

Template Week 2 – Logic

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Assignment 2.1: Parking lot

Which gates do you need?

Een AND gate met 3 ingangen.

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 gate

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

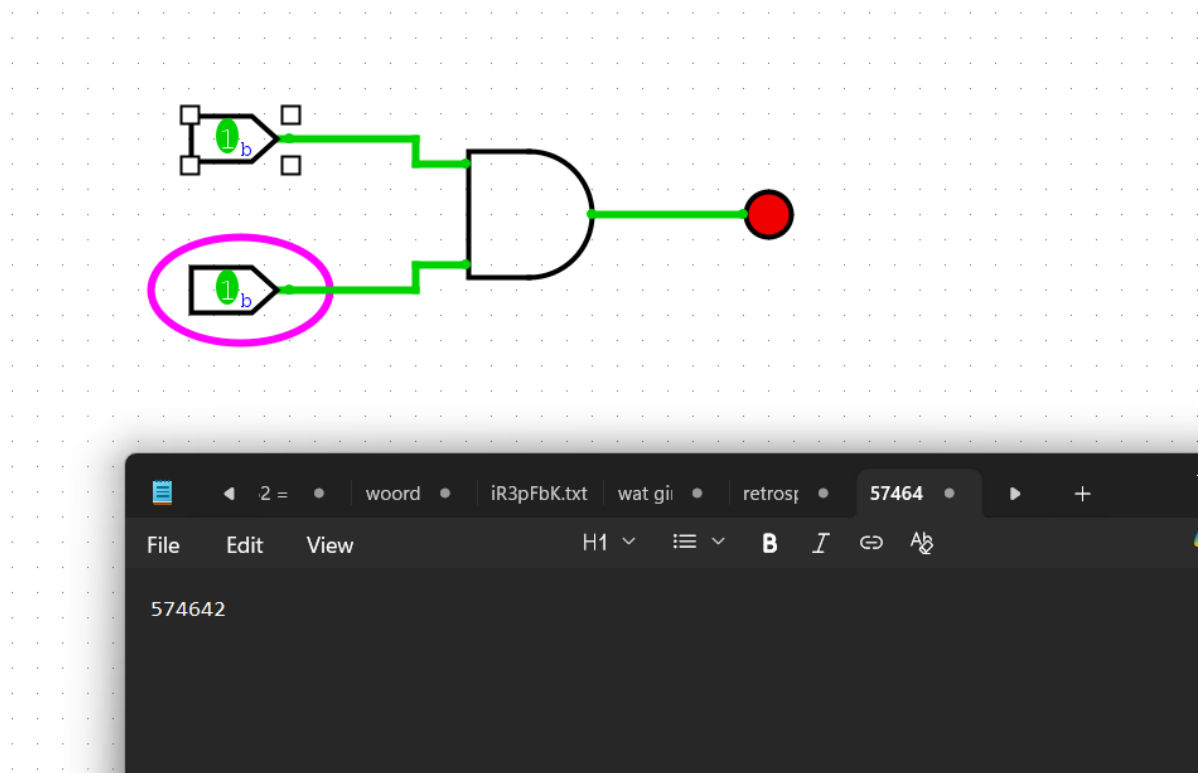
A	B	Q
0	0	0
0	1	1
1	0	1
1	1	0

How can the design be simplified?

Die 4 NAND gates zijn eigenlijk een XOR gate.

