

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

```
import java.util.Scanner;
```

```
// using if- else
```

```
// class leapYear{  
//   public static void main(String[] args){  
//     Scanner scn = new Scanner(System.in);  
//     int year = scn.nextInt();  
  
//     if(year%400==0 || (year%4 == 0 && year%100 != 0)){  
//       System.out.println(year + " is a leap year.");  
//     }  
//     else{  
//       System.out.println(year+ " is not a leap year");  
//     }  
//   }  
// }
```

```
// using switch-case
```

```
class leapyear{  
   public static void main(String[] args){  
       Scanner scn = new Scanner(System.in);
```

```
int year = scn.nextInt();

int r = (year % 400 == 0 || (year % 100 != 0 && year % 4 == 0)) ? 1 : 0;

switch(r){
    case 1 :
        System.out.println("leap year");
        break;
    case 0 :
        System.out.println("Not a leap year");
        break;
    default :
        System.out.println("Not a leap 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).

```
import java.util.*;

class bmi{
    public static void main(String args[]){
        Scanner sc = new Scanner(System.in);
        float weight = sc.nextFloat();
```

```

float height = sc.nextFloat();

height = height/100;

float bmi = (weight/(height*height));
System.out.println("the bmi is : " + bmi);
if(bmi>40.0){
    System.out.println("the person is obese");
}
else if(bmi>25.0){
    System.out.println("the person is overweight");
}
else if(bmi >18.5){
    System.out.println("the person is normal");
}
else{
    System.out.println("the person is underweight");
}

}
}

```

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

```

import java.util.*;

class vote{

```

```
public static void main(String args[]){  
    Scanner sc = new Scanner(System.in);  
    int age = sc.nextInt();  
  
    if(age>=18){  
        System.out.println("You are eligible to vote");  
    }  
    else{  
        System.out.println("You are 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

```
import java.util.*;  
  
class season{  
    public static void main(String args[]){  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter the month number between 1-12 to know the weather: ");  
        int month = sc.nextInt();  
  
        switch(month){  
            case 1: System.out.println("Winter");  
                    break;
```

```
case 2: System.out.println("Winter");
        break;
case 3: System.out.println("Winter");
        break;
case 4: System.out.println("Summer");
        break;
case 5: System.out.println("Summer");
        break;
case 6: System.out.println("Summer");
        break;
case 7: System.out.println("Summer");
        break;
case 8: System.out.println("Autumn");
        break;
case 9: System.out.println("Spring");
        break;
case 10: System.out.println("Spring");
        break;
case 11: System.out.println("Winter");
        break;
case 12: System.out.println("Winter");
        break;
default: System.out.println("Enter the correct 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.

```
import java.util.*;

class area{

    public static void main(String args[]){

        Scanner sc = new Scanner(System.in);

        System.out.println("select a shape based on number assigned to them:");

        System.out.println("Enter 1 for circle");

        System.out.println("Enter 2 for square");

        System.out.println("Enter 3 for Rectangle");

        System.out.println("Enter 4 for triangle");


        int shape = sc.nextInt();


        switch(shape){

            case 1: System.out.println("You selected circle, now enter the radius of the circle:");

                    int radius = sc.nextInt();

                    System.out.println("the area is: " + 3.14*radius*radius);

                    break;

            case 2: System.out.println("You selected Square, now enter the side of the square:");

                    int side = sc.nextInt();

                    System.out.println("the area is: " + side*side);

                    break;

            case 3: System.out.println("You selected Rectangle, now enter the length and breadth of the rectangle:");
```

```
        int length = sc.nextInt();

        int breadth = sc.nextInt();

        System.out.println("the area is: " + length*breadth);

        break;

    case 4: System.out.println("You selected Triangle, now enter the height and base side of the
triangle:");

        int height = sc.nextInt();

        int base_side = sc.nextInt();

        System.out.println("the area is: " + (base_side*height)/2);

        break;

    default: System.out.println("Enter the correct shape");

    }

}

}
```