

Template Week 2 – Logic

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Assignment 2.1: Parking lot

Which gates do you need?

Complete this table

Parking lot 1	Parking lot 2	Parking lot 3	Result (full)
0	0	0	
0	0	1	
0	1	0	

Assignment 2.2: Android/iPhone

Which gates do you need?

Complete this table

Android phone	iPhone	Result (Phone in possession)
0	0	

Assignment 2.3: Four NAND gates

Complete this table

A	B	Q

How can the design be simplified?

Assignment 2.4: Getting to know Logisim evolution

Screenshot of the design with your name and student number in it:

Assignment 2.5: SR Latch

Screenshot SR Latch in Logisim with your name and student number:

Assignment 2.6: Vending Machine

Screenshot Vending Machine in Logisim with your name and student number:

Bonus point assignment – week 2

Create a java program that accepts user input and presents a menu with options.

1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?

Implement the methods by using the bitwise operators you have just learned.

Organize your source code in a readable manner with the use of control flow and methods.

Paste source code here, with a screenshot of a working application.

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

```
public class Main {
```

```
    public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);
```

```
        System.out.println("\nMenu:");
```

```
        System.out.println("1. Is number odd?");
```

```
        System.out.println("2. Is number a power of 2?");
```

```
        System.out.println("3. Two's complement of number");
```

```
        System.out.println("4. Exit");
```

```
        System.out.print("Enter your choice: ");
```

```
        int choice = scanner.nextInt();
```

```
        if (choice == 4) {
```

```
            System.out.println("Exiting the program. Goodbye!");
```

```
            return;
```

```
        }
```

```
        System.out.print("Enter a number: ");
```

```
        int number = scanner.nextInt();
```

```
        if (choice == 1) {
```

```
            boolean isOdd = (number & 1) == 1;
```

```
            System.out.println("The number " + number + (isOdd ? " is odd." : " is even."));
```

```
        } else if (choice == 2) {
```

```
            boolean isPowerOfTwo = number > 0 && (number & (number - 1)) == 0;
```

```
            System.out.println("The number " + number + (isPowerOfTwo ? " is a power of 2." : " is not a power of 2."));
```

```
        } else if (choice == 3) {
```

```
            int twosComplement = ~number + 1;
```

```
            System.out.println("The two's complement of " + number + " is: " + twosComplement);
```

```
        } else {
```

```
            System.out.println("Invalid choice. Please try again.");
```

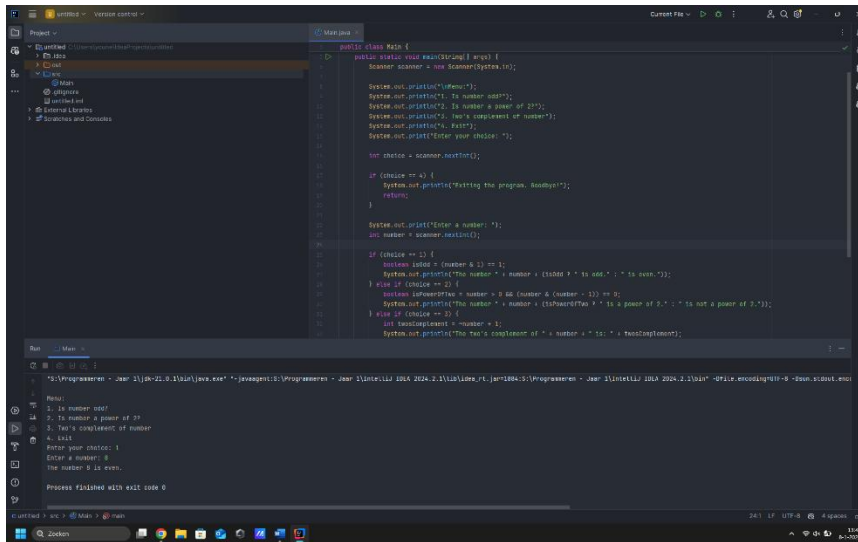
```
        }
```

```

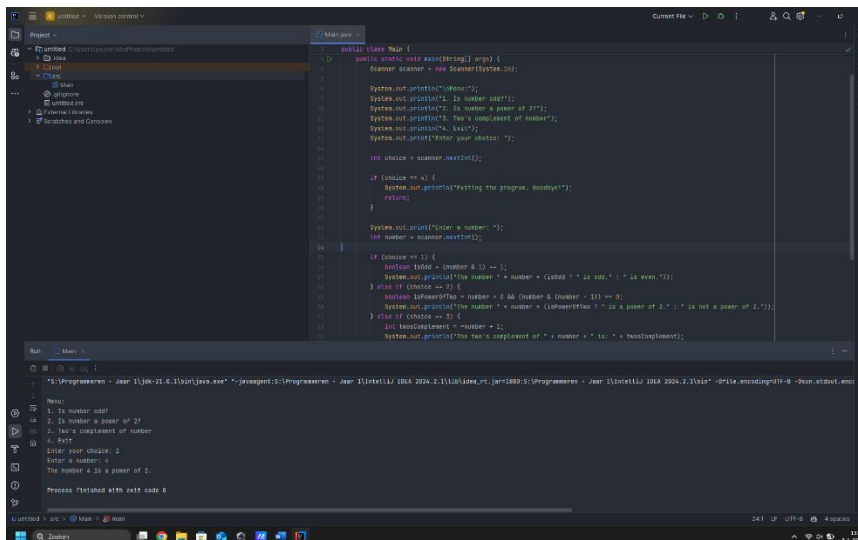
        scanner.close();
    }
}

