Template Week 2 – Logic

Student number: 582762

Assignment 2.1: Parking lot

Which gates do you need?

Een AND gate met 3 ingangen voor parking lot 1, 2, 3

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

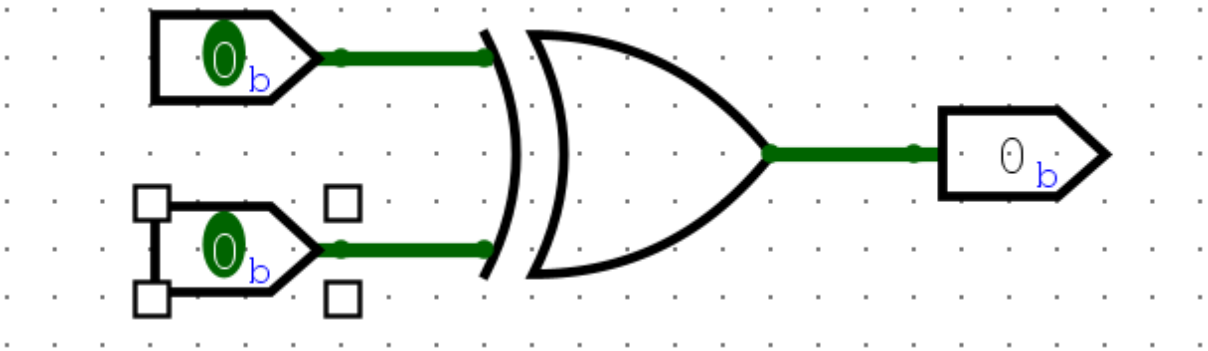
Assignment 2.3: Four NAND gates

Complete this table

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

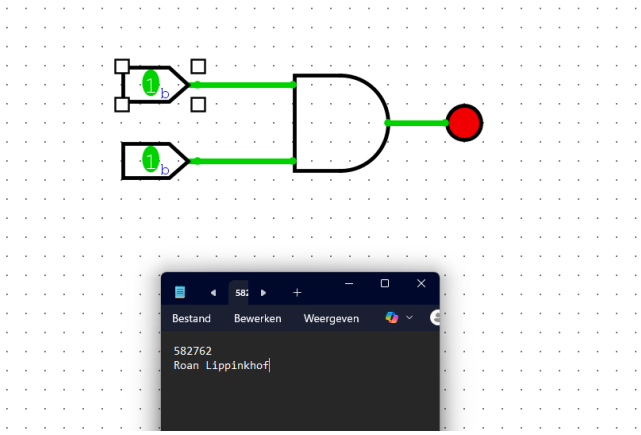
How can the design be simplified?

De vier nand gates vormen eigenlijk een XOR gate het is of het een of het ander maar kan niet beide aan of uit zijn het kan versimpeld zijn zoals hieronder



