```java
// 1 . Write a for loop that prints the even numbers from 1 to 20.

public class unit_2_1 {
    public static void main(String[] args) {
        for (int i = 1; i <= 20; i++) {
            if (i % 2 == 0) {
                System.out.println(i);
            }
        }
    }
}
```

```java
/*  2 .Create a while loop that prompts the user for their flight choice until a valid number
is
entered*/

import java.util.Scanner;
public class unit_2_2 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int flightchoice = 0;
        while (flightchoice <= 0) {
            System.out.println("Enter the Flight choice :");
            if (s.hasNextInt()) {
                flightchoice = s.nextInt();
               if (flightchoice <= 0) {
                    System.out.println("Invalid Input... Please Enter Positive Number ");
                }
            } else {
                System.out.println("Invalid input . Please Enter Valid Number.");
            }
        }
        System.out.println("You selected Flight Number :" + flightchoice);
        s.close();
    }
}
```

```java
/* 4. Write a Java program that uses a for loop to print the first 10 numbers of the Fibonacci
sequence. */

public class unit_2_3 {
    public static void main(String[] args) {
        int  a = 0, b = 1;
        System.out.println("First " + 10 + " Number of Fibonacci Sequence are :");
        for (int i = 0; i < 10; i++) {
            System.out.print(a + " ");
            int next = a + b;
            a = b;
            b = next;
        }
    }
}
```

```java
// 5 . Create a Java program using a while loop to calculate the sum of integers from 1 to 100.

public class unit_2_4 {
    public static void main(String[] args) {
        int i = 1;
        int sum = 0;
        while (i <= 100) {
            sum += i;
```

```
            i++;
        }
        System.out.println("The Sum of Integer from 1 to 100 is :" + sum);
    }
}
```

```
/* 6 . Implement a do-while loop that prompts the user to enter a number until they enter a
negative number. */

import java.util.Scanner;
public class unit_2_5 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int number;
        System.out.println("Enter the Number : ");
        do {

            number = s.nextInt();

        } while (number >= 0);
        System.out.println("Negative Number Entered...");
        s.close();
    }
}
```

```
// 7 . Write a Java program that demonstrates the use of the continue statement in a loop.

public class unit_2_6 {
    public static void main(String[] args) {
        for (int i = 1; i < 10; i++) {
            if (i % 2 == 0) {
                continue;
            }
            System.out.println(i);
        }
    }
}
```

```
// 14 . Create a method that accepts an array and returns the maximum value using a for loop.
import java.util.Scanner;
public class unit_2_7 {
    public static void main(String[] args) {
        int maxvalue = 0;
        System.out.println("Enter the Size of Array :");
        int size = s.nextInt();
        int arr[] = new int[size];

        System.out.println("Enter the Elements of Array :");
        for (int i = 0; i < arr.length; i++) {
            arr[i] = s.nextInt();
            if (arr[i] > maxvalue) {
                maxvalue = arr[i];
            }
        }
        System.out.println("Maximum value is :" + maxvalue);
    }
}
```

```java
// 15 . Write a Java program that finds the average of numbers stored in an integer array.

import java.util.Scanner;
public class unit_2_8 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int sum = 0;
        double average;
        System.out.println("Enter the Size of Array :");
        int size = s.nextInt();
        int array[] = new int[size];
        System.out.println("Enter the Elements of Array :");
        for (int i = 0; i < size; i++) {
            array[i] = s.nextInt();
            sum += array[i];
        }
        average = (double) sum / size;
        System.out.println("The Average of Array Elements is :" + average);
        s.close();
    }
}
```

```java
// 16 . Write a Java program that sums the elements of a 2D array.