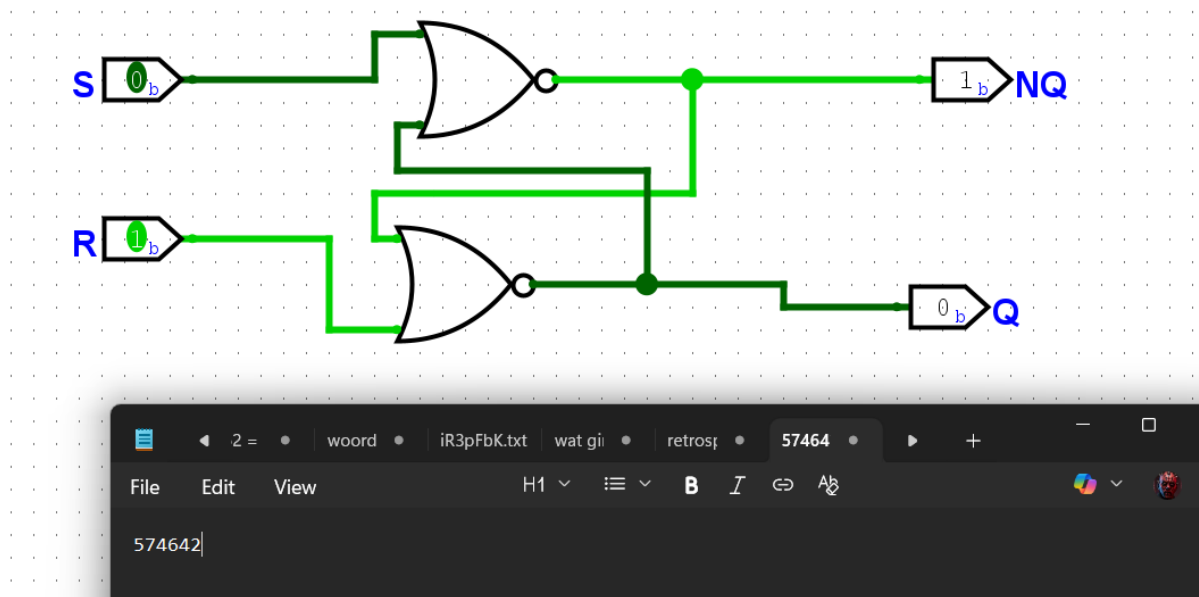
Assignment 2.4: Getting to know Logisim evolution

