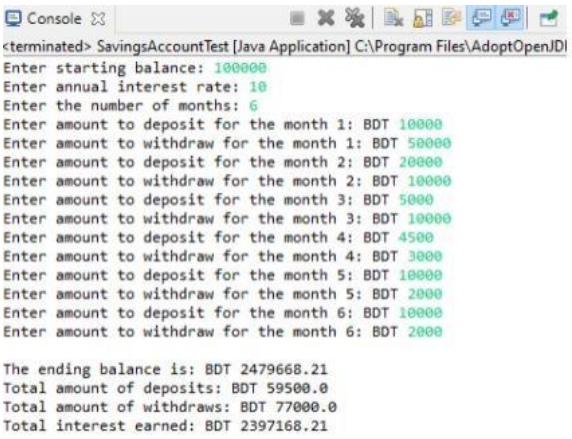
Saving Account test:

Input:

```
import java.util.Scanner;
public class SavingsAccountTest {
public static void main(String[] args) {
double startBalance, annual_Interest_Rate, deposit_Amount, withdraw_Amount;
int months;
Scanner input = new Scanner(System.in);
System.out.print("Enter starting balance: $");
startBalance = input.nextDouble();
System.out.print("Enter annual interest rate: ");
annual_Interest_Rate = input.nextDouble();
System.out.print("Enter the number of months: ");
months = input.nextInt();
SavingsAccount sa = new SavingsAccount(startBalance, annual_Interest_Rate);
sa.setAnnualInterestRate(annual_Interest_Rate);
for (int i = 0; i < months; i++)
```

```
{ System.out.print("Enter amount to deposit for the month " + (i+1) + ":$");
deposit_Amount = input.nextDouble();
sa.setDeposit(deposit_Amount);
System.out.print("Enter amount to withdraw for the month " + (i+1) + ":$");
withdraw_Amount = input.nextDouble();
sa.setWithdraw(withdraw_Amount);
sa.calculateMonthlyInterest(); }
sa.displayData(); }}
```

Output:



Project

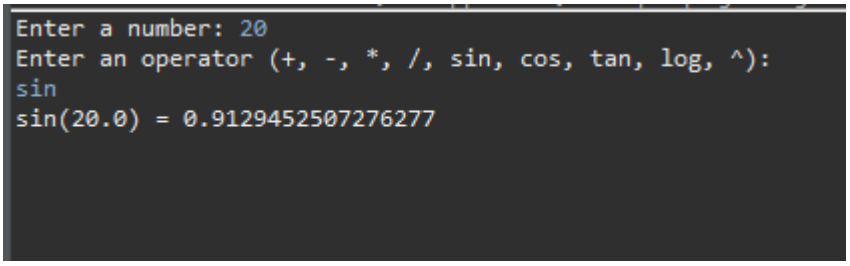
Scientific Calculator:

Input:

```
package program2;
import java.util.Scanner;
public class ScientificCalculator {

public static void main(String[] args) {
// TODO Auto-generated method stub



   Scanner input = new Scanner(System.in);

   System.out.print("Enter a number: ");
   double num1 = input.nextDouble();

   System.out.print("Enter an operator (+, -, *, /, sin, cos, tan, log, ^): ");
   String operator = input.next();

   if (operator.equals("sin") || operator.equals("cos") || operator.equals("tan")) {
     double result = 0.0;
     switch(operator) {
       case "sin":
         result = Math.sin(num1);
         break;
       case "cos":
         result = Math.cos(num1);
         break;
       case "tan":
         result = Math.tan(num1);
         break;
     }
     System.out.println(operator + "(" + num1 + ") = " + result);
   } else {
     System.out.print("Enter a second number: ");
     double num2 = input.nextDouble();

     double result;
     if (operator.equals("^")) {
       result = Math.pow(num1, num2);
     } else {
       switch(operator) {
       case "+":
          result = num1 + num2;
```

```
            break;
        case "-":
            result = num1 - num2;
            break;
        case "*":
            result = num1 * num2;
            break;
        case "/":
            result = num1 / num2;
            break;
        case "log":
            result = Math.log(num2) / Math.log(num1);
            break;
        default:
            System.out.println("Invalid operator");
            return;
      }
    }

    System.out.println(num1 + " " + operator + " " + num2 + " = " + result);
  }


}

}
```

Output:



Banking Application:

