

```
import java.util.Scanner;

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

        // Input two numbers
        System.out.print("Enter first number: ");
        int num1 = scanner.nextInt();
        System.out.print("Enter second number: ");
        int num2 = scanner.nextInt();

        // Calculate and display the sum
        System.out.println("Sum: " + (num1 + num2));

        scanner.close();
    }
}
```

Output

```
Enter first number: 5
Enter second number: 10
Sum: 15
```

```
import java.util.Scanner;

public class SimpleMultiplication {
    public static void main(String[] args) {
        // Create a Scanner object for input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user for two numbers
        System.out.print("Enter the first number: ");
        int num1 = scanner.nextInt();

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

        // Multiply the numbers
        int product = num1 * num2;

        // Display the result
        System.out.println("The product is: " + product);

        // Close the scanner
    }
}
```

```
        scanner.close();
    }
}
```

Output

Enter the first number: 4

Enter the second number: 3

The product is: 12

```
public class OddNumbers {
    public static void main(String[] args) {
        // Loop through numbers from 2 to 100
        for (int i = 2; i <= 100; i++) {
            // Check if the number is odd
            if (i % 2 != 0) {
                System.out.println(i); // Print the odd number
            }
        }
    }
}
```

Output

3  
5  
7  
9  
11  
13  
15  
17  
19  
21  
23  
25  
27  
29  
31  
33  
35  
37  
39  
41  
43

45  
47  
49  
51  
53  
55  
57  
59  
61  
63  
65  
67  
69  
71  
73  
75  
77  
79  
81  
83  
85  
87  
89  
91  
93  
95  
97  
99

```
public class SumOfOddNumbers {  
    public static void main(String[] args) {  
        int sum = 0;  
  
        // Loop through numbers from 1 to 100  
        for (int i = 1; i <= 100; i++) {  
            // Check if the number is odd  
            if (i % 2 != 0) {  
                sum += i; // Add the odd number to the sum  
            }  
        }  
  
        // Print the result  
        System.out.println("The sum of odd numbers between 1 and 100 is: " + sum);  
    }  
}
```

```
}  
}
```

Output

The sum of odd numbers between 1 and 100 is: 2500

```
public class CountOddNumbers {  
    public static void main(String[] args) {  
        int count = 0;  
  
        // Loop through numbers from 1 to 100  
        for (int i = 1; i <= 100; i++) {  
            // Check if the number is odd  
            if (i % 2 != 0) {  
                count++; // Increment the count for each odd number  
            }  
        }  
  
        // Print the total count of odd numbers  
        System.out.println("The total number of odd numbers between 1 and 100 is: " + count);  
    }  
}
```

Output

The total number of odd numbers between 1 and 100 is: 50

```
import java.util.Scanner;  
  
public class SumOfNNumbers {  
    public static void main(String[] args) {  
        // Create a Scanner object for user input  
        Scanner scanner = new Scanner(System.in);  
  
        // Ask the user for the value of n  
        System.out.print("Enter a number (n): ");  
        int n = scanner.nextInt();  
  
        // Variable to hold the sum of numbers  
        int sum = 0;  
  
        // Loop to calculate the sum of the first n numbers  
        for (int i = 1; i <= n; i++) {  
            sum += i; // Add i to sum  
        }  
    }  
}
```

```

// Output the result
System.out.println("The sum of the first " + n + " numbers is: " + sum);

// Close the scanner
scanner.close();
}
}

```

Output

Enter a number (n): 5

The sum of the first 5 numbers is: 15

```

import java.util.Scanner;

public class SimpleSwitchExample {
    public static void main(String[] args) {
        // Create a Scanner object to read user input
        Scanner scanner = new Scanner(System.in);

        // Ask the user for a number between 1 and 7
        System.out.print("Enter a number (1-7): ");
        int day = scanner.nextInt();

        // Use a switch statement to print the corresponding day
        switch (day) {
            case 1:
                System.out.println("Monday");
                break;
            case 2:
                System.out.println("Tuesday");
                break;
            case 3:
                System.out.println("Wednesday");
                break;
            case 4:
                System.out.println("Thursday");
                break;
            case 5:
                System.out.println("Friday");
                break;
            case 6:
                System.out.println("Saturday");
                break;
        }
    }
}

