Lab Practice 1

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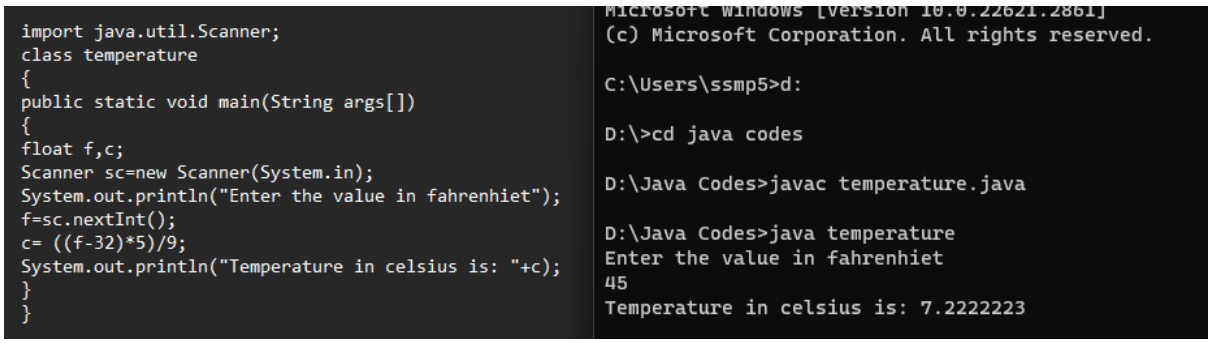
1. **Write a program which will read temperature value in Fahrenheit scale and print the value in Celsius scale.**

   Code:

```
import java.util.Scanner;
class temperature
{
public static void main(String args[])
{
float f,c;
Scanner sc=new Scanner(System.in);
System.out.println("Enter the value in fahrenhiet");
f=sc.nextInt();
c= ((f-32)*5)/9;
System.out.println("Temperature in celsius is: "+c);
}
}
```



2. **Write a program to enter length and width of a rectangle and find area and perimeter of the rectangle.**

   Code:

```
import java.util.Scanner;
class RecArea
{
public static void main(String args[])
{
int l,b,area;
Scanner sc=new Scanner(System.in);
System.out.println("Enter length : ");
```

```
l=sc.nextInt();
System.out.println("Enter breadth : ");
b=sc.nextInt();
area = l*b;
System.out.println("Area of rectangle : " +area);
}
}
```

```
import java.util.Scanner;
class RecArea
{
public static void main(String args[])
{
int l,b,area;
Scanner sc=new Scanner(System.in);
System.out.println("Enter length : ");
l=sc.nextInt();
System.out.println("Enter breadth : ");
b=sc.nextInt();
area = l*b;
System.out.println("Area of rectangle : " +area);
}
}
```

```
C:\Users\ssmp5>d:

D:\>cd java codes

D:\Java Codes>javac RecArea.java

D:\Java Codes>java RecArea
Enter length :
3
Enter breadth :
5
Area of rectangle : 15

D:\Java Codes>
```

3. **Write a program to enter marks of five subjects of a student and calculate total, average and percentage of all subjects.**

Code:

```
import java.util.Scanner;
class Marks
{
public static void main(String args[])
{
    float eng, phy, chem, math, comp;
    double total, average, percentage;
   Scanner op=new Scanner(System.in);
   /* Input marks of all five subjects */
   System.out.println("Enter marks of five subjects:");
   System.out.print("Enter marks of English subjects:");
   eng=op.nextFloat();
   System.out.print("Enter marks of physics subjects:");
   phy=op.nextFloat();
   System.out.print("Enter marks of chemistry subjects:");
   chem=op.nextFloat();
   System.out.print("Enter marks of maths subjects:");
   math=op.nextFloat();
   System.out.print("Enter marks of computers subjects:");
   comp=op.nextFloat();

   /* Calculate total, average and percentage */
   total = eng + phy + chem + math + comp;
```

```
        average = (total / 5.0);
        percentage = (total / 500.0) * 100;

        /* Print all results */
        System.out.println("Total marks ="+total);
        System.out.println("Average marks = "+average);
        System.out.println("Percentage = "+percentage);

      }
    }
```

```
import java.util.Scanner;
class Marks
{
public static void main(String args[])
{
     float eng, phy, chem, math, comp;
     double total, average, percentage;
    Scanner op=new Scanner(System.in);
    /* Input marks of all five subjects */
    System.out.println("Enter marks of five subjects:");
    System.out.print("Enter marks of English subjects:");
    eng=op.nextFloat();
    System.out.print("Enter marks of physics subjects:");
    phy=op.nextFloat();
    System.out.print("Enter marks of chemistry subjects:");
    chem=op.nextFloat();
    System.out.print("Enter marks of maths subjects:");
    math=op.nextFloat();
    System.out.print("Enter marks of computers subjects:");
    comp=op.nextFloat();

    /* Calculate total, average and percentage */
    total = eng + phy + chem + math + comp;
    average = (total / 5.0);
    percentage = (total / 500.0) * 100;

    /* Print all results */
    System.out.println("Total marks ="+total);
    System.out.println("Average marks = "+average);
    System.out.println("Percentage = "+percentage);

   }
}
```

```
C:\Users\ssmp5>d":
'd":' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\ssmp5>d:

D:\>cd java codes

D:\Java Codes>javac Marks.java

D:\Java Codes>java Marks
Enter marks of five subjects:
Enter marks of English subjects:98
Enter marks of physics subjects:95
Enter marks of chemistry subjects:99
Enter marks of maths subjects:100
Enter marks of computers subjects:92
Total marks =484.0
Average marks = 96.8
Percentage = 96.8

D:\Java Codes>
```

