Template Week 2 – Logic

Student number: 588898

Assignment 2.1: Parking lot

Which gates do you need?

3 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	0	0
1	1	0	0
0	1	1	0
1	0	1	0
1	1	1	1

Assignment 2.2: Android or iPhone

Which gates do you need?

AND gate en OR 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

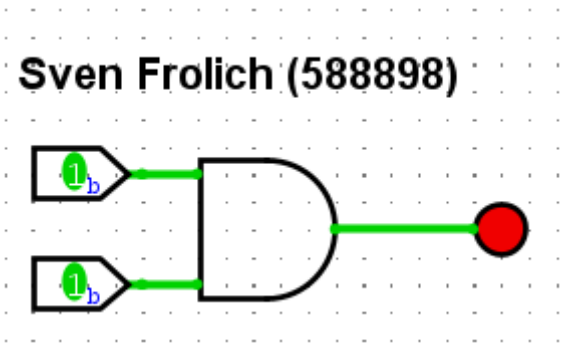
A	B	Q
0	0	0
1	0	1
0	1	1
1	1	0

How can the design be simplified?

Een XOR-gate in plaats van vier NAND gates

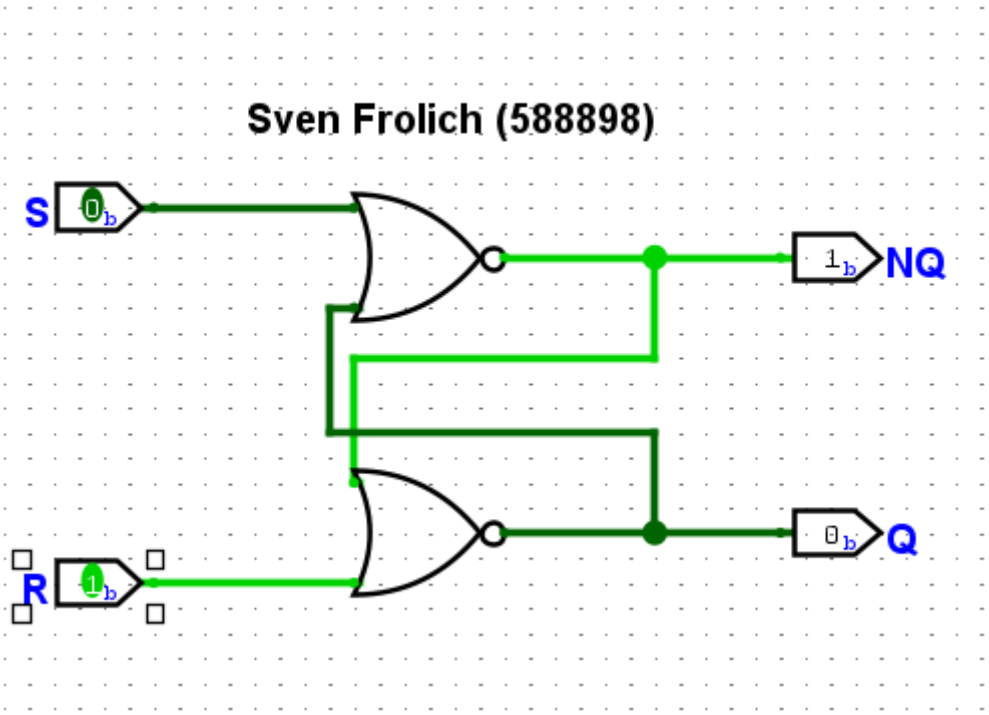
Assignment 2.4: Getting to know Logisim evolution

