**Java programming**

**Instructions**

*Answer all the questions.*

*Each question is five marks.*

***QUESTION ONE:***

Create a java project, name it methods\_in\_java, in the project create a package named java\_methods and in the package, create a class and named methods.

b. in the classmethods, write a method that asks user to enter three numbers, using if statement determine the largest number, the smallest number and display the results in the following format.   
The smallest number: ?  
The largest number number: ?  
? is your largest and ? smallest number.

package java\_methods;

import java.util.Scanner;

public class Methods {

public static void main(String[] args) {

Methods methods = new Methods();

// Call the method to get user input and determine the smallest and largest numbers

methods.findSmallestAndLargest();

}

// Method to get user input and find the smallest and largest numbers

public void findSmallestAndLargest() {

Scanner scanner = new Scanner(System.in);

// Ask the user to enter three numbers

System.out.print("Enter the first number: ");

double num1 = scanner.nextDouble();

System.out.print("Enter the second number: ");

double num2 = scanner.nextDouble();

System.out.print("Enter the third number: ");

double num3 = scanner.nextDouble();

// Determine the smallest and largest numbers using if statements

double smallest = num1;

double largest = num1;

if (num2 < smallest) {

smallest = num2;

} else if (num2 > largest) {

largest = num2;

}

if (num3 < smallest) {

smallest = num3;

} else if (num3 > largest) {

largest = num3;

}

// Display the results

System.out.println("The smallest number: " + smallest);

System.out.println("The largest number: " + largest);

System.out.println(smallest + " is your smallest number, and " + largest + " is your largest number.");

scanner.close();

}

}

Used the double data type it does not display a whole No.

***QUESTION 2:***

Create a java project, package and class. In the class, write a method that asks a lecturer to enter marks for three units, java programming, networking and maths. The method should compute the average marks for three units and output the data in the following format.

marks for java programming is: ?  
marks for networking is: ?

marks for maths is: ?

the average is: ?

package academics;

import java.util.Scanner;

public class Lecturer {

public static void main(String[] args) {

// Create an instance of the Lecturer class

Lecturer lecturer = new Lecturer();

// Call the method to enter and calculate marks

lecturer.calculateAndDisplayMarks();

}

// Method to ask for marks and calculate the average

public void calculateAndDisplayMarks() {

Scanner scanner = new Scanner(System.in);

// Ask the lecturer to enter marks for three units

System.out.print("Enter marks for Java Programming: ");

double javaMarks = scanner.nextDouble();

System.out.print("Enter marks for Networking: ");

double networkingMarks = scanner.nextDouble();

System.out.print("Enter marks for Maths: ");

double mathsMarks = scanner.nextDouble();

// Calculate the average

double averageMarks = (javaMarks + networkingMarks + mathsMarks) / 3;

// Display the marks and average

System.out.println("Marks for Java Programming is: " + javaMarks);

System.out.println("Marks for Networking is: " + networkingMarks);

System.out.println("Marks for Maths is: " + mathsMarks);

System.out.println("The average is: " + averageMarks);

scanner.close();

}

}

Used Double data type rather than float for more accuracy on decimal.

***QUESTION 3:***

Write a method that asks user to enter the year, the program should check if the year is a leap year, and output the text the year you entered is a leap year.

import java.util.Scanner;

public class SimpleLeapYearChecker {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

// Ask the user to enter a year

System.out.print("Enter a year: ");

int year = scanner.nextInt();

// Check if it's a leap year and display the result

if (year % 4 == 0 && (year % 100 != 0 || year % 400 == 0)) {

System.out.println("Leap year!");

} else {

System.out.println("Not a leap year.");

}

//The code checks if the year is divisible by 4 and, if it's not divisible by 100, or if it's divisible by 400.

scanner.close();

}

}

Create a java project, a package and a class, in the class, write a program to calculate the area of a triangle. The program should have thee non-static methods:

One of the methods should ask the user to enter the base and the height of a triangle.

The other method should compute the area of the rectangle.

The other method should output the calculated area of the triangle an display it to the user.

package geometry;

import java.util.Scanner;

public class TriangleAreaCalculator {

public static void main(String[] args) {

double base = getUserInput("Enter the base of the triangle: ");

double height = getUserInput("Enter the height of the triangle: ");

double area = calculateArea(base, height);

displayArea(area);

}

// Method to get input from the user

private static double getUserInput(String message) {

Scanner scanner = new Scanner(System.in);

System.out.print(message);

return scanner.nextDouble();

}

// Method to calculate the area of the triangle

private static double calculateArea(double base, double height) {

return 0.5 \* base \* height;

}

// Method to display the calculated area

private static void displayArea(double area) {

System.out.println("The area of the triangle is: " + area);

}

}

Used private static to make the method only accessible within the same class .

***QUESTION 4***

Create a java program that has one non-static method, two static methods and a constructor.

public class Program {

// Non-static method

public void nonStaticMethod() {

System.out.println("This is a non-static method.");

}

// Static method 1

public static void staticMethod1() {

System.out.println("This is static method 1.");

}

// Static method 2

public static void staticMethod2() {

System.out.println("This is static method 2.");

}

// Constructor

public Program() {

System.out.println("This is the constructor.");

}

public static void main(String[] args) {

Program program = new Program();

program.nonStaticMethod();

staticMethod1();

staticMethod2();

}

}