JAVA Week 1 Code talk

Please analyze the pieces of code given and give an explanation to the class.

Problem 1. Factorial calculation:

```
public class Factorial {
    public static int factorial(int n) {
        int result = 1;
        for (int i = 1; i <= n; i++) {
            result *= i;
        }
        return result;
    }

    public static void main(String[] args) {
        int number = 5;
        int result = factorial(number);
        System.out.println("Factorial of " + number + " is: " + result);
    }
}
```

Factorial calculation The Factorial class has a static method factorial that calculates the factorial of a given number n. It uses a for loop to iterate from 1 to n and multiplies the current value of result by the current value of i. The initial value of result is 1. The main method of this class calls the factorial method with the number 5 and prints the result.

Problem 2. Prime Number Check

```
public class PrimeNumber {
    public static boolean isPrime(int number) {
        if (number <= 1) {
            return false;
        }
        for (int i = 2; i < number; i++) {
            if (number % i == 0) {
                return false;
            }
        }
        return true;
    }

    public static void main(String[] args) {
        int number = 17;
        if (isPrime(number)) {
            System.out.println(number + " is a prime number.");
        } else {
            System.out.println(number + " is not a prime number.");
        }
    }
}
```

Prime Number Check The PrimeNumber class has a static method isPrime that checks whether a given number is prime or not. It first checks if the number is less than or equal to 1 and returns false in that case since prime numbers are greater than 1. It then uses a for loop to iterate from 2 to 1 less than the given number. Inside the loop, it checks if the number is divisible by the current value of i. If it is, the method returns false as the number is not prime. Otherwise, if no factors are found, it returns true. The main method of this class calls the isPrime method with the number 17 and prints whether it is a prime number or not.

Problem 3: Array sorting

```
import java.util.Arrays;

public class ArraySorting {
    public static void main(String[] args) {
        int[] numbers = {5, 2, 8, 1, 9};
        Arrays.sort(numbers);
        System.out.print("Sorted Array: ");
        for (int number : numbers) {
            System.out.print(number + " ");
        }
    }
}
```

Array sorting The ArraySorting class demonstrates how to sort an array of integers using the Arrays.sort() method from the java.util package. It declares an array of integers called numbers with values {5, 2, 8, 1, 9}. It then calls the Arrays.sort() method, which sorts the array in ascending order. Finally, it prints the sorted array using a for-each loop.