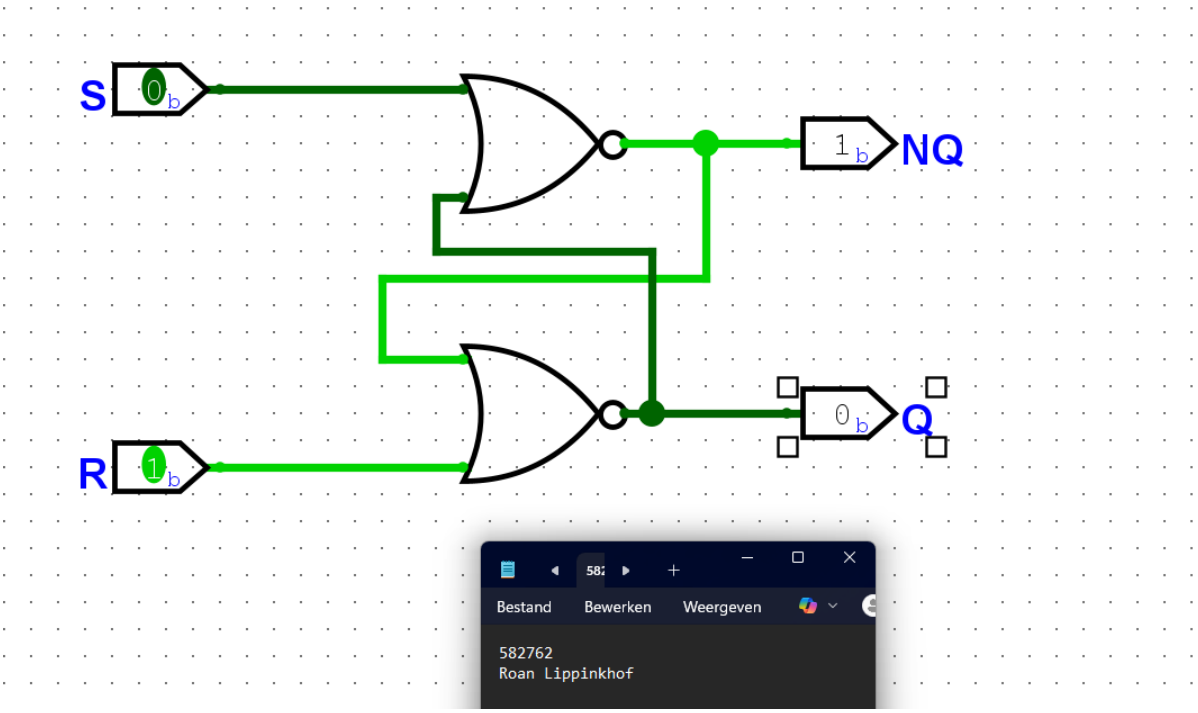
Assignment 2.4: Getting to know Logisim evolution

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



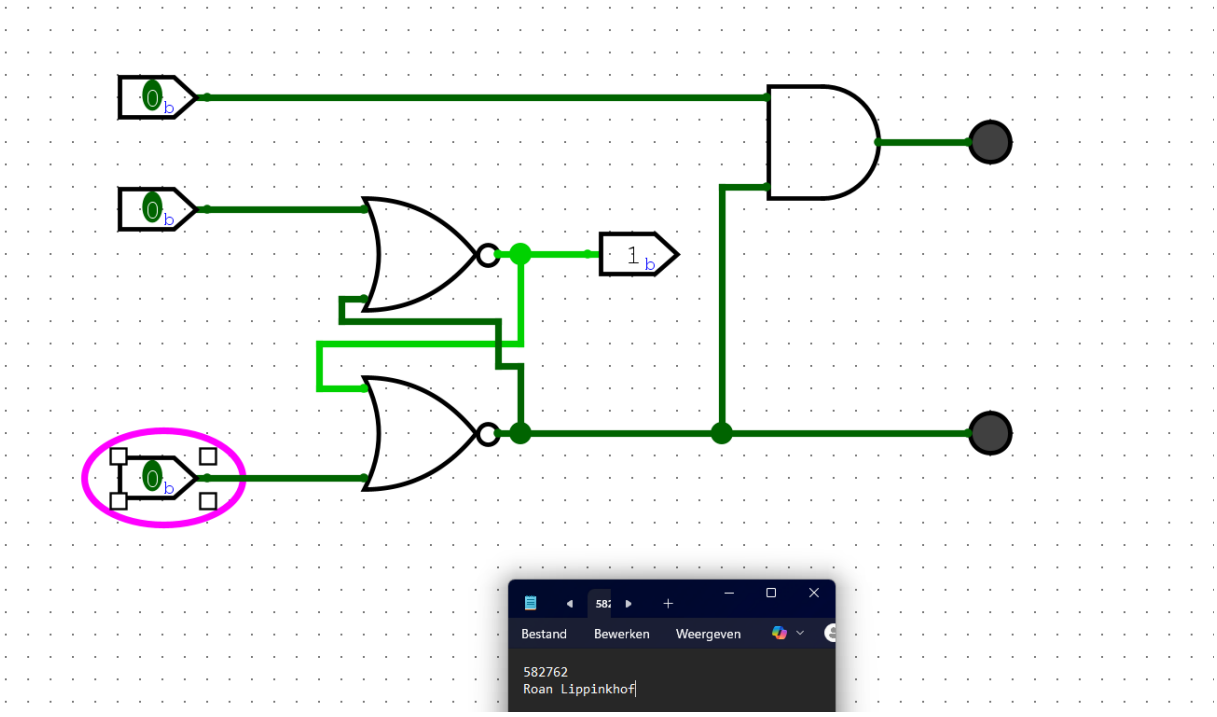
Assignment 2.5: SR Latch

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.