import java.util.Scanner;

public class SimpleSum2DArray {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
           int sum = 0;
        // Read rows and columns
        System.out.print("Enter number of rows: ");
        int rows = scanner.nextInt();
        System.out.print("Enter number of columns: ");
        int cols = scanner.nextInt();

        int[][] array = new int[rows][cols];

        // Input elements of the 2D array
        System.out.println("Enter the elements:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                array[i][j] = scanner.nextInt();
                sum += array[i][j];  // Directly add the element to sum
            }
        }
        System.out.println("Sum of elements: " + sum);
    }
}
```

```java
// 19. Design a Java program that merges two sorted arrays into a single sorted array.

import java.util.Scanner;
public class unit_2_11 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the Size of First Array :");
        int size1 = s.nextInt();
```

```
        int array1[] = new int[size1];
        System.out.println("Enter the Elements of First Array :");
        for (int i = 0; i < size1; i++) {
            array1[i] = s.nextInt();
        }
        System.out.println("Enter the Size of Second Array :");
        int size2 = s.nextInt();
        int array2[] = new int[size2];
        System.out.println("Enter the Elements of Second Array :");
        for (int i = 0; i < size2; i++) {
            array2[i] = s.nextInt();
        }
        int[] mergedarray = new int[size1 + size2];
        for (int i = 0; i < size1; i++) {
            mergedarray[i] = array1[i];
        }
        for (int i = 0; i < size2; i++) {
            mergedarray[size1 + i] = array2[i];
        }
        System.out.println("Merged Array is :");
        for (int i = 0; i < mergedarray.length; i++) {
            System.out.print(mergedarray[i] + " ");
        }
        s.close();
    }
}
```

```
//20. Write a Java program to reverse the array

import java.util.Scanner;
public class unit_2_12 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the Size of Array :");
        int size = s.nextInt();
        int array[] = new int[size];
        System.out.println("Enter the Elements of Array :");
        for (int i = 0; i < size; i++) {
            array[i] = s.nextInt();
        }
        int start = 0;
        int end = array.length - 1;
        while (start < end) {
            int temp = array[start];
            array[start] = array[end];
            array[end] = temp;
            start++;
            end--;
        }
        for (int i = 0; i < array.length; i++) {
            System.out.print(array[i] + " ");
        }
        s.close();
    }
}
```

```java
// 21. Find the Second largest element in Java

import java.util.Scanner;
public class unit_2_13 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the Size of Array :");
        int size = s.nextInt();
        int array[] = new int[size];
        System.out.println("Enter the Elements of Array :");
        for (int i = 0; i < size; i++) {
            array[i] = s.nextInt();
        }
        int largest = 0;
        int secondlargest = 0;
        for (int i = 0; i < array.length; i++) {
            if (array[i] > largest) {
                secondlargest = largest;
                largest = array[i];
            } else if (array[i] > secondlargest && array[i] != largest) {
                secondlargest = array[i];
            }
        }
        System.out.println("Second Larges element of array is :" + secondlargest);
        s.close();
    }
}
```

```java
// 22 . Find the first even number in a list and breaks the loop when it finds.

public class unit_2_14 {
    public static void main(String[] args) {
        int i;
        for (i = 1; i < 100; i++) {
            if (i % 2 == 0) {
                break;
            }
        }
        System.out.println(i);
    }
}
```

```java
// 23 . Prints all odd numbers from 1 to 20, using continue to skip even numbers.

public class unit_2_15 {
    public static void main(String[] args) {
        int i;
        for (i = 1; i < 20; i++) {
            if (i % 2 == 0) {
                continue;
            }
            System.out.println(i);
        }
    }
```

```
}
```

```
// 24. Prompts the user to enter numbers until they enter a negative number.

import java.util.Scanner;
public class unit_2_16 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int number;
        do {
            System.out.println("Enter the Number : ");
            number = s.nextInt();
            if (number < 0) {
                System.out.println("You Entered Negative Number...");
                break;
            } else {
                System.out.println("You Entered :" + number);
            }
        } while (true);
        s.close();
    }
}
```

```
// 25. Prints a multiplication table but skips the multiplication by 5.