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



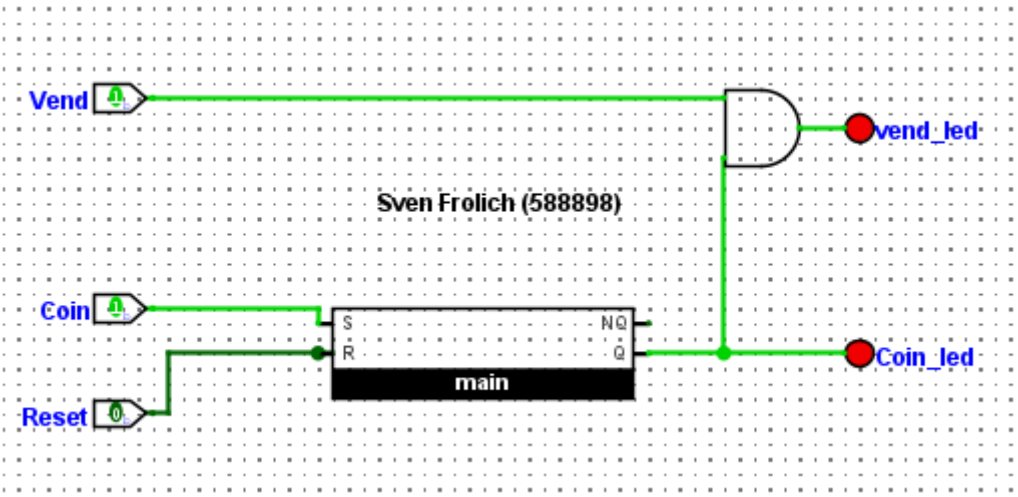
Assignment 2.5: SR Latch

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 = 2;
      if((number & 1)==1) System.out.println("number is odd");
      else System.out.println("number is even");
   }
}
```

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.

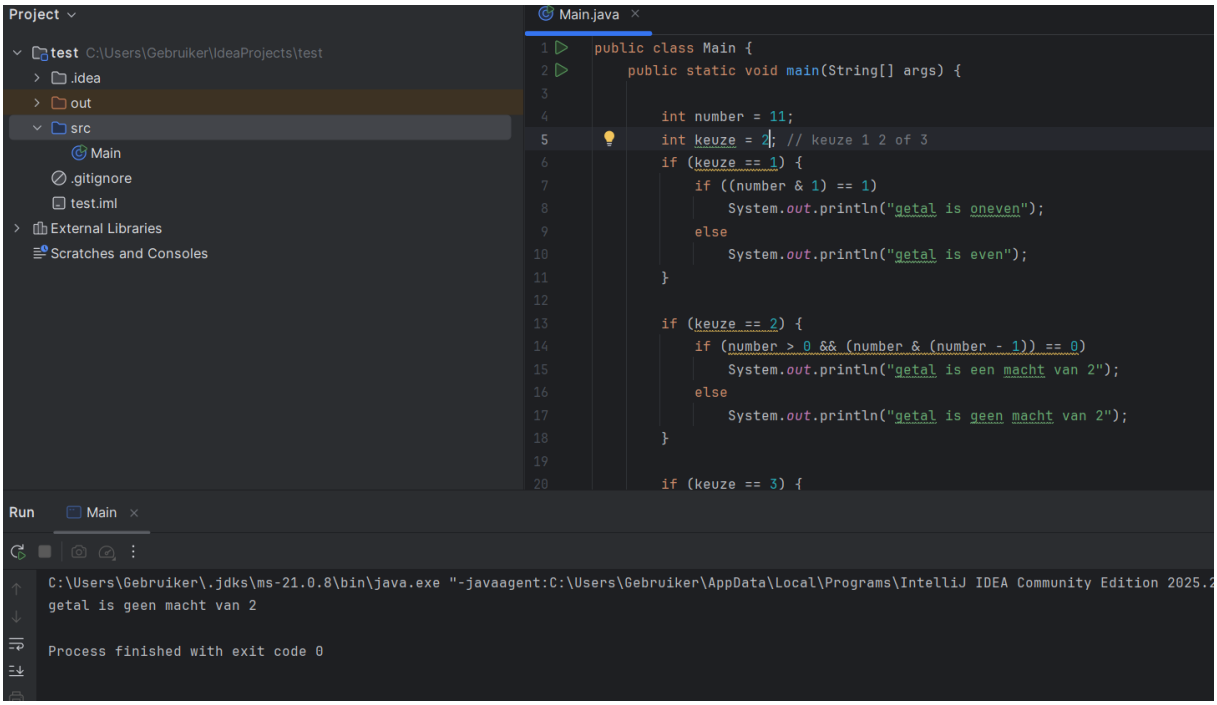
Keep this application because you need to expand it in week 6 for calculating network segments.

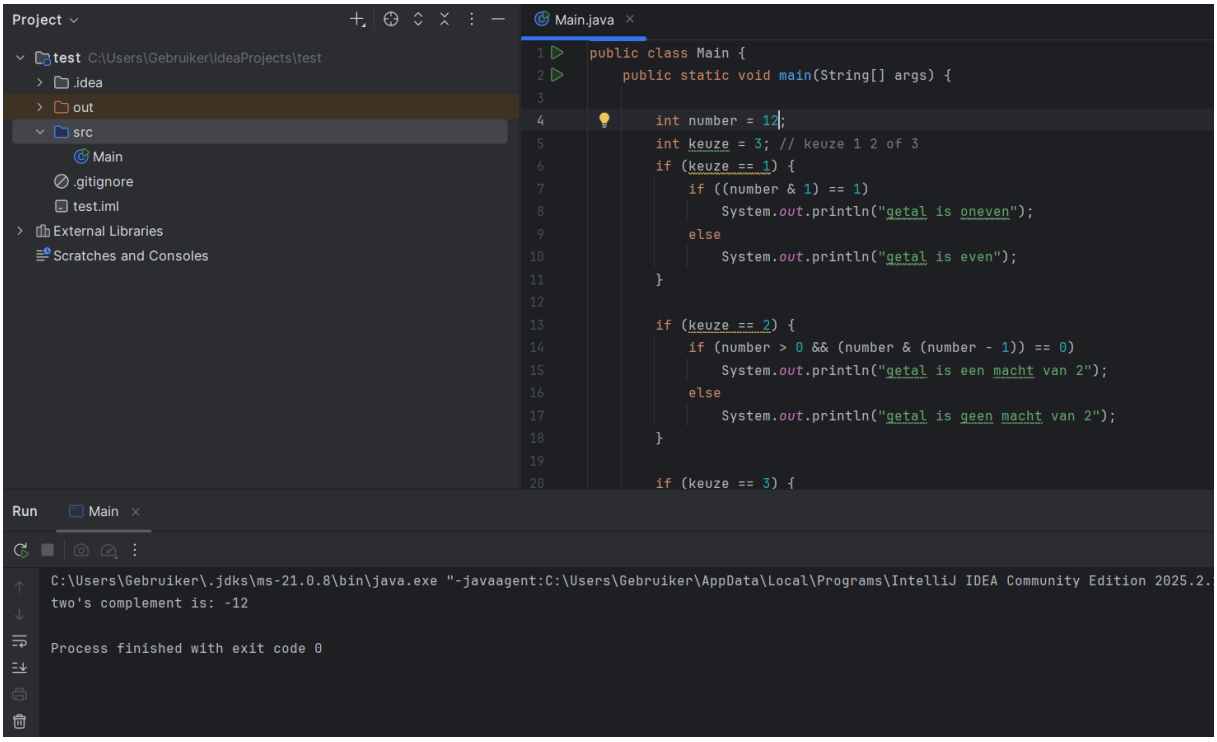
Paste source code here, with a screenshot of a working application.

