

1)Write a program that checks if a given year is a leap year or not using both if-else and switch-case.

Code:

Using If-else:

```
import java.util.Scanner;

class leapyearifelse{

    public static void main(String[] args) {

        System.out.println("Enter the year to check");

        Scanner s = new Scanner(System.in);

        int year = s.nextInt();

        if(year%100==0 || year%4==0){

            System.out.println("It is a leap year");

        }

        else{

            System.out.println("It is not a leap year");

        }

    }

}
```

Using Switch-case:

```
class leapyearswitch {  
    public static void main(String[] args) {  
        System.out.print("Enter the year ");  
        Scanner sc = new Scanner(System.in);  
        int year = sc.nextInt();  
        int leap = 0;  
        if (year % 4 == 0) {  
            if (year % 100 == 0) {  
                if (year % 400 == 0) {  
                    leap = 1;  
                } else {  
                    leap = 0;  
                }  
            } else {  
                leap = 1;  
            }  
        } else {  
            leap = 0;  
        }  
        switch (leap) {  
            case 1:  
                System.out.println(year + " is a leap year"); break;  
            case 0:  
                System.out.println(year + " is not a leap year"); break;  
            default:  
                System.out.println("Invalid year"); break;  
        }  
    }  
}
```

2)Implement a program that calculates the Body Mass Index (BMI) based on height and weight input using if-else to classify the BMI int categories (underweight, normal weight, overweight,etc).

Code:

```
public class BMI {  
  
    public static void main(String[] args) {  
  
        Scanner s = new Scanner(System.in);  
  
        System.out.println("Enter your weight in kg");  
  
        double weight = s.nextDouble();  
  
  
        System.out.println("Enter your height in metre");  
  
        double height = s.nextDouble();  
  
  
        double BMI = (weight / Math.pow(height, 2));  
  
  
        String formatBMI = String.format("%.1f", BMI);  
  
  
        if (BMI < 18) {  
            System.out.println("The BMI is: " + formatBMI + " and is Underweight");  
        } else if (BMI > 18 && BMI < 25) {  
            System.out.println("The BMI is: " + formatBMI + " and is normal weight");  
        } else {  
            System.out.println("The BMI is: " + formatBMI + " and is over weight");  
        }  
  
    }  
  
}
```

3)Write a program that checks if a person is eligible to vote based on their age.

Code:

```
import java.util.*;;

public class vote {
    public static void main(String... args){
        System.out.println("Enter the persons age: ");
        Scanner sc = new Scanner(System.in);
        int age = sc.nextInt();

        if(age > 18){
            System.out.println("Person is eligibe to vote");
        }
        else{
            System.out.println("Person is not eligible to vote");
        }
    }
}
```

4)Write a program that takes a month (1-12) and prints the corresponding season (Winter, Spring, Summer, Autumn) using a switch case

Code:

```
public class season {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter the month ");  
        int month = sc.nextInt();  
  
        switch (month) {  
            case 1:  
                System.out.println("It is a winter season");  
                break;  
            case 2:  
                System.out.println("It is a winter season");  
                break;  
            case 3:  
                System.out.println("It is a spring season");  
                break;  
            case 4:  
                System.out.println("It is a spring season");  
                break;  
            case 5:  
                System.out.println("It is a spring season");  
                break;  
            case 6:  
                System.out.println("It is a summer season");  
                break;  
            case 7:  
                System.out.println("It is a summer season");  
                break;
```

```
case 8:
    System.out.println("It is a summer season");
    break;
case 9:
    System.out.println("It is a autumn season");
    break;
case 10:
    System.out.println("It is a autumn season");
    break;
case 11:
    System.out.println("It is a autumn season");
    break;
case 12:
    System.out.println("It is a winter season");
    break;
default:
    System.out.println("Not a valid month");
    break;
}
}
}
```

5)Write a program that allows the user to select a shape (Circle, Square, Rectangle, Triangle) and then calculates the area based on user-provided dimensions using a switch case.

Code:

```
public class problem5 {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("1. Circle, ");  
        System.out.print("2. Square, ");  
        System.out.print("3. Rectangle, ");  
        System.out.println("4. Triangle");  
        System.out.print("Select choice from(1-4) ");  
  
        int choice = sc.nextInt();  
        switch (choice) {  
            case 1:  
                System.out.println("Enter the radius");  
                double radius = sc.nextDouble();  
                double arci = Math.PI * radius*radius;  
                System.out.println("area of circle is "+ arci);  
                break;  
  
            case 2:  
                System.out.println("Enter the side");  
                double side = sc.nextDouble();  
                double arsq = side*side;  
                System.out.println("area of square is: " +arsq);  
                break;  
  
            case 3:  
                System.out.print("Enter the length ");
```

```
double len = sc.nextDouble();  
System.out.print("Enter the breadth ");  
double bre = sc.nextDouble();  
double arrect = len * bre;  
System.out.println("area of reatangle is: " + arrect);  
break;
```

case 4:

```
System.out.println("Enter the base");  
double base = sc.nextDouble();  
System.out.println("Enter the height");  
double height = sc.nextDouble();  
double artri = 0.5*base*height;  
System.out.println("area of triangle is: " +artri );  
break;
```

default:

```
System.out.println("Not among the given choice");  
break;
```

```
}
```

```
}
```

```
}
```