

# Template Week 2 – Logic

Student number: 591905

## Assignment 2.1: Parking lot

Which gates do you need?

2 AND poorten. Als al de inputs 1 zijn, zal het resultaat ook 1 zijn. Alle andere inputs geven 0.

Complete this table

Parking lot 1 (P1)	Parking lot 2 (P2)	Parking lot 3 (P3)	Result (full) (F)
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

## Assignment 2.2: Android or iPhone

Which gates do you need?

Een XOR gate

Complete this table

Android phone	iPhone	Result (Phone in possession)
0	0	0
1	0	1

0	1	1
1	1	0

### Assignment 2.3: Four NAND gates

Complete this table

A	B	Q
0	0	0
1	0	1
0	1	1
1	1	0

How can the design be simplified?

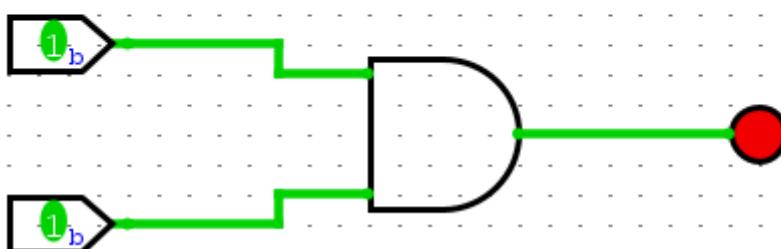
Door 1 XOR gate te implementeren

### Assignment 2.4: Getting to know Logisim evolution

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

Ahmet Tumkaya

591905

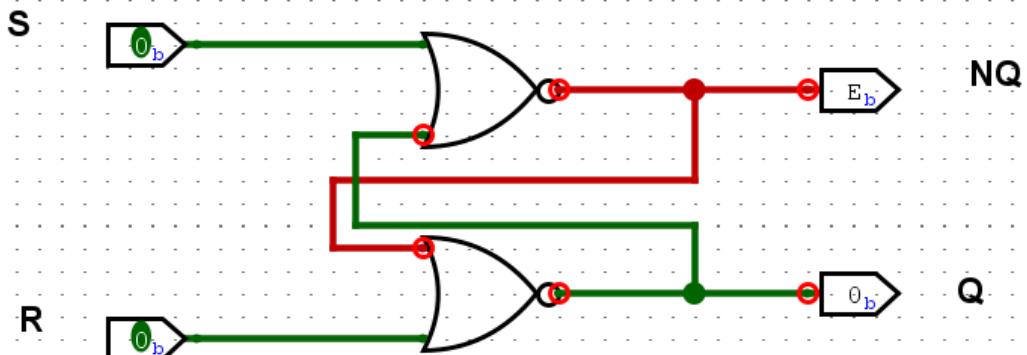


### Assignment 2.5: SR Latch

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

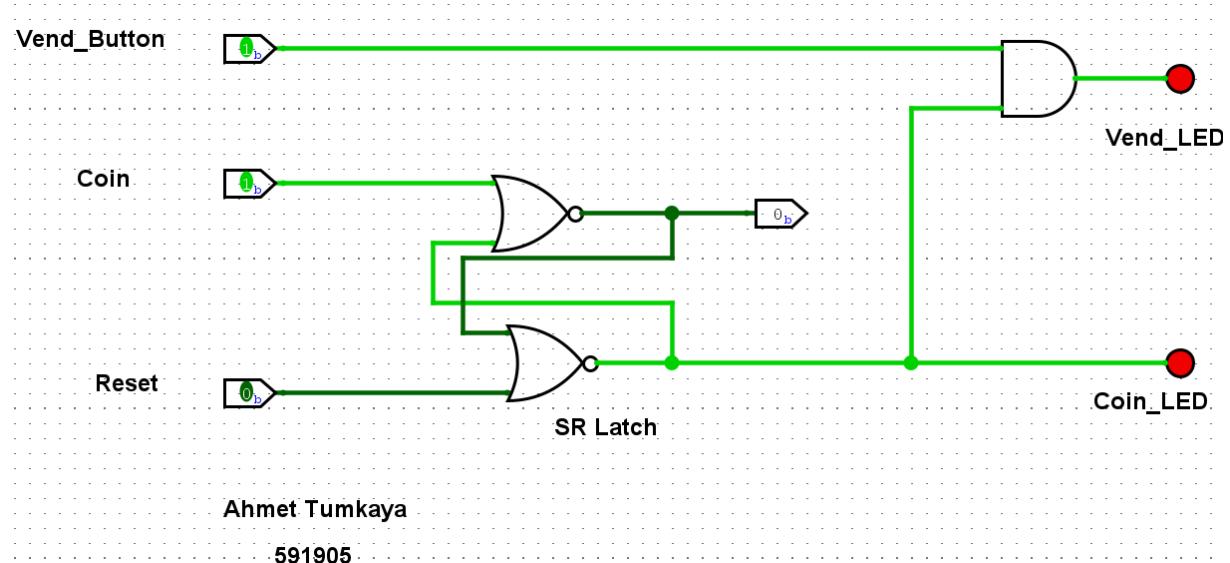
Ahmet Tumkaya

591905



### Assignment 2.6: Vending Machine

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



## Assignment 2.7: Bitwise operators

Complete the java source code for bitwise operators. Put the source code here.

The screenshot shows a browser window with several tabs. The active tab is a Java code editor on w3schools.com. The code is as follows:

```
public class Main {
    public static void main(String[] args) {
        int number = 5;
        if((number & 1) == 1)
            System.out.println("number is odd");
        else System.out.println("number is even");
    }
}
```

The output window shows the result: "number is odd". To the right of the output window, there is a sidebar for "Python - Global Variables" which includes a small Python-related illustration and some promotional banners for coolblue deals.