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



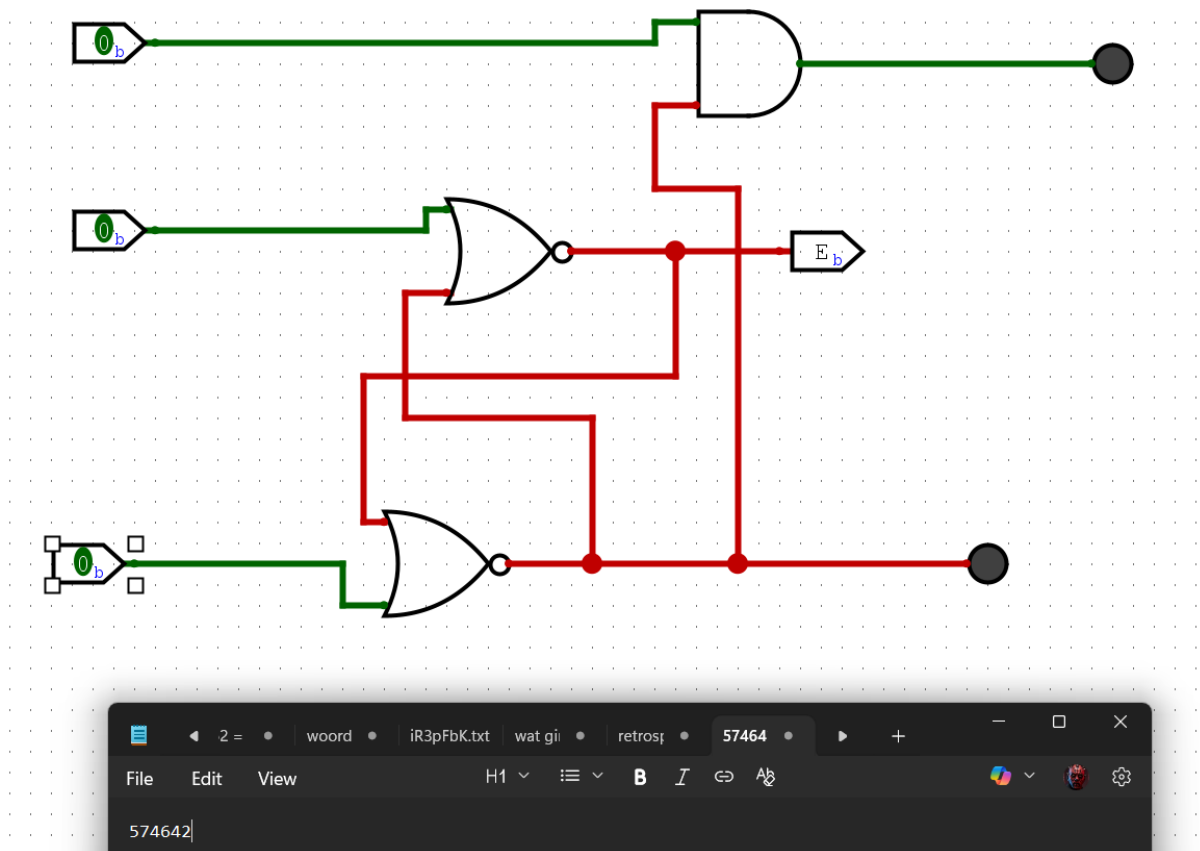
Assignment 2.5: SR Latch

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:



Assignment 2.7: Bitwise operators

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

```
public class Main {  
    public static void main(String[] args) {  
        int number = 6;  
        if ((number & 1) == 1)  
            System.out.println("number is odd");  
        else  
            System.out.println("number is even");  
    }  
}
```

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

```
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) != 0) System.out.println("User has read permissions");  
        else System.out.println("User can't read. No permissions.");  
    }  
}
```

```
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);  
    }  
}
```

```

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);
    }
}

```

```

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

```

Assignment 2.8: Java Application Bit Calculations

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

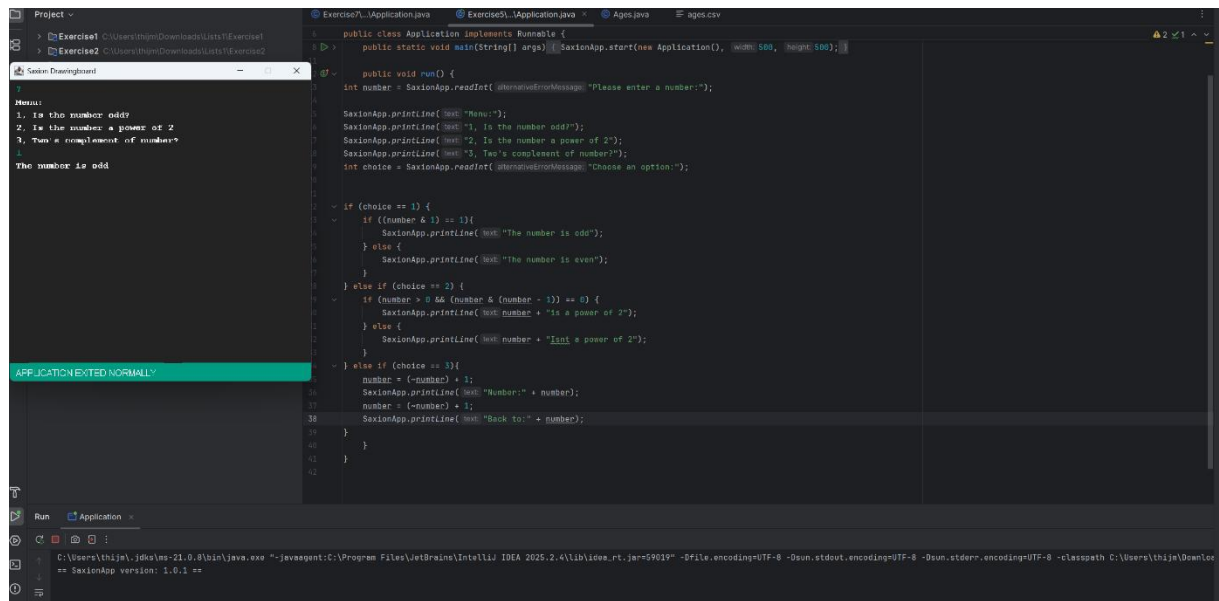
1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?

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.



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