```

```

        case 7:
            System.out.println("Sunday");
            break;
        default:
            System.out.println("Invalid input!");
    }

    // Close the scanner
    scanner.close();
}
}

```

Output

Enter a number (1-7): 4

Thursday

```

import java.util.Scanner;

public class SimpleFactorial {
    public static void main(String[] args) {
        // Create a Scanner object to read user input
        Scanner scanner = new Scanner(System.in);

        // Ask the user for a number
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        // Initialize factorial to 1
        int factorial = 1;

        // Loop to calculate factorial
        for (int i = 1; i <= number; i++) {
            factorial *= i; // Multiply factorial by i
        }

        // Display the result
        System.out.println("Factorial of " + number + " is: " + factorial);

        // Close the scanner
        scanner.close();
    }
}

```

Output

Enter a number: 4  
Factorial of 4 is: 24

```
import java.util.Scanner;

public class SimpleFactorial {

    public static int factorial(int n) {
        if (n == 0) {
            return 1;
        } else {
            return n * factorial(n - 1);
        }
    }

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

        System.out.print("Enter a number: ");
        int num = scanner.nextInt();

        System.out.println("Factorial: " + factorial(num));

        scanner.close();
    }
}
```

Output  
Enter a number: 5  
Factorial: 120

```
import java.util.Scanner;

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

        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        int smallest = number, largest = number;

        do {
            System.out.print("Enter another number (0 to stop): ");
```

```

        number = scanner.nextInt();

        if (number != 0) {
            if (number < smallest) smallest = number;
            if (number > largest) largest = number;
        }
    } while (number != 0);

    System.out.println("Smallest: " + smallest);
    System.out.println("Largest: " + largest);

    scanner.close();
}
}

```

### Output

```

Enter a number: 10
Enter another number (0 to stop): 5
Enter another number (0 to stop): 20
Enter another number (0 to stop): 0
Smallest: 5
Largest: 20

```

```

import java.util.Scanner;

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

        // Ask the user to enter a number
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        // Using if-else statement to check if the number is positive, negative, or zero
        if (number > 0) {
            System.out.println("The number is positive.");
        } else if (number < 0) {
            System.out.println("The number is negative.");
        } else {
            System.out.println("The number is zero.");
        }

        scanner.close();
    }
}

```



```
}
```

Output

Enter a number: 5

The number is positive.

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

```
public class SimpleOperators {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
  
        // Taking two numbers as input  
        System.out.print("Enter the first number: ");  
        int num1 = scanner.nextInt();  
  
        System.out.print("Enter the second number: ");  
        int num2 = scanner.nextInt();  
  
        // Arithmetic Operations  
        int sum = num1 + num2;  
        int diff = num1 - num2;  
        int prod = num1 * num2;  
        int div = num1 / num2;  
  
        // Relational Operations  
        boolean isEqual = (num1 == num2);  
  
        // Unary Operations  
        int increment = num1++;  
        int decrement = num2--;  
  
        // Displaying the results  
        System.out.println("\nSum: " + sum);  
        System.out.println("Difference: " + diff);  
        System.out.println("Product: " + prod);  
        System.out.println("Division: " + div);  
        System.out.println("Are numbers equal? " + isEqual);  
        System.out.println("Incremented num1: " + increment);  
        System.out.println("Decrement num2: " + decrement);  
  
        scanner.close();  
    }  
}
```

Output

Enter the first number: 10

Enter the second number: 5

Sum: 15

Difference: 5

Product: 50

Division: 2

Are numbers equal? false

Incremented num1: 10

Decrement num2: 5

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

```
public class SimpleInterest {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
  
        // Input for principal, rate, and time  
        System.out.print("Enter principal: ");  
        double principal = scanner.nextDouble();  
  
        System.out.print("Enter rate of interest: ");  
        double rate = scanner.nextDouble();  
  
        System.out.print("Enter time in years: ");  
        double time = scanner.nextDouble();  
  
        // Simple Interest formula  
        double interest = (principal * rate * time) / 100;  
  
        // Output the result  
        System.out.println("Simple Interest: " + interest);  
  
        scanner.close();  
    }  
}
```