```

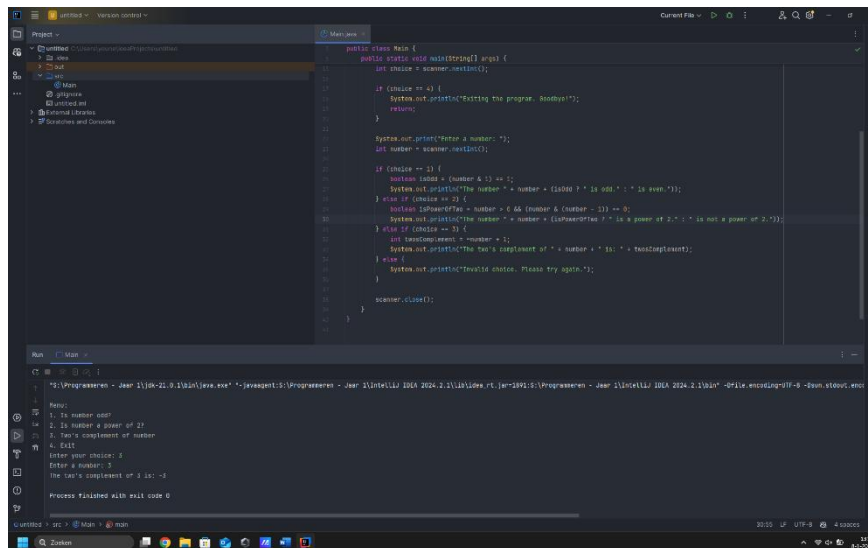
SCREENSHOT (Optie 1)



SCREENSHOT (Optie 2)



SCREENSHOT (Optie 3)



The screenshot displays an IDE with a Java file named `Main.java`. The code defines a `Scanner` object and a `main` method. It prompts the user to enter a number and then performs several checks: if the number is odd, it prints "Fastest the program. Goodbye!"; if it's even, it prints "The number " + number + " is even."; if it's a power of 2, it prints "The number " + number + " is a power of 2."; if it's a power of 3, it prints "The number " + number + " is a power of 3.". If none of these conditions are met, it prints "Invalid choice. Please try again." and loops back to the input prompt. The `Scanner` object is closed at the end of the method.

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

        if (args.length > 0) {
            System.out.println("Fastest the program. Goodbye!");
            return;
        }

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

        if (number % 2 == 0) {
            System.out.println("The number " + number + " is even.");
        } else if (number % 2 == 1) {
            System.out.println("The number " + number + " is odd.");
        }

        if (number % 2 == 0) {
            System.out.println("The number " + number + " is a power of 2.");
        } else if (number % 3 == 0) {
            System.out.println("The number " + number + " is a power of 3.");
        } else {
            System.out.println("Invalid choice. Please try again.");
            scanner.close();
        }
    }
}
```

The Run window shows the execution of the program. The output is as follows:

```
1. Enter a number: 3
2. The number 3 is not a power of 2
3. The number 3 is not a power of 3
4. Invalid choice. Please try again.
Enter a number: 3
The number 3 is a power of 3
Process finished with exit code 0
```

Ready? Then save this file and export it as a pdf file with the name: [week2.pdf](#)