JAVA LABORATORY WEEK-1

PROGRAM ON DATA TYPES

1.Write a Java program that reads an integer between 0 and 1000 and adds all the digits in the integer.

PROGRAM:

```
import java.util.*;

class DigitsSum {
   public static void main(String[] args) {
      Scanner s = new Scanner(System.in);

      System.out.println("Enter an integer between 0 and 1000:");
      int number = s.nextInt();

      int sum = 0;

      while (number > 0) {
         sum += number % 10;
         number/= 10;
      }

      System.out.println("The sum of the digits is: " + sum);
   }
}
```

OUTPUT:

```
Enter an integer between 0 and 1000:
195
The sum of the digits is: 15
```

2.Write a Java program that reads a number in inches and converts it to meters.

Note: One inch is 0.0254 meter.

Test Data

Input a value for inch: 100

Expected Output :

100.0 inch is 2.54 meters

PROGRAM:

```
import java.util.*;

public class d_inch {
   public static void main(String[] args) {
      Scanner s = new Scanner(System.in);

      System.out.print("Input a value for inch: ");
      double inches = sc.nextDouble();

      System.out.println(inches + " inch is " + inches*0.0254 + " meters");
   }
}
```

OUTPUT:

```
Input a value for inch: 100
100.0 inch is 2.54 meters
```

3. Write a program to accept a alphabet and print the respective ASCII Value

PROGRAM:

```
import java.util.Scanner;

public class D_ASCII {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      System.out.print("Enter an alphabet: ");
      char alphabet = scanner.next().charAt(0);

      System.out.println("The ASCII value of " + alphabet + " is: " + (int)alphabet);
     }
}
```

OUTPUT:

```
Enter an alphabet: c
The ASCII value of a is: 99
```

4. Write a program that accept length and breadth and print the area of a rectangle

PROGRAM:

```
import java.util.*;

public class RectangleArea {
   public static void main(String[] args) {
      Scanner s = new Scanner(System.in);
      System.out.print("Enter the length of the rectangle: ");
      double length = s.nextDouble();

      System.out.print("Enter the breadth of the rectangle: ");
      double breadth = s.nextDouble();

      System.out.println("The area of the rectangle is: " +  length * breadth);
   }
}
```

OUTPUT:

```
Enter the length of the rectangle: 5
Enter the breadth of the rectangle: 6
The area of the rectangle is: 30.0
```

PROBLEMS ON CONTROL STRUCTURES

1.A Number (N) is passed as the input to the program. Write a program to check the number is positive, negative or zero using nested if-else.

PROGRAM:

```
import java.util.*;

public class CheckNumber {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter a number: ");
      int number = scanner.nextInt();

      if (number >= 0) {
         if (number == 0) {
            System.out.println("The number is zero");
         } else {
            System.out.println("The number is positive");
```

```
        }
    } else {
        System.out.println("The number is negative");
    }

  }
}
```

OUTPUT:

```
Enter a number: -1
The number is negative
```

2.Write a Java program that simulates a simple voting system. The program should prompt the user to enter their age. Based on the age entered, use a boolean variable to determine if the person is eligible to vote (age 18 or older). Print appropriate messages indicating whether the person can vote or not.

PROGRAM:

```
import java.util.Scanner;

public class VotingSystem {
  public static void main(String[] args) {
    Scanner s = new Scanner(System.in);
    System.out.print("Enter your age: ");
    int age = s.nextInt();

    boolean a = age >= 18;

    if (a) {
        System.out.println("You can  vote.");
    } else {
        System.out.println("You cannot  vote.");
    }
  }
}
```

OUTPUT:

```
Enter your age: 48
You can vote.
```

3. Write a program that performs basic arithmetic operations (sum, subtract, multiply, divide, and remainder) on two given numbers using a switch-case structure. The program should prompt the user to input the two numbers and choose the desired operation.

PROGRAM:

```
import java.util.*;

public calculator {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      System.out.print("Enter the first number: ");
      double num1 = scanner.nextDouble();

      System.out.print("Enter the second number: ");
      double num2 = scanner.nextDouble();

      System.out.println("Choose the operation:");
      System.out.println("1: Sum");
      System.out.println("2: Subtract");
      System.out.println("3: Multiply");
      System.out.println("4: Divide");
      System.out.println("5: Remainder");

      System.out.print("Enter your choice: ");
      int choice = scanner.nextInt();

      switch (choice) {
         case 1:
            System.out.println("Result: " + (num1 + num2));
            break;
         case 2:
            System.out.println("Result: " + (num1 - num2));
            break;
         case 3:
            System.out.println("Result: " + (num1 * num2));
            break;
         case 4:
            System.out.println("Result: " + (num1 / num2));
            break;
         case 5:
            System.out.println("Result: " + (num1 % num2));
            break;
         default:
            System.out.println("Invalid choice.");
      }
```

```
    }
}
```

OUTPUT:

```
Enter the first number: 2
Enter the second number: 2
Choose the operation:
1: Sum
2: Subtract
3: Multiply
4: Divide
5: Remainder
Enter your choice: 2
Result: 0
```

4. Using Switch statement, write a program that displays the following menu for the food items available to take order from the customer:

- **B= Burger**
- **F= French Fries**
- **P= Pizza**
- **S= Sandwiches**

The program inputs the type of food and quantity. It finally displays the total charges for the order according to following criteria:

- **Burger = Rs. 200**
- **French Fries= Rs. 50**
- **Pizza= Rs. 500**
- **Sandwiches= Rs. 150**

PROGRAM:

```
import java.util.*;

public class FoodOrder {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);

        System.out.println("Menu:");
        System.out.println("B = Burger");
        System.out.println("F = French Fries");
        System.out.println("P = Pizza");
        System.out.println("S = Sandwiches");
```

```
        System.out.print("Enter the type of food: ");
        char foodType = s.next().charAt(0);

        System.out.print("Enter the quantity: ");
        int quantity = s.nextInt();

        int totalCharges = 0;

        switch (foodType) {
            case 'B':
                totalCharges = quantity * 200;
                break;
            case 'F':
                totalCharges = quantity * 50;
                break;
            case 'P':
                totalCharges = quantity * 500;
                break;
            case 'S':
                totalCharges = quantity * 150;
                break;
            default:
                System.out.println("Invalid food type.");
        }

        System.out.println("Total charges: Rs. " + totalCharges);
    }
}
```

OUTPUT:

```
Menu:
B = Burger
F = French Fries
P = Pizza
S = Sandwiches
Enter the type of food: F
Enter the quantity: 2
Total charges: Rs. 100
```

6. Write a program to filter out job applications based on specific criteria. The criteria include a minimum GPA of 3.0, relevant work experience of at least 2 years, and proficiency in specific skills (e.g., Python and SQL).

PROGRAM:

```
import java.util.Scanner;

public class JobApplicationFilter {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      System.out.print("Enter your GPA: ");
      double gpa = scanner.nextDouble();

      System.out.print("Enter your years of relevant work experience: ");
      int yearsOfExperience = scanner.nextInt();

      System.out.print("Are you proficient in Python? (yes/no): ");
      boolean knowsPython = scanner.next().equalsIgnoreCase("yes");

      System.out.print("Are you proficient in SQL? (yes/no): ");
      boolean knowsSQL = scanner.next().equalsIgnoreCase("yes");

      if (gpa >= 3.0 && yearsOfExperience >= 2 && knowsPython && knowsSQL) {
         System.out.println("Your application meets the criteria.");
      } else {
         System.out.println("Your application does not meet the criteria.");
   }
}
```

OUTPUT:

```
Enter your GPA: 8.5
Enter your years of relevant work experience: 2
Are you proficient in Python? (yes/no): yes
Are you proficient in SQL? (yes/no): yes
Your application meets the criteria.
```

7. Write a program that accepts a student's score and prints the corresponding grade using the following scale: A (90-100), B (80-89), C (70-79), D (60-69), F (below 60). Use conditional statements to determine the grade.

PROGRAM:

```
import java.util.Scanner;

public class D_StudentGrade {
   public static void main(String[] args) {
      Scanner s = new Scanner(System.in);

      System.out.print("Enter the student's score: ");
      int mark = s.nextInt();

      char grade;
      if (mark>= 90 && mark <= 100) {
         grade = 'A';
      } else if (mark >= 80 && mark< 90) {
         grade = 'B';
      } else if (mark >= 70 && mark < 80) {
         grade = 'C';
      } else if (mark >= 60 && mark < 70) {
         grade = 'D';
      } else {
         grade = 'F';
      }

      System.out.println("The student's grade is: " + grade);
   }
}
```

OUTPUT:

```
Enter the student's score: 99
The student's grade is: A
```

8. Write a program to check whether a triangle is Equilateral, Isosceles or Scalene.

PROGRAM:

```
import java.util.*;

public class D_triangle {
   public static void main(String[] args) {
      Scanner s = new Scanner(System.in);

      System.out.print("Enter the length of side 1: ");
      double side1 = s.nextDouble();

      System.out.print("Enter the length of side 2: ");
      double side2 = s.nextDouble();
```

```
        System.out.print("Enter the length of side 3: ");
        double side3 = s.nextDouble();

        if (side1 == side2 && side2 == side3) {
            System.out.println("Equilateral.");
        }
        else if (side1 == side2 || side2 == side3 || side1 == side3) {
            System.out.println("Isosceles.");
        }
        else {
            System.out.println("Scalene.");
        }
    }
}
```

OUTPUT:

```
Enter the length of side 1: 6
Enter the length of side 2: 6
Enter the length of side 3: 6
Equilateral
```

9. Write a program to read any Month Number in integer and display the number of days for this month.

PROGRAM:

```
import java.util.*;
public class D_days {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the month : ");
        int month = s.nextInt();
        int days;

        switch (month) {
            case 1:
            case 3:
            case 5:
            case 7:
            case 8:
            case 10:
            case 12:
                days = 31;
                break;
            case 2:
                days = 28;
```

```
            break;
         case 4:
         case 6:
         case 9:
         case 11:
            days = 30;
            break;
         default:
            days = -1;
      }

      if (days != -1) {
         System.out.println("Number of days :"+days);
      } else {
         System.out.println("Invalid month number.");
      }
   }
}
```

OUTPUT:

```
Enter the month :2
Number of days : 28
```