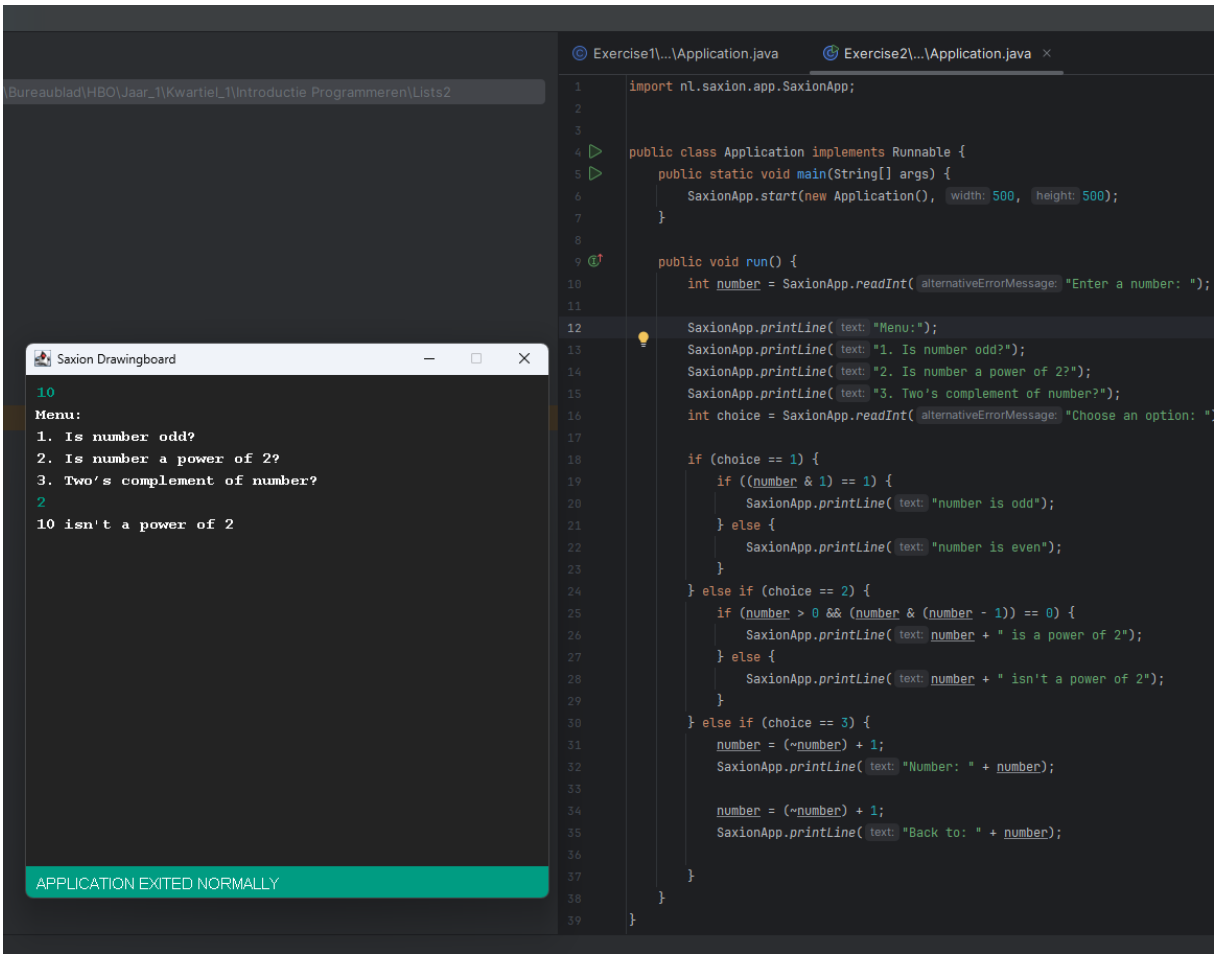
1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?

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**