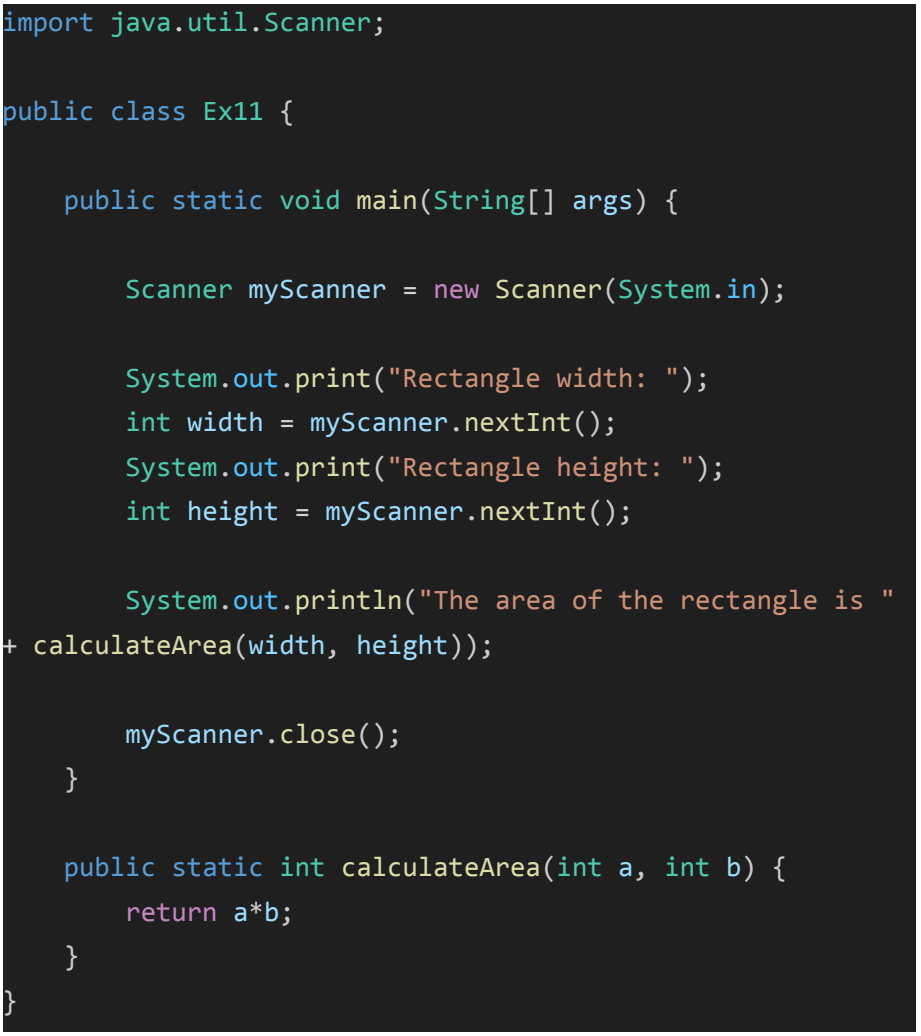
Java module 2

Exercises Day 1

1.1 - Functions	Create and use a function
Instructions	Step 1: Create a function that returns the area of a rectangle given the rectangle's width and height. Step 2: Create a program that asks the user for the width and height of a rectangle and outputs the rectangle's area. It should use the function created in step 1.

Expected output	Rectangle width:
	>>> 10
	Rectangle height:
	>>> 5
	The area of the rectangle is 50.

Solution	

```java
import java.util.Scanner;

public class Ex11 {

    public static void main(String[] args) {

        Scanner myScanner = new Scanner(System.in);

        System.out.print("Rectangle width: ");
        int width = myScanner.nextInt();
        System.out.print("Rectangle height: ");
        int height = myScanner.nextInt();

        System.out.println("The area of the rectangle is "
+ calculateArea(width, height));

        myScanner.close();
    }

    public static int calculateArea(int a, int b) {
        return a*b;
    }
}
```

1.2 - Procedures	Create and use a procedure
Instructions	Step 1: Create a procedure that prints a number's multiplication table. The procedure should receive the number in a parameter. Step 2: Create a program that asks the user for a number and then prints the number's multiplication table. It should use the procedure created in step 1.
Expected output	Enter a number: >>> 3 3 x 1 = 3 3 x 2 = 6 3 x 3 = 9 3 x 4 = 12 3 x 5 = 15 3 x 6 = 18 3 x 7 = 21 3 x 8 = 24 3 x 9 = 27 3 x 10 = 30
Solution	See code block below

```java
import java.util.Scanner;

public class Ex12 {

    public static void main(String[] args) {
        System.out.print("Enter a number: ");

        Scanner scanner = new Scanner(System.in);
        int number = scanner.nextInt();

        printTable(number);

        scanner.close();
    }

    public static void printTable(int number) {
        for (int i = 1; i <= 10; i++) {
            System.out.println(number + " x " + i + " = " +
number*i);
        }
    }
}
```

2.1 - JavaDoc	Implement the function

Instructions	Based on this javaDoc, implement the code
	
	/**
	* Checks if a number is prime.
	*
	* @param num the number to check
	* @return true if the number is prime, otherwise false
	*/
	public static boolean isPrime(int num) {
	// Implementation code here
	}

Solution	

```java
import java.util.Scanner;

public class Ex21 {

    public static void main(String[] args) {

        System.out.print("Select a number: ");
        Scanner scanner = new Scanner(System.in);
        int number = scanner.nextInt();
        if (isPrime(number))
            System.out.println("The number is prime.");
        else
            System.out.println("The number is not prime");
        scanner.close();
    }

    /**
     * Checks if a number is prime.
     *
     * @param num the number to check
     * @return true if the number is prime, otherwise false
     */
    public static boolean isPrime(int num) {
        if (num <= 1) {
            return false; // Numbers less than or equal to
1 are not prime
        }
        // Check for divisibility by numbers up to the
square root of the number
```

```
        for (int i = 2; i * i <= num; i++) {
            if (num % i == 0) {
                return false; // If the number is divisible
by any other number, it's not prime
            }
        }
        return true; // If no divisor is found, the number
is prime
    }
}
```

2.2 - JavaDoc	Write the JavaDoc
Instructions	Write the JavaDoc for the methods implemented in exercises 1.1 and 1.2.
Solution	

```
    /**
     * Function to calculate the area of a rectangle
     * @param a the width of the rectangle
     * @param b the height of the rectangle
     * @return the area of the rectangle
     */
    public static int calculateArea(int a, int b) {
        return a*b;
    }


    /**
     * Procedure to print the multiplying table of a number
     * @param number the number of which to print the
multiplying table
     */
    public static void printTable(int number) {
        for (int i = 1; i <= 10; i++) {
            System.out.println(number + " x " + i + " = " +
number*i);
        }
    }
```