The screenshot shows a browser window with several tabs. The active tab is a Java code editor on w3schools.com. The code is as follows:

```
public class Main {
    public static void main(String[] args) {
        int number = 4;
        if((number & (number - 1)) == 0) {
            System.out.println("number is a power of 2");
        } else {
            System.out.println("number isn't a power of 2");
        }
    }
}
```

The output window shows the result: "number is a power of 2". To the right of the output window, there is a sidebar for "Python - Global Variables" which includes a small Python-related illustration and some promotional banners for coolblue deals.

The screenshot shows a Java code editor window with the following code:

```
public class Main {
    public static void main(String[] args) {
        final int READ = 4;
        final int WRITE = 2;
        final int EXECUTE = 1;

        int userPermissions = 7;

        if((userPermissions & READ) == READ)
            System.out.println("User has read permissions");
        else System.out.println("User can't read. No
permissions.");
    }
}
```

The output window shows the result: "User has read permissions".

On the right side of the browser window, there are several ads:

- A Python tutorial ad for "Python - Global Variables".
- A "cool blue" advertisement for "MESSCHERPE DEALS".
- A "codecademy" advertisement featuring a person working on a laptop.

The screenshot shows a Java code editor window with the following code:

```
public class Main {
    public static void main(String[] args) {
        final int READ = 4;
        final int WRITE = 2;
        final int EXECUTE = 1;

        int userPermissions = READ | EXECUTE;
        System.out.println("User permissions:
"+userPermissions);

    }
}
```

The output window shows the result: "User permissions: 5".

On the right side of the browser window, there are two ads:

- A "cool blue" advertisement for "MESSCHERPE DEALS".
- A "codecademy" advertisement featuring a person working on a laptop.

The screenshot shows a Java code editor window with the following code:

```
public class Main {
    public static void main(String[] args) {
        final int READ = 4;
        final int WRITE = 2;
        final int EXECUTE = 1;

        int userPermissions = 6;
        userPermissions = userPermissions ^ WRITE;
        System.out.println("User permissions: " + userPermissions);
    }
}
```

The output window displays the result: "User permissions: 4".

A sidebar on the right shows a "Python - Global Variables" section with a character icon and a "ROBUX" section showing a balance of 1,382.

The screenshot shows a Java code editor window with the following code:

```
public class Main {
    public static void main(String[] args) {
        int number = 5;
        number = -number + 1;
        System.out.println("Number: " + number);
    }
}
```

The output window displays the result: "Number: -5".

A sidebar on the right shows a "Python - Global Variables" section with a character icon and a "Bitdefender" advertisement for Black Friday.

## Assignment 2.8: Java Application Bit Calculations

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.

Keep this application because you need to expand it in week 6 for calculating network segments.

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

```
import nl.saxion.app.SaxionApp;

public class Application implements Runnable {

    public static void main(String[] args) {
        SaxionApp.start(new Application(), 600, 800);
    }

    public void run() {
        SaxionApp.printLine("Voer een getal in om te testen:");
        int number = SaxionApp.readInt();
        boolean running = true;

        while (running) {
            SaxionApp.printLine("");
            SaxionApp.printLine("MENU (Huidig getal: " + number + ")");
            SaxionApp.printLine("1. Is het getal oneven?");
            SaxionApp.printLine("2. Is het getal een macht van 2?");
            SaxionApp.printLine("3. Twee's complement berekenen?");
            SaxionApp.printLine("4. Nieuw getal invoeren");
            SaxionApp.printLine("0. Stoppen");

            SaxionApp.printLine("Maak uw keuze:");
            int choice = SaxionApp.readInt();

            if (choice == 1) {
                checkIfOdd(number);
            } else if (choice == 2) {
                checkPowerOfTwo(number);
            } else if (choice == 3) {
                calculateTwosComplement(number);
            } else if (choice == 4) {
                SaxionApp.printLine("Voer een nieuw getal in:");
                number = SaxionApp.readInt();
            } else if (choice == 0) {
                running = false; // Dit stopt de loop
                SaxionApp.printLine("Programma gestopt.");
            } else {
                SaxionApp.printLine("Ongeldige keuze, probeer opnieuw.");
            }
        }
    }
}
```

```

        }

    }

public void checkIfOdd(int number) {
    if ((number & 1) == 1) {
        SaxionApp.printLine("JA, " + number + " is oneven.");
    } else {
        SaxionApp.printLine("NEE, " + number + " is even.");
    }
}

public void checkPowerOfTwo(int number) {
    if ((number & (number - 1)) == 0) {
        SaxionApp.printLine("JA, " + number + " is een macht van 2.");
    } else {
        SaxionApp.printLine("NEE, " + number + " is geen macht van 2.");
    }
}

public void calculateTwosComplement(int number) {
    int result = ~number + 1;
    SaxionApp.printLine("Het twee's complement is " + result);
}
}

```

Saxion Drawingboard

**Voer een getal in om te testen:**

7

**MENU (Huidig getal: 7)**

1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Twee's complement berekenen?
4. Nieuw getal invoeren
0. Stoppen

**Maak uw keuze:**

1

JA, 7 is oneven.

```
Saxion Drawingboard
Voer een getal in om te testen:
7

MENU (Huidig getal: 7)
1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Twee's complement berekenen?
4. Nieuw getal invoeren
0. Stoppen
Maak uw keuze:
2
HEE, 7 is geen macht van 2.
```

```
Saxion Drawingboard
Voer een getal in om te testen:
7

MENU (Huidig getal: 7)
1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Twee's complement berekenen?
4. Nieuw getal invoeren
0. Stoppen
Maak uw keuze:
3
Het twee's complement is -7
```

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