Output

Enter principal: 1000

Enter rate of interest: 5

Enter time in years: 2

Simple Interest: 100.0

```

import java.util.Scanner;

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

        // Input for units consumed
        System.out.print("Enter the number of units consumed: ");
        double units = scanner.nextDouble();

        double billAmount;

        // Simple tariff calculation
        if (units <= 100) {
            billAmount = units * 1.5; // Rs 1.5 per unit for first 100 units
        } else if (units <= 300) {
            billAmount = 100 * 1.5 + (units - 100) * 2.5; // Rs 2.5 per unit for 101-300 units
        } else {
            billAmount = 100 * 1.5 + 200 * 2.5 + (units - 300) * 4; // Rs 4 per unit for above 300 units
        }

        // Output the calculated bill
        System.out.println("Total Electricity Bill: Rs " + billAmount);

        scanner.close();
    }
}

```

#### Output

```

Enter the number of units consumed: 250
Total Electricity Bill: Rs 550.0

```

```

import java.util.Scanner;

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

        // Input for student details
        System.out.print("Enter student name: ");
        String name = scanner.nextLine();

        System.out.print("Enter student roll number: ");
    }
}

```

```

int rollNumber = scanner.nextInt();

System.out.print("Enter student marks: ");
double marks = scanner.nextDouble();

// Displaying the collected details
System.out.println("\nStudent Details:");
System.out.println("Name: " + name);
System.out.println("Roll Number: " + rollNumber);
System.out.println("Marks: " + marks);

scanner.close();
}
}

```

### Output

```

Enter student name: John
Enter student roll number: 101
Enter student marks: 85.5

```

### Student Details:

```

Name: John
Roll Number: 101
Marks: 85.5

```

```

import java.util.Scanner;

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

        // Input the number
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        int sum = 0;

        // Calculate the sum of digits
        while (number != 0) {
            sum += number % 10; // Add the last digit to sum
            number /= 10;       // Remove the last digit
        }

        // Output the sum of digits
    }
}

```

```

        System.out.println("Sum of digits: " + sum);

        scanner.close();
    }
}

```

Output

Enter a number: 1234

Sum of digits: 10

```

import java.util.Scanner;

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

        // Input the number
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        // Check if the number is odd or even
        if (number % 2 == 0) {
            System.out.println("The number " + number + " is Even.");
        } else {
            System.out.println("The number " + number + " is Odd.");
        }

        scanner.close();
    }
}

```

Output

Enter a number: 10

The number 10 is Even.

```

import java.util.Scanner;

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

        // Reading a string input
        System.out.print("Enter your name: ");
        String name = scanner.nextLine();
    }
}

```

```

        // Reading an integer input
        System.out.print("Enter your age: ");
        int age = scanner.nextInt();

        // Displaying the input values
        System.out.println("\nYour name is: " + name);
        System.out.println("Your age is: " + age);

        scanner.close();
    }
}

```

#### Output

```

Enter your name: John
Enter your age: 25

```

```

Your name is: John
Your age is: 25

```

```

class Student {
    String name;
    int age;

    // Constructor to initialize the object
    Student(String name, int age) {
        this.name = name;
        this.age = age;
    }

    // Method to display student details
    void display() {
        System.out.println("Name: " + name + ", Age: " + age);
    }
}

```

```

public class SimpleClassObject {
    public static void main(String[] args) {
        // Creating objects of Student class
        Student student1 = new Student("John", 20);
        Student student2 = new Student("Alice", 22);

        // Displaying student details
    }
}

```

```
        student1.display();
        student2.display();
    }
}
```

Output

Name: John, Age: 20

Name: Alice, Age: 22

```
class Person {
    String name;

    // Constructor to initialize the object
    Person(String name) {
        this.name = name;
    }

    // Method to display the details
    void display() {
        System.out.println("Name: " + name);
    }
}

public class SimpleConstructorExample {
    public static void main(String[] args) {
        // Creating an object of Person class using the constructor
        Person person1 = new Person("John");

        // Displaying the details
        person1.display();
    }
}
```

