Template Week 2 – Logic

Student number: 589531

Assignment 2.1: Parking lot

Which gates do you need?

And gate

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?

Een XOR 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

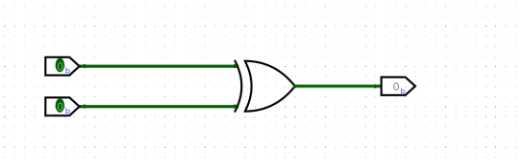
Complete this table

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

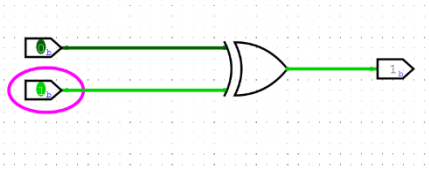
How can the design be simplified?

Door een XOR poort te gebruiken zie mijn demonstatie.

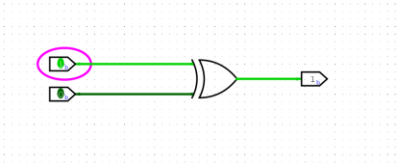
A = 0, B = 0, C = 0



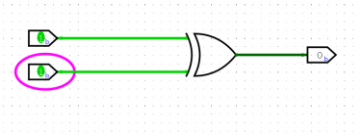
A = 0, B = 1, C=1



A = 1, B = 0, C = 1

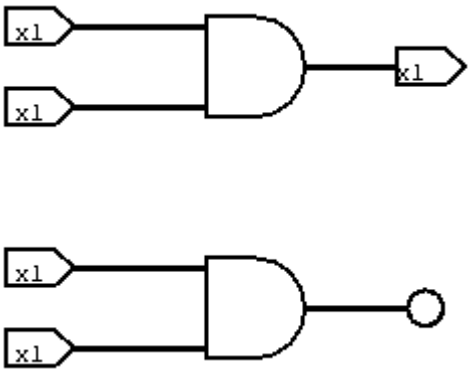


A = 1, B = 1, C = 0



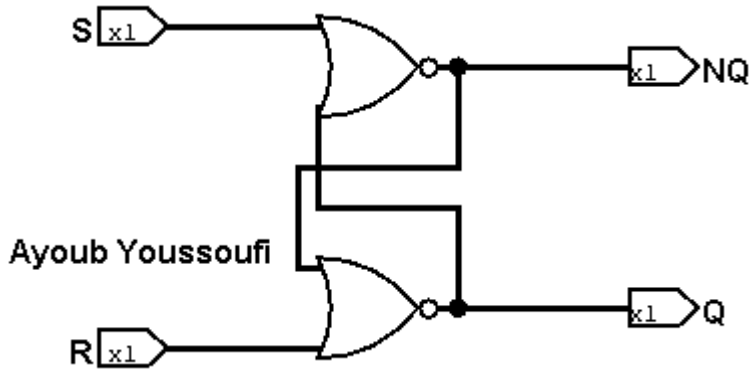
Assignment 2.4: Getting to know Logisim evolution

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



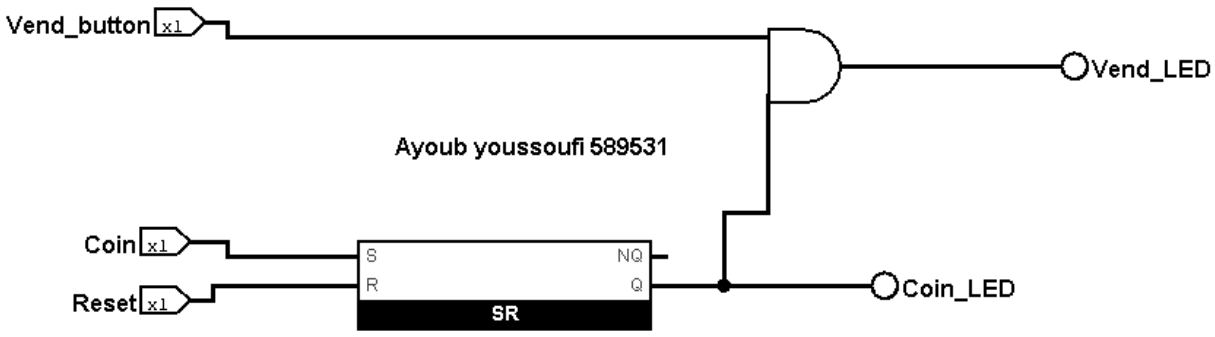
Assignment 2.5: SR Latch

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.

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

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

        int number = 5;

        if ((number & 1) == 1) {
            SaxionApp.printLine( text: "Het getal is oneven");
        } else {
            SaxionApp.printLine( text: "Het getal is even");
        }

    }
}
```

Assignment 2.8: Java Application Bit Calculations

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

