BeginwithJava

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Programming Questions and Exercises : Decision

Question 1

Even or Odd

Write a program that asks the user to enter a number and displays whether entered number is an odd number or even number.

Show the answer.

```
import java.util.Scanner;

public class EvenOdd
{
    public static void main(String[] args)
    {
        int number;

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get number from the user.
        System.out.print("Enter an integer: ");
        number = console.nextInt();

        // Determine even or odd.
        if (number % 2 == 0)
        {
            System.out.println("number is even");
        }
        else
        {
            System.out.println("number is odd");
        }
    }
}
```

Question 2

Absolute value

Write a program that asks the user to enter a number and displays the absolute value of that number.

Show the answer.

```
import java.util.Scanner;

public class AbsoluteValue
{
    public static void main(String[] args)
    {
        int number;

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get number from the user.
        System.out.print("Enter an integer: ");
        number = console.nextInt();

        // Change sign if number is negative.
        if (number < 0)
        {
            number = -number;
        }

        // Display absolute value of number.
        System.out.println("Absolute value: " + number);
    }
}
```

Question 3

Discount and Revenue

Revenue can be calculated as the selling price of the product times the quantity sold, i.e. revenue = price × quantity. Write a program that asks the user to enter product price and quantity and then calculate the revenue. If the revenue is more than 5000 a discount is 10% offered. Program should display the discount and net revenue.

Show the answer.

```
import java.util.Scanner;

public class RevenueCalc
{
    public static void main(String[] args)
    {
        int revenue, price, quantity;
        int discount = 0; // To hold discount

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get value from the user.
        System.out.print("Enter price of product: ");
        price = console.nextInt();

        System.out.print("Enter quantity of product: ");
        quantity = console.nextInt();

        // Calculate revenue.
        revenue = price * quantity;

        if (revenue > 5000)
        {
            // Calculate discount.
            discount = revenue * 10 / 100;
            // Calculate net revenue.
            revenue = revenue - discount;
        }

        // Display Discount and net revenue.
        System.out.println("The discount is " + discount);
        System.out.println("The net revenue is " + revenue);
    }
}
```

Question 4

Largest Number

Write a program that asks the user to enter a numbers in three variables and then displays the largest number.

Show the answer.

```
import java.util.Scanner;

public class LargestNumber
```

```
{
    public static void main(String[] args)
    {
        int number1, number2, number3; // To hold three numbers.
        int largest; // To hold largest number.

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get numbers from the user.
        System.out.print("Enter first number: ");
        number1 = console.nextInt();

        System.out.print("Enter second number: ");
        number2 = console.nextInt();

        System.out.print("Enter third number: ");
        number3 = console.nextInt();

        // Determine largest number.
        if (number1 > number2 && number1 > number3)
        {
            largest = number1;
        }
        else if (number2 > number3)
        {
            largest = number2;
        }
        else
        {
            largest = number3;
        }

        // Display largest number.
        System.out.println("Largest number: " + largest);
    }
}
```

Question 5

Positive, negative or zero

Write a program that prompts the user to input a number. The program should then output the number and a message saying whether the number is positive, negative, or zero.

Show the answer.

```java
import java.util.Scanner;

public class PositiveNegativeZero
{
    public static void main(String[] args)
    {
        int number; // To hold a number.

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get number from the user.
        System.out.print("Enter an integer: ");
        number = console.nextInt();

        // Determine positive, negative or zero.
        if (number > 0)
        {
            System.out.println("Number is positive");
        }
        else if (number < 0)
        {
            System.out.println("Number is negative.");
        }
        else
        {
            System.out.println("Number is zero.");
        }
    }
}
```

Question 6

Valid Triangle

A triangle is valid if the sum of all the three angles is equal to 180 degrees. Write a program that asks the user to enter three integers as angles and check whether a triangle is valid or not.

Show the answer.

```java
import java.util.Scanner;

public class TriangleTest
{
    public static void main(String[] args)
    {
        int angle1, angle2, angle3; // To hold three angles.
```

```
        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get angles from the user.
        System.out.print("Enter first angle: ");
        angle1 = console.nextInt();

        System.out.print("Enter second angle: ");
        angle2 = console.nextInt();

        System.out.print("Enter third angle: ");
        angle3 = console.nextInt();

        // Determine validity of triangle.
        if (angle1 + angle2 + angle3 == 180)
        {
            System.out.println("Triangle is valid");
        }
        else
        {
            System.out.println("Triangle is not valid");
        }
    }
}
```

Question 7

Leap Year
Any year is input by the user. Write a program to determine whether the year is a leap year or not.

Leap Years are any year that can be evenly divided by 4. A year that is evenly divisible by 100 is a leap year only if it is also evenly divisible by 400.