Output

Name: John

```
class Car {
    String model;
    int year;

    // Default constructor
    Car() {
        model = "Unknown";
    }
}
```

```

        year = 2020;
    }

    void display() {
        System.out.println("Model: " + model);
        System.out.println("Year: " + year);
    }
}

public class DefaultConstructorExample {
    public static void main(String[] args) {
        Car car1 = new Car(); // Using default constructor
        car1.display();
    }
}

```

Output

Model: Unknown

Year: 2020

```

class Car {
    String model;
    int year;

    // Parameterized constructor
    Car(String model, int year) {
        this.model = model;
        this.year = year;
    }

    void display() {
        System.out.println("Model: " + model);
        System.out.println("Year: " + year);
    }
}

```

```

public class ParameterizedConstructorExample {
    public static void main(String[] args) {
        // Using parameterized constructor
        Car car1 = new Car("Tesla", 2022);
        car1.display();
    }
}

```

Output



Model: Tesla

Year: 2022

```
class Person {
    String name;
    int age;

    // Constructor to initialize the fields
    public Person(String name, int age) {
        this.name = name;
        this.age = age;
    }

    // Copy constructor
    public Person(Person p) {
        this.name = p.name;
        this.age = p.age;
    }

    // Method to display person details
    public void display() {
        System.out.println("Name: " + name + ", Age: " + age);
    }

    public static void main(String[] args) {
        // Create a Person object
        Person p1 = new Person("Alice", 25);

        // Use the copy constructor to create a new object
        Person p2 = new Person(p1);

        // Display details of both persons
        p1.display();
        p2.display();
    }
}
```

Output

Name: Alice, Age: 25

Name: Alice, Age: 25

```
class Rectangle {
    int length, width;
```

```

// Constructor 1: Default constructor
public Rectangle() {
    length = 0;
    width = 0;
}

// Constructor 2: Parameterized constructor
public Rectangle(int l, int w) {
    length = l;
    width = w;
}

// Method to display rectangle details
public void display() {
    System.out.println("Length: " + length + ", Width: " + width);
}

public static void main(String[] args) {
    // Creating a Rectangle object using the default constructor
    Rectangle r1 = new Rectangle();
    r1.display(); // Outputs default values

    // Creating a Rectangle object using the parameterized constructor
    Rectangle r2 = new Rectangle(10, 5);
    r2.display(); // Outputs specified values
}
}

```

Output

Length: 0, Width: 0

Length: 10, Width: 5

```

class Student {
    // Private fields
    private String name;
    private int rollNo;

    // Constructor to initialize the student details
    public Student(String name, int rollNo) {
        this.name = name;
        this.rollNo = rollNo;
    }

    // Method to display student details

```

```

public void display() {
    System.out.println("Name: " + name);
    System.out.println("Roll No: " + rollNo);
}

public static void main(String[] args) {
    // Creating a student object
    Student student1 = new Student("John", 101);

    // Display student details
    student1.display();
}
}

```

Output

Name: John  
Roll No: 101

```

class Student {
    String name;

    // Constructor to initialize the student's name
    public Student(String name) {
        this.name = name;
    }
}

```

```

public class ReferenceVariableExample {
    public static void main(String[] args) {
        // Creating a Student object and using a reference variable
        Student student1 = new Student("Alice");

        // student2 is another reference variable pointing to the same object as student1
        Student student2 = student1;

        // Displaying student1's name
        System.out.println("Student 1: " + student1.name);

        // Modifying the name using student2 (which refers to the same object)
        student2.name = "Bob";

        // Displaying student1's name again (it reflects the change)
        System.out.println("Student 1 after change: " + student1.name);
    }
}

