

Template Week 2 – Logic

Student number: 592513

Assignment 2.1: Parking lot

Which gates do you need?

Twee 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
1	0	1	0
0	1	1	0
1	1	0	0
1	0	1	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
1	0	1
0	1	1
1	1	0

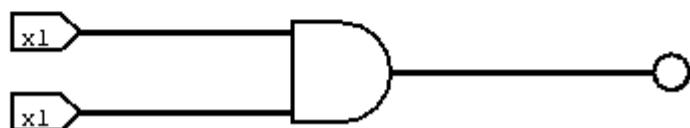
How can the design be simplified?

Xor gate

Assignment 2.4: Getting to know Logisim evolution

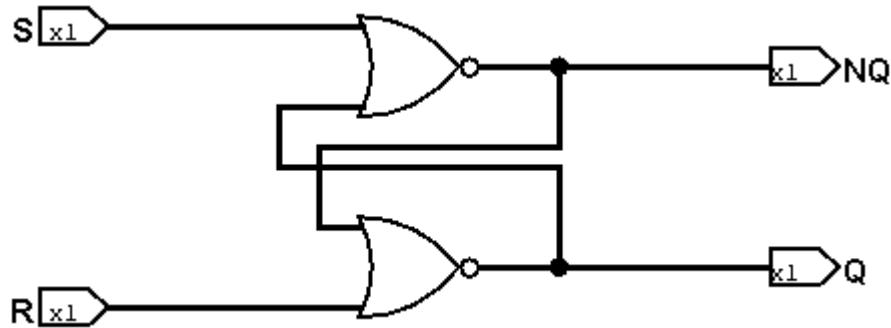
Screenshot of the design with your name and student number in it:

david den hartog 592513

**Assignment 2.5: SR Latch**

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

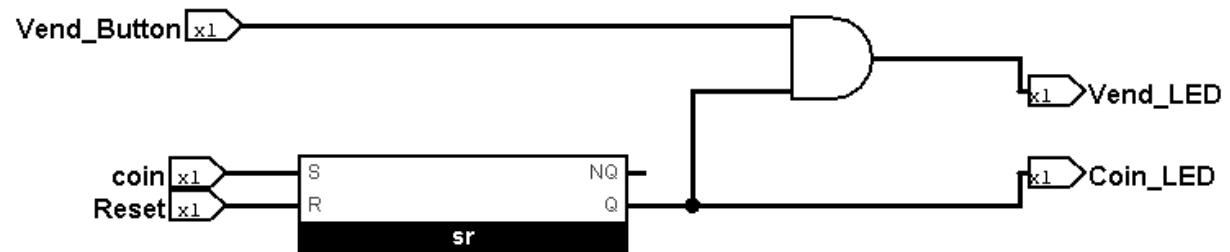
592513 David den hartog



Assignment 2.6: Vending Machine

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

592513 David den hartog



Assignment 2.7: Bitwise operators

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

The screenshot shows a Java development environment with two code snippets and their corresponding outputs.

Code Snippet 1:

```
public class Main {
    public static void main(String[] args) {
        int number = 8;
        int b = 1; // 0001
        int result = number & b;
        System.out.println(result);
        if(result == 1) System.out.println("number is odd");
        else System.out.println("number is even");
    }
}
```

Output 1:

```
0
number is even
```

Code Snippet 2:

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

        int a = 13; // 0100
        int b = a-1; // 0011
        int result = a & b; // ----&
        System.out.println(result); // 0001
        if((result == 0)) System.out.println("number is a power of 2");

        else System.out.println("number isn't a power of 2");
    }
}
```

Output 2:

```
0
number is a power of 2
```

Saxion Profile:

MijnSaxion
David den Hartog
592513@student.saxion.nl
Select
My Profile
Font size Aa Aa Aa Aa
Language English
Select theme Select

Evening David Dashboard:

evening David
day, 26 November 2025 22:12
Search MijnSaxion
Quick links Knowledge base David den Hartog 592513@student.saxion.nl

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.

```

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

public void run() {
    // Your code goes here!
    while(0==0) {
        SaxionApp.printLine("options \n 1. is the number even or not\n
2. is the number a power of two\n 3. make it negative");
        int choice = SaxionApp.readInt();
        if (choice == 1) {
            int input = SaxionApp.readInt();
            even_or_uneven(input);
        } else if (choice == 2) {
            int input = SaxionApp.readInt();
            power_of_2(input);
        } else if (choice == 3) {
            int input = SaxionApp.readInt();
            make_two_compliment(input);
        } else{
            break;
        }
        SaxionApp.pause();
        SaxionApp.clear();
    }
}
}

public int power_of_2 (int a ) {
    int b = a-1;

    int result = a & b; // ----&
    if(result == 0) {
        SaxionApp.printLine("number is a power of 2");
    }else {
        SaxionApp.printLine("number isn't a power of 2");
    }
    return result;
}
public int even_or_uneven (int a){
    int result = a & 1;
    if (result == 1){
        SaxionApp.printLine("number is uneven");
    }else{
        SaxionApp.printLine("number is even ");
    }
    return result;
}
public int make_two_compliment (int a){

```

```
        int result = (~a)+1;
        SaxionApp.printLine("number = "+result);
        return result;
    }

}
```

```
options
1. is the number even or not
2. is the number a power of two
3. make it negative
3
18
number = -18
```

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