**Title:** Finding Prime Numbers from 1 to 20 in Java

**Aim:** To find prime numbers using Java programming.

**Objective:** To demonstrate the use of loops in Java programming.

Introduction: Prime numbers are natural numbers greater than 1 that have no positive divisors other than 1 and themselves. In this lab, we will write a Java program to find prime numbers from 1 to 20.

**Java Program:**

java

```
// Main class
public class PrimeNumbers {
    // Method to check if a number is prime
    static boolean isPrime(int num) {
        if (num <= 1)
            return false;
        for (int i = 2; i <= Math.sqrt(num); i++) {
            if (num % i == 0)
                return false;
        }
        return true;
    }

    // Main method
    public static void main(String[] args) {
        System.out.println("Prime numbers from 1 to 20:");
        for (int i = 1; i <= 20; i++) {
            if (isPrime(i))
                System.out.print(i + " ");
        }
    }
}
```

**Explanation:**

1. We define a class named `PrimeNumbers`.

2. Inside the class, we define a method `isPrime(int num)` to check if a given number is prime.
    - We first check if the number is less than or equal to 1. If so, we return `false` as numbers less than or equal to 1 are not prime.
    - We then loop from 2 to the square root of the number (`Math.sqrt(num)`). If the number is divisible by any integer in this range, it is not prime, and we return `false`.
    - If the number is not divisible by any integer in the range, we return `true`.
3. In the `main` method, we print a message indicating the range of numbers we are checking for prime numbers (from 1 to 20).
4. We then use a `for` loop to iterate through numbers from 1 to 20.
    - Inside the loop, we call the `isPrime` method for each number.
    - If the number is prime (the `isPrime` method returns `true`), we print it.

**Conclusion:** In this lab, we have learned how to implement a Java program to find prime numbers from 1 to 20 using loops. We used a method to check if a number is prime and then iterated through a range of numbers to find and print the prime numbers. This demonstrates the use of loops and methods in Java programming.