```

Output

Student 1: Alice

Student 1 after change: Bob

```
import java.util.Scanner;

class Student {
    String name;
    int rollNo;

    // Constructor to initialize the student details
    public Student(String name, int rollNo) {
        this.name = name;
        this.rollNo = rollNo;
    }

    // Method to display student details
    public void display() {
        System.out.println("Name: " + name + ", Roll No: " + rollNo);
    }
}

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

        // Input student details
        System.out.print("Enter name: ");
        String name = scanner.nextLine();
        System.out.print("Enter roll number: ");
        int rollNo = scanner.nextInt();

        // Create Student object
        Student student = new Student(name, rollNo);

        // Display student details
        student.display();

        scanner.close();
    }
}
```

Output

Enter name: Alice

Enter roll number: 101  
Name: Alice, Roll No: 101

```
class Student {  
    // Private variables (fields)  
    private String name;  
    private int rollNo;  
  
    // Getter method for name  
    public String getName() {  
        return name;  
    }  
  
    // Setter method for name  
    public void setName(String name) {  
        this.name = name;  
    }  
  
    // Getter method for rollNo  
    public int getRollNo() {  
        return rollNo;  
    }  
  
    // Setter method for rollNo  
    public void setRollNo(int rollNo) {  
        this.rollNo = rollNo;  
    }  
}  
  
public class Main {  
    public static void main(String[] args) {  
        // Create Student object  
        Student student = new Student();  
  
        // Setting values using setter methods  
        student.setName("John");  
        student.setRollNo(101);  
  
        // Getting values using getter methods  
        System.out.println("Student Name: " + student.getName());  
        System.out.println("Roll Number: " + student.getRollNo());  
    }  
}
```

Output

Student Name: John

Roll Number: 101

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

```
public class Main {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
  
        // Input for original salary and percentage increase  
        System.out.print("Enter original salary: ");  
        double originalSalary = scanner.nextDouble();  
  
        System.out.print("Enter percentage increase: ");  
        double percentageIncrease = scanner.nextDouble();  
  
        // Calculate the new salary  
        double newSalary = originalSalary + (originalSalary * percentageIncrease / 100);  
  
        // Output the new salary  
        System.out.println("New salary after increase: " + newSalary);  
  
        scanner.close();  
    }  
}
```

Output

Enter original salary: 50000

Enter percentage increase: 10

New salary after increase: 55000.0

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

```
public class StringOperationsEnhanced {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
  
        // Input strings  
        System.out.print("Enter the first string: ");  
        String str1 = scanner.nextLine();  
        System.out.print("Enter the second string: ");  
        String str2 = scanner.nextLine();
```

```

// Display menu for string operations
System.out.println("\nChoose a string operation:");
System.out.println("1. Find Length");
System.out.println("2. Convert to Uppercase");
System.out.println("3. Convert to Lowercase");
System.out.println("4. Reverse the String");
System.out.println("5. Concatenate Strings");
System.out.println("6. Compare Strings");
System.out.println("7. Check if Substring Exists");
System.out.println("8. Replace a Character");
System.out.println("9. Find Character at Index");
System.out.println("10. Split the String");
System.out.println("11. Trim Whitespaces");
System.out.println("12. Check if String is Empty");
System.out.println("13. Convert to Character Array");
System.out.println("14. Exit");

int choice;
do {
    System.out.print("\nEnter your choice: ");
    choice = scanner.nextInt();
    scanner.nextLine(); // Consume newline

    switch (choice) {
        case 1:
            System.out.println("Length of first string: " + str1.length());
            System.out.println("Length of second string: " + str2.length());
            break;

        case 2:
            System.out.println("First string in uppercase: " + str1.toUpperCase());
            System.out.println("Second string in uppercase: " + str2.toUpperCase());
            break;

        case 3:
            System.out.println("First string in lowercase: " + str1.toLowerCase());
            System.out.println("Second string in lowercase: " + str2.toLowerCase());
            break;

        case 4:
            System.out.println("Reversed first string: " + new StringBuilder(str1).reverse());
            System.out.println("Reversed second string: " + new StringBuilder(str2).reverse());
            break;
    }
}

