Template Week 2 – Logic

Student number:553809

Assignment 2.1: Parking lot

Which gates do you need?
2x AND gates

Complete this table

Parking lot 1	Parking lot 2	Parking lot 3	Result (full)
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?
XOR

Complete this table

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

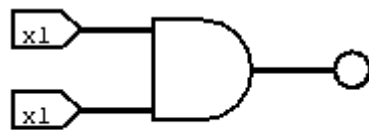**Assignment 2.3: Four NAND gates**

Complete this table

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

How can the design be simplified?
Door middel van een XOR gate gebruiken
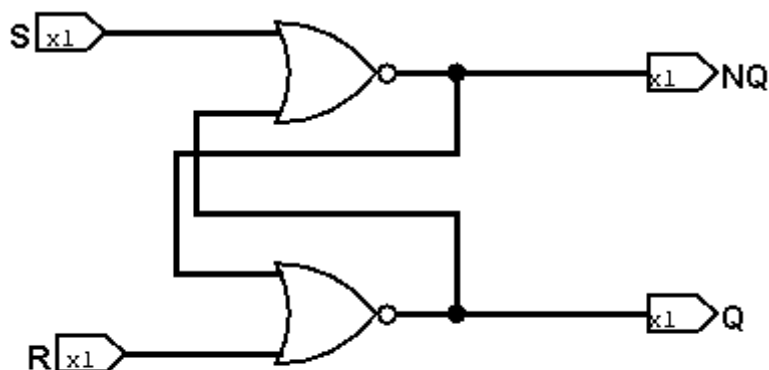
Assignment 2.4: Getting to know Logisim evolution

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

Charbel 553809

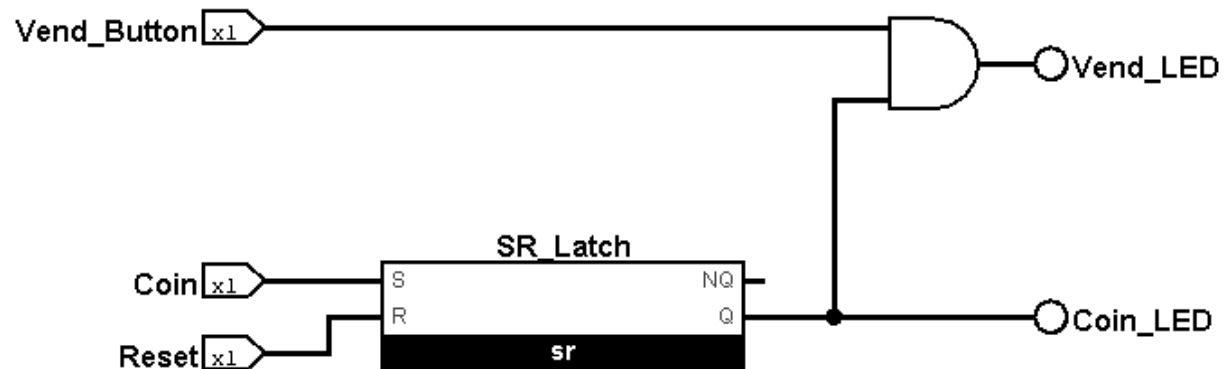**Assignment 2.5: SR Latch**

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

Charbel 553809

Assignment 2.6: Vending Machine

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

Charbel 553809

Assignment 2.7: Bitwise operators

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

#3 Check permissions
What are the file permissions on the file verse in the above picture?
Write the answer as an octal value.
644
110 100 100

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.

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

public class Application implements Runnable {

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

  public void run() {
    // Your code goes here!

    SaxionApp.print("1. Is number odd?\n" +
        "2. Is number a power of 2?\n" +
        "3. Two's complement of number?\n");
    SaxionApp.print("Choose between 1,2 or 3: ");
    int userInput = SaxionApp.readInt();

    SaxionApp.print("Give number: ");
    int userNumber = SaxionApp.readInt();
    switch (userInput){
```

```java
        case 1:
            SaxionApp.printLine("is " + userNumber + " odd?");
            SaxionApp.printLine(isOdd(userNumber));
            break;
        case 2:
            SaxionApp.printLine("is " + userNumber + " a power of 2?");
            SaxionApp.printLine(isPowerOfTwo(userNumber));
            break;
        case 3:
            SaxionApp.print("Two's complement of " + userNumber + " is ");
            SaxionApp.printLine(twosComplement(userNumber));
            break;
        default:
            SaxionApp.printLine("Invalid option.");
    }

}

public boolean isOdd(int number) {
    return (number & 1) == 1;
}

public boolean isPowerOfTwo(int number) {
    return (number & (number - 1)) == 0;
}

public int twosComplement(int number) {
    return ~number + 1;
}
}
```
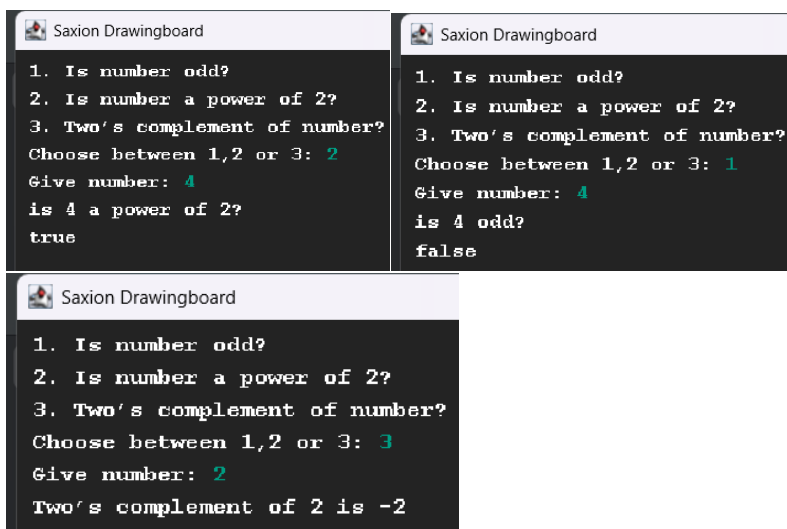
```
Saxion Drawingboard

1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?
Choose between 1,2 or 3: 2
Give number: 4
is 4 a power of 2?
true
```

```
Saxion Drawingboard

1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?
Choose between 1,2 or 3: 1
Give number: 4
is 4 odd?
false
```

```
Saxion Drawingboard

1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?
Choose between 1,2 or 3: 3
Give number: 2
Two's complement of 2 is -2
```

Ready? Then save this file and export it as a pdf file with the name: **week2.pdf**