4. **Write four statements by using printf functionto print an asterisk pattern having 1, 3,5 and 7 asterisks (*) in successive lines so that it generates a triangular pattern as given below.**

```
    *

  * * *

* * * * *

* * * * * * *
```

Code:

```
import java.util.Scanner;
class star {
   public static void main(String[] args)
   {
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter the number of rows to be printed");
      int rows = sc.nextInt();

      for (int i = 1; i <= rows; i++) {

         for (int j = rows; j >= i; j--) {
            System.out.print(" ");
         }

         for (int j = 1; j <= i; j++) {
            System.out.print("* ");
         }

         System.out.println();
      }
   }
}
```

```
import java.util.Scanner;
class star {
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of rows to be printed");
        int rows = sc.nextInt();

        for (int i = 1; i <= rows; i++) {

            for (int j = rows; j >= i; j--) {
                System.out.print(" ");
            }

            for (int j = 1; j <= i; j++) {
                System.out.print("* ");
            }

            System.out.println();
        }
    }
}
```

```
C:\Users\ssmp5>d:

D:\>cd java codes

D:\Java Codes>javac star.java

D:\Java Codes>java star
Enter the number of rows to be printed
7
       *
      * *
     * * *
    * * * *
   * * * * *
  * * * * * *
 * * * * * * *

D:\Java Codes>
```

5. **A ball is released from a height of Y meters. Each time it bounces on the floor, its velocity becomes halved. Write a program, which reads the value of Y and prints the total distance traversed by the ball when it touches the ground for the third time. Assume that the value of acceleration due to gravity, g, is 9.8**

Code:

```
import java.util.Scanner;

public class BouncingBallDistance {
```

```
public static void main(String[] args) {
Scanner scanner = new Scanner(System.in);
System.out.print("Enter the initial height (Y) in meters: ");
double initialHeight = scanner.nextDouble();
double gravity = 9.8;
double totalDistance = calculateTotalDistance(initialHeight, gravity);
System.out.println("Total distance traversed by the ball when it touches the ground for
the third time: " + totalDistance + " meters");
scanner.close();
}
private static double calculateTotalDistance(double initialHeight, double gravity) {
double totalDistance = 0;
double velocity = Math.sqrt(2 * gravity * initialHeight);
for (int i = 0; i < 3; i++) {
totalDistance += initialHeight;
velocity /= 2;
double timeToGround = velocity / gravity;
double distanceDownward = 0.5 * gravity * Math.pow(timeToGround, 2);
totalDistance += distanceDownward;
}
return totalDistance;
}
}
```

```
import java.util.Scanner;

public class BouncingBallDistance {
public static void main(String[] args) {
Scanner scanner = new Scanner(System.in);
System.out.print("Enter the initial height (Y) in meters: ");
double initialHeight = scanner.nextDouble();
double gravity = 9.8;
double totalDistance = calculateTotalDistance(initialHeight, gravity);
System.out.println("Total distance traversed by the ball when it touches the ground
for the third time: " + totalDistance + " meters");
scanner.close();
}
private static double calculateTotalDistance(double initialHeight, double gravity)
{
double totalDistance = 0;
double velocity = Math.sqrt(2 * gravity * initialHeight);
for (int i = 0; i < 3; i++) {
totalDistance += initialHeight;
velocity /= 2;
double timeToGround = velocity / gravity;
double distanceDownward = 0.5 * gravity * Math.pow(timeToGround, 2);
totalDistance += distanceDownward;
}
return totalDistance;
}
}
```

```
C:\Users\ssmp5>d:

D:\>cd java codes

D:\Java Codes>javac BouncingBallDistance.java

D:\Java Codes>java BouncingBallDistance
Enter the initial height (Y) in meters: 15
Total distance traversed by the ball when it touches the ground for the
third time: 49.921875 meters

D:\Java Codes>
```

6. **Consider a bank that offers fixed deposit accounts with cumulative (annually) interest on the balance available in the account. Write a program that reads the amount initially invested (called Principal amount) in an account and interest rate. The program generates the balance available in the account at the end of each year for first five years.**

Code:

```
import java.util.Scanner;

public class FixedDepositCalculator {
public static void main(String[] args) {
Scanner scanner = new Scanner(System.in);
System.out.print("Enter the principal amount: ");
double principalAmount = scanner.nextDouble();
System.out.print("Enter the interest rate (in percentage): ");
double interestRate = scanner.nextDouble();
System.out.println("\nYear\tBalance");
for (int year = 1; year <= 5; year++) {
double interest = principalAmount * interestRate;
principalAmount += interest;
System.out.printf("%d\t%.2f\n", year, principalAmount);
}
scanner.close();
}
}
```

```
import java.util.Scanner;

public class FixedDepositCalculator {
public static void main(String[] args) {
Scanner scanner = new Scanner(System.in);
System.out.print("Enter the principal amount: ");
double principalAmount = scanner.nextDouble();
System.out.print("Enter the interest rate (in percentage): ");
double interestRate = scanner.nextDouble();
System.out.println("\nYear\tBalance");
for (int year = 1; year <= 5; year++) {
double interest = principalAmount * interestRate;
principalAmount += interest;
System.out.printf("%d\t%.2f\n", year, principalAmount);
}
scanner.close();
}
}
```

```
C:\Users\ssmp5>d:

D:\>cd java codes

D:\Java Codes>javac FixedDepositCalculator.java

D:\Java Codes>java FixedDepositCalculator
Enter the principal amount: 50000
Enter the interest rate (in percentage): 2.5

Year    Balance
1       175000.00
2       612500.00
3       2143750.00
4       7503125.00
5       26260937.50
```