```
public class Main {
   public static void main(String[] args) {
      int number = 10;
      int keuze = 3; // keuze 1 2 of 3
      if (keuze == 1) {
         if ((number & 1) == 1)
            System.out.println("getal is oneven");
         else
            System.out.println("getal is even");
      }
      if (keuze == 2) {
         if (number > 0 && (number & (number - 1)) == 0)
            System.out.println("getal is een macht van 2");
         else
            System.out.println("getal is geen macht van 2");
      }

      if (keuze == 3) {
         int twos = ~number + 1;
         System.out.println("two's complement is: " + twos);
```

```
        }
    }
}
```


Project
test C:\Users\Gebruiker\IdeaProjects\test
.idea
out
src
Main
.gitignore
test.iml
External Libraries
Scratches and Consoles
Main.java
public class Main {
public static void main(String[] args) {
int number = 11;
int keuze = 2; // keuze 1 2 of 3
if (keuze == 1) {
if ((number & 1) == 1)
System.out.println("getal is oneven");
else
System.out.println("getal is even");
}
if (keuze == 2) {
if (number > 0 && (number & (number - 1)) == 0)
System.out.println("getal is een macht van 2");
else
System.out.println("getal is geen macht van 2");
}
if (keuze == 3) {
Run
Main
C:\Users\Gebruiker\.jdks\ms-21.0.8\bin\java.exe "-javaagent:C:\Users\Gebruiker\AppData\Local\Programs\IntelliJ IDEA Community Edition 2025.2
getal is geen macht van 2
Process finished with exit code 0


Project
test C:\Users\Gebruiker\IdeaProjects\test
.idea
out
src
Main
.gitignore
test.iml
External Libraries
Scratches and Consoles
Main.java
public class Main {
public static void main(String[] args) {
int number = 12;
int keuze = 3; // keuze 1 2 of 3
if (keuze == 1) {
if ((number & 1) == 1)
System.out.println("getal is oneven");
else
System.out.println("getal is even");
}
if (keuze == 2) {
if (number > 0 && (number & (number - 1)) == 0)
System.out.println("getal is een macht van 2");
else
System.out.println("getal is geen macht van 2");
}
if (keuze == 3) {
Run
Main
C:\Users\Gebruiker\.jdks\ms-21.0.8\bin\java.exe "-javaagent:C:\Users\Gebruiker\AppData\Local\Programs\IntelliJ IDEA Community Edition 2025.2.
two's complement is: -12
Process finished with exit code 0

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