Input:

```
public class FirstBank {
public static void main(String[] args) {
// TODO Auto-generated method stub
Account tim = new Account("Tim Statler", "A00001");
Account beyonce = new Account("Beyonce", "B00002");
beyonce.showMenu();
}
}
```

Account Class

```
import java.util.Scanner;
public class Account {
//Class Variables
int balance;
int previousTransaction;
String customerName;
String customerID;
//Class constructor
Account(String cname, String cid) {
customerName = cname;
customerID = cid;
}
//Function for Depositing money
void deposit(int amount) {
if (amount != 0) {
balance = balance + amount;
previousTransaction = amount;
}
}
//Function for Withdrawing money
void withdraw(int amount) {
if (amount != 0) {
balance = balance - amount;
previousTransaction = -amount;
}
}
//Function showing the previous transaction
void getPreviousTransaction() {
if (previousTransaction > 0) {
System.out.println("Deposited: " + previousTransaction);
} else if (previousTransaction < 0) {
System.out.println("Withdrawn: " +
Math.abs(previousTransaction));
} else {
System.out.println("No transaction occurred");
}
}
//Function calculating interest of current funds after a number of years
```

```
void calculateInterest(int years) {
double interestRate = .0185;
double newBalance = (balance * interestRate * years) + balance;
System.out.println("The current interest rate is " + (100 *
interestRate) + "%");

System.out.println("After " + years + " years, you balance will be: " +
newBalance);
}
//Function showing the main menu
void showMenu() {
char option = '\0';
Scanner scanner = new Scanner(System.in);
System.out.println("Welcome, " + customerName + "!");
System.out.println("Your ID is: " + customerID);
System.out.println();
System.out.println("What would you like to do?");
System.out.println();
System.out.println("A. Check your balance");
System.out.println("B. Make a deposit");
System.out.println("C. Make a withdrawal");
System.out.println("D. View previous transaction");
System.out.println("E. Calculate interest");
System.out.println("F. Exit");
do {
System.out.println();
System.out.println("Enter an option: ");
char option1 = scanner.next().charAt(0);
option = Character.toUpperCase(option1);
System.out.println();
switch(option) {
//Case 'A' allows the user to check their account balance
case 'A':
System.out.println("====================================");
System.out.println("Balance = $" + balance);
System.out.println("====================================");
System.out.println();
break;
//Case 'B' allows the user to deposit money into their account
using the 'deposit' function
case 'B':
System.out.println("Enter an amount to deposit: ");
int amount = scanner.nextInt();
deposit(amount);
System.out.println();
break;
//Case 'C' allows the user to withdraw money from their account
using the 'withdraw' function
case 'C':
System.out.println("Enter an amount to withdraw: ");
int amount2 = scanner.nextInt();
```

```
withdraw(amount2);
System.out.println();
break;
//Case 'D' allows the user to view their most recent transaction
using the 'getPreviousTransaction' function
case 'D':
System.out.println("====================================");
getPreviousTransaction();
System.out.println("====================================");
System.out.println();
break;
//Case 'E' calculates the accrued interest on the account after a
number of years specified by the user
case 'E':
System.out.println("Enter how many years of accrued
interest: ");

int years = scanner.nextInt();
calculateInterest(years);
break;
//Case 'F' exits the user from their account
case 'F':
System.out.println("====================================");
break;
//The default case let's the user know that they entered an
invalid character and how to enter a valid one
default:
System.out.println("Error: invalid option. Please enter
A, B, C, D, or E or access services.");
break;
}
} while(option != 'F');
System.out.println("Thank you for banking with us!");
}
}
```

Output in Console:

```
Welcome, Beyonce!
Your ID is: B00002
What would you like to do?
A. Check your balance
B. Make a deposit
C. Make a withdrawal
D. View previous transaction
E. Calculate interest
F. Exit
Enter an option:
A
====================================
```

Balance = $0
==========
Enter an option:
B
Enter an amount to deposit:
20000
Enter an option:
A
==========
Balance = $20000
==========
Enter an option:
C
Enter an amount to withdraw:
6000
Enter an option:
A
==========
Balance = $14000
==========
Enter an option:
D
==========
Withdrawn: 6000
==========
Enter an option:
E
24
24 | P a g e
Enter how many years of accrued interest:
4
The current interest rate is 1.8499999999999999%
After 4 years, you balance will be: 15036.0
Enter an option:
F
==========
Thank you for banking with us!