```

case 5:

```
System.out.println("Concatenated string: " + str1.concat(str2));  
break;
```

case 6:

```
int comparison = str1.compareTo(str2);  
if (comparison == 0) {  
    System.out.println("Strings are equal.");  
} else if (comparison > 0) {  
    System.out.println("First string is lexicographically greater.");  
} else {  
    System.out.println("Second string is lexicographically greater.");  
}  
break;
```

case 7:

```
System.out.print("Enter a substring to check in the first string: ");  
String substring = scanner.nextLine();  
System.out.println("Substring exists in the first string: " + str1.contains(substring));  
break;
```

case 8:

```
System.out.print("Enter the character to replace: ");  
char oldChar = scanner.next().charAt(0);  
System.out.print("Enter the new character: ");  
char newChar = scanner.next().charAt(0);  
System.out.println("First string after replacement: " + str1.replace(oldChar, newChar));  
System.out.println("Second string after replacement: " + str2.replace(oldChar, newChar));  
break;
```

case 9:

```
System.out.print("Enter the index to find the character (0-based): ");  
int index = scanner.nextInt();  
try {  
    System.out.println("Character at index " + index + " in first string: " + str1.charAt(index));  
    System.out.println("Character at index " + index + " in second string: " + str2.charAt(index));  
} catch (IndexOutOfBoundsException e) {  
    System.out.println("Index out of range!");  
}  
break;
```

case 10:

```
System.out.print("Enter the delimiter to split the first string: ");
```



```

        String delimiter = scanner.nextLine();
        String[] parts = str1.split(delimiter);
        System.out.println("First string split into parts:");
        for (String part : parts) {
            System.out.println(part);
        }
        break;

    case 11:
        System.out.println("First string after trimming: [" + str1.trim() + "]");
        System.out.println("Second string after trimming: [" + str2.trim() + "]");
        break;

    case 12:
        System.out.println("Is the first string empty? " + str1.isEmpty());
        System.out.println("Is the second string empty? " + str2.isEmpty());
        break;

    case 13:
        System.out.println("Character array of first string:");
        for (char c : str1.toCharArray()) {
            System.out.print(c + " ");
        }
        System.out.println();
        break;

    case 14:
        System.out.println("Exiting...");
        break;

    default:
        System.out.println("Invalid choice. Please try again.");
    }
} while (choice != 14);

scanner.close();
}

```

Output

Enter the first string: hello

Enter the second string: world

Choose a string operation:

1. Find Length

2. Convert to Uppercase
3. Convert to Lowercase
4. Reverse the String
5. Concatenate Strings
6. Compare Strings
7. Check if Substring Exists
8. Replace a Character
9. Find Character at Index
10. Split the String
11. Trim Whitespaces
12. Check if String is Empty
13. Convert to Character Array
14. Exit

Enter your choice: 1

Length of first string: 5

Length of second string: 5

Enter your choice: 2

First string in uppercase: HELLO

Second string in uppercase: WORLD

Enter your choice: 4

Reversed first string: olleh

Reversed second string: dlrow

Enter your choice: 5

Concatenated string: helloworld

Enter your choice: 6

Strings are equal.

Enter your choice: 7

Enter a substring to check in the first string: lo

Substring exists in the first string: true

Enter your choice: 8

Enter the character to replace: l

Enter the new character: x

First string after replacement: hexxo

Second string after replacement: worxd

Enter your choice: 9

Enter the index to find the character (0-based): 2

Character at index 2 in first string: l  
Character at index 2 in second string: r

Enter your choice: 10  
Enter the delimiter to split the first string: l  
First string split into parts:  
heo  
o

Enter your choice: 11  
First string after trimming: [hello]  
Second string after trimming: [world]

Enter your choice: 12  
Is the first string empty? false  
Is the second string empty? false

