

# Template Week 2 – Logic

Student number:

## 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.print("Enter an integer: ");
        int number = scanner.nextInt();

        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.print("Choose an option (1-3): ");
        int choice = scanner.nextInt();

        if (choice == 1) {
            System.out.println(number % 2 != 0 ? "The number is odd." : "The number is even.");
        } else if (choice == 2) {
            System.out.println((number > 0 && (number & (number - 1)) == 0) ? "The number is a power of 2." : "The number is not a power of 2.");
        } else if (choice == 3) {
            System.out.println("The two's complement of the number is: " + (~number + 1));
        } else {
            System.out.println("Invalid choice.");
        }

        scanner.close();
    }
}
```

```
Enter an integer: 10

Menu:
1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?
Choose an option (1-3): 1
The number is even.

Process finished with exit code 0
```

Een getal is oneven als het niet deelbaar is door 2.

```
Enter an integer: 16

Menu:
1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?
Choose an option (1-3): 2
The number is a power of 2.

Process finished with exit code 0
```

Een getal is een macht van 2 als het geschreven kan worden als  $2^N$  (bijvoorbeeld 1, 2, 4, 8, 16, ...).

```
Enter an integer: 255

Menu:
1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?
Choose an option (1-3): 3
The two's complement of the number is: -255

Process finished with exit code 0
```

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