public class unit_2_17 {
    public static void main(String[] args) {
        int number = 5;
        System.out.println("Multiplication Table for " + number);
        for (int i = 1; i <= 10; i++) {
            System.out.println(number + " X " + i + " = " + (number * i));
        }
    }
}
```

```
// 26. Program counts from 1 to 10 but breaks when it reaches 6.

public class unit_2_18 {
    public static void main(String[] args) {
        for (int i = 1; i <= 10; i++) {
            if (i == 6) {
                break;
            }
            System.out.println(i);
        }
    }
}
```

```
// 27. Program prints numbers from 1 to 10 but skips the number 5.

public class unit_2_19 {
    public static void main(String[] args) {
        for (int i = 1; i <= 10; i++) {
```

```
            if (i == 5) {
                continue;
            }
            System.out.println(i);
        }
    }
}
```

```
/* 28 . Develop a program that checks whether a given number is prime or not. Use a for loop
to test divisibility. If the number is found to be divisible by any number other than 1 and
itself, it is not prime.  */


import java.util.Scanner;
public class unit_2_20 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the Number :");
        int number = s.nextInt();
        boolean prime = true;
        if (number < 2) {
            prime = false;
        } else {
            for (int i = 2; i <= Math.sqrt(number); i++) {
                if (number % i == 0) {
                    prime = false;
                    break;
                }
            }
        }
        if (prime) {
            System.out.println(number + " is a prime Number.");
        } else {
            System.out.println(number + " is not a primt Number.");
        }
        s.close();
    }
}
```

```
/* 29 . Create a program that reverses the digits of a given integer. Use a while loop to
extract
each digit and build the reversed number. */

import java.util.Scanner;
public class unit_2_21{
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        // Input: integer from the user
        System.out.print("Enter an integer: ");
        int number = scanner.nextInt();
        // Initialize variables for reversing
        int reversed = 0;
        // Use a while loop to reverse the digits
        while (number != 0) {
            int digit = number % 10; // Extract the last digit
            reversed = reversed * 10 + digit; // Append the digit to reversed
            number /= 10; // Remove the last digit
```

```
        }
        // Output: the reversed number
        System.out.println("Reversed number: " + reversed);
    }
}
```

```
/* 30. Write a program that prints the multiplication table for a given number. The user
should input the number and the range (e.g., up to 10 or 20). Use a for loop to generate
the table.  */

import java.util.Scanner;
public class unit_2_22 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        // Input: number and range
        System.out.print("Enter the number for the multiplication table: ");
        int number = scanner.nextInt();
        System.out.print("Enter the range for the table: ");
        int range = scanner.nextInt();
        // Generate and print the multiplication table
        System.out.println("Multiplication Table for " + number + ":");
        for (int i = 1; i <= range; i++) {
            System.out.println(number + " x " + i + " = " + (number * i));
        }
    }
}
```

```
/*31. Write a program that counts the number of vowels and consonants in a given string.
Use a for loop to iterate through the string and keep track of the counts.  */

import java.util.Scanner;
public class unit_2_23 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        // Input: string from the user
        System.out.print("Enter a string: ");
        String input = scanner.nextLine();
        // Initialize counters
        int vowelCount = 0;
        int consonantCount = 0;
        // Convert the string to lowercase for easier comparison
        input = input.toLowerCase();
        // Iterate through each character in the string
        for (int i = 0; i < input.length(); i++) {
            char ch = input.charAt(i);
            // Check if the character is a vowel
            if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {
                vowelCount++;
            }
            // Check if the character is a consonant (alphabetic but not a vowel)
            else if (ch >= 'a' && ch <= 'z') {
                consonantCount++;
            }
        }
        // Output: number of vowels and consonants
        System.out.println("Number of vowels: " + vowelCount);
        System.out.println("Number of consonants: " + consonantCount);
```

```
    }
}
```