Enter your choice: 13  
Character array of first string:  
h e l l o

Enter your choice: 14  
Exiting...

```
public class ArrayExamples {  
    public static void main (String [] args) {  
        // Single-dimensional array  
        Int [] singleArray = {1, 2, 3, 4, 5};  
        System.out.println("Single-dimensional array:");  
        for (int i = 0; i < singleArray.length; i++) {  
            System.out.print(singleArray[i] + " ");  
        }  
        System.out.println();  
  
        // Two-dimensional array  
        int[][] twoDimensionalArray = {  
            {1, 2, 3},  
            {4, 5, 6},  
            {7, 8, 9}  
        };  
        System.out.println("\nTwo-dimensional array:");  
        for (int i = 0; i < twoDimensionalArray.length; i++) {  
            for (int j = 0; j < twoDimensionalArray[i].length; j++) {
```

```

        System.out.print(twoDimensionalArray[i][j] + " ");
    }
    System.out.println();
}

// Multi-dimensional array (3D array)
int[][][] multiDimensionalArray = {
    {
        {1, 2, 3},
        {4, 5, 6}
    },
    {
        {7, 8, 9},
        {10, 11, 12}
    }
};
System.out.println("\nMulti-dimensional array (3D):");
for (int i = 0; i < multiDimensionalArray.length; i++) {
    for (int j = 0; j < multiDimensionalArray[i].length; j++) {
        for (int k = 0; k < multiDimensionalArray[i][j].length; k++) {
            System.out.print(multiDimensionalArray[i][j][k] + " ");
        }
        System.out.println();
    }
    System.out.println();
}
}
}

```

Output

Single-dimensional array:

1 2 3 4 5

Two-dimensional array:

1 2 3

4 5 6

7 8 9

Multi-dimensional array (3D):

1 2 3

4 5 6

7 8 9

10 11 12

```

public class SumOfArray {
    public static void main(String[] args) {
        int[] numbers = {5, 10, 15, 20, 25};
        int sum = 0;
        for (int num : numbers) {
            sum += num;
        }

        System.out.println("Sum of elements: " + sum);
    }
}

```

Output

Sum of elements: 75

```

public class MatrixAddition {
    public static void main(String[] args) {
        int[][] matrixA = {
            {1, 2, 3},
            {4, 5, 6}
        };
        int[][] matrixB = {
            {7, 8, 9},
            {10, 11, 12}
        };

        int[][] result = new int[2][3];
        for (int i = 0; i < matrixA.length; i++) {
            for (int j = 0; j < matrixA[i].length; j++) {
                result[i][j] = matrixA[i][j] + matrixB[i][j];
            }
        }

        System.out.println("Resultant matrix after addition:");
        for (int[] row : result) {
            for (int element : row) {
                System.out.print(element + " ");
            }
            System.out.println();
        }
    }
}

```

Output

Resultant matrix after addition:

8 10 12

14 16 18

```
public class MaxIn3DArray {
    public static void main(String[] args) {
        int[][][] array = {
            {
                {3, 5, 9},
                {12, 7, 2}
            },
            {
                {4, 6, 8},
                {10, 14, 1}
            }
        };

        int max = array[0][0][0];

        for (int[][] matrix : array) {
            for (int[] row : matrix) {
                for (int element : row) {
                    if (element > max) {
                        max = element;
                    }
                }
            }
        }

        System.out.println("Maximum element in the 3D array: " + max);
    }
}
```

Output

Maximum element in the 3D array: 14

```
public class DiagonalElements {
    public static void main(String[] args) {
        int[][] squareMatrix = {
            {1, 2, 3},
            {4, 5, 6},
            {7, 8, 9}
        };
    }
}
```

```

        System.out.println("Diagonal elements:");
        for (int i = 0; i < squareMatrix.length; i++) {
            System.out.print(squareMatrix[i][i] + " ");
        }
        System.out.println();
    }
}

```

Output

Diagonal elements:

1 5 9

```

public class MatrixTranspose {
    public static void main(String[] args) {
        int[][] matrix = {
            {1, 2, 3},
            {4, 5, 6},
            {7, 8, 9}
        };

        int[][] transpose = new int[matrix[0].length][matrix.length];

        for (int i = 0; i < matrix.length; i++) {
            for (int j = 0; j < matrix[i].length; j++) {
                transpose[j][i] = matrix[i][j];
            }
        }

        System.out.println("Transpose of the matrix:");
        for (int[] row : transpose) {
            for (int element : row) {
                System.out.print(element + " ");
            }
            System.out.println();
        }
    }
}

```

Output

Transpose of the matrix:

1 4 7

2 5 8

3 6 9