Example :
1992 Leap Year
2000 Leap Year
1900 NOT a Leap Year

Show the answer.

```
import java.util.Scanner;     // Needed for the Scanner class

public class Leapyear
{
   public static void main(String[] args)
   {
      int year;    // holds a year
```

```
      // Create a Scanner object for keyboard input.
      Scanner console = new Scanner(System.in);

      // Get the year.
      System.out.print("Enter a year : ");
      year = console.nextInt();

      // Determine whether the year is leap year.
      if ((year % 4 == 0) && ((year % 400 == 0) || (year % 100 != 0)))
      {
         System.out.println("A leap year");
      }
      else
      {
         System.out.println("Not a leap year");
      }
   }
}
```

Question 8

Telephone Bill

Write a program to calculate the monthly telephone bills as per the following rule:
Minimum Rs. 200 for up to 100 calls.
Plus Rs. 0.60 per call for next 50 calls.
Plus Rs. 0.50 per call for next 50 calls.
Plus Rs. 0.40 per call for any call beyond 200 calls.

Show the answer.

```
import java.util.Scanner;

public class TelephoneBill
{
    public static void main(String[] args)
    {
        int numberOfCalls;
        double bill;

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get value from the user.
        System.out.print("Enter number of calls: ");
        numberOfCalls = console.nextInt();
```

```
        // Calculate bill.
        if (numberOfCalls <= 100)
        {
            bill = 200;
        }
        else if (numberOfCalls <= 150)
        {
            bill = 200 + (numberOfCalls - 100) * 0.60;
        }
        else if (numberOfCalls <= 200)
        {
            bill = 200 + 50 * 0.60
                    + (numberOfCalls - 150) * 0.50;
        }
        else
        {
            bill = 200 + 50 * 0.60 + 50 * 0.50
                    + (numberOfCalls - 200) * 0.40;
        }

        // Display bill.
        System.out.println("The bill is Rs. " + bill);
    }
}
```

Question 9

Grade Calculator

The marks obtained by a student in 3 different subjects are input by the user. Your program should calculate the average of subjects. The student gets a grade as per the following rules:

Average	Grade
90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

Show the answer.

```
import java.util.Scanner;

public class GradeCalc
{
    public static void main(String[] args)
    {
        int marks1, marks2, marks3; // To hold marks in three subjects
        double average; // To hold average Marks
        char grade; // To hold grade

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get value from the user.
        System.out.print("Enter marks of subject 1: ");
        marks1 = console.nextInt();

        System.out.print("Enter marks of subject 2: ");
        marks2 = console.nextInt();

        System.out.print("Enter marks of subject 3: ");
        marks3 = console.nextInt();

        // Calculate average marks.
        average = (marks1 + marks2 + marks3) / 3.0;

        if (average >= 90)
        {
            grade = 'A';
        }
        else if (average >= 80)
        {
            grade = 'B';
        }
        else if (average >= 70)
        {
            grade = 'C';
        }
        else if (average >= 60)
        {
            grade = 'D';
        }
        else
        {
            grade = 'F';
        }

        // Display grade.
```

```
        System.out.println("Grade is: " + grade);
    }
}
```

Question 10

Meaning of Grade

Write a program that prompts the user to enter grade. Your program should display the corresponding meaning of grade as per the following table

Grade	Meaning
A	Excellent
B	Good
C	Average
D	Deficient
F	Failing

Show the answer.

```
import java.util.Scanner;

public class GradeMeaning
{
    public static void main(String[] args)
    {
        char grade; // To hold grade

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get grade from the user.
        System.out.print("Enter grade: ");
        grade = console.next().charAt(0);

        // Determine and display grade
        switch (grade)
        {
        case 'A':
            System.out.println("Excellent");
            break;
        case 'B':
            System.out.println("Good");
            break;
```

```
        case 'C':
            System.out.println("Average");
            break;
        case 'D':
            System.out.println("Deficient");
            break;
        case 'F':
            System.out.println("Failing");
            break;
        default:
            System.out.println("Invalid input");
        }
    }
}
```

Question 11

Descending Order Names

Write a program that prompts the user to enter three names. Your program should display the names in descending order.

Show the answer.

```
import java.util.Scanner;

public class DescendingNames
{
    public static void main(String[] args)
    {
        String name1, name2, name3; // To hold three names

        // Create a Scanner object to read input.
        Scanner console = new Scanner(System.in);

        // Get names from the user.
        System.out.print("Enter name 1: ");
        name1 = console.nextLine();

        System.out.print("Enter name 2: ");
        name2 = console.nextLine();

        System.out.print("Enter name 3: ");
        name3 = console.nextLine();

        //Arrange names in Descending order
        if (name1.compareTo(name2) > 0
                && name1.compareTo(name3) > 0)
```

```
        {
            System.out.println(name1);
            if (name2.compareTo(name3) > 0)
            {
                System.out.println(name2);
                System.out.println(name3);
            }
            else
            {
                System.out.println(name3);
                System.out.println(name2);
            }
        }

        else if (name2.compareTo(name1) > 0
                && name2.compareTo(name3) > 0)
        {
            System.out.println(name2);
            if (name1.compareTo(name3) > 0)
            {
                System.out.println(name1);
                System.out.println(name3);
            }
            else
            {
                System.out.println(name3);
                System.out.println(name1);
            }
        }

        else
        {
            System.out.println(name3);
            if (name1.compareTo(name2) > 0)
            {
                System.out.println(name1);
                System.out.println(name2);
            }
            else
            {
                System.out.println(name2);
                System.out.println(name1);
            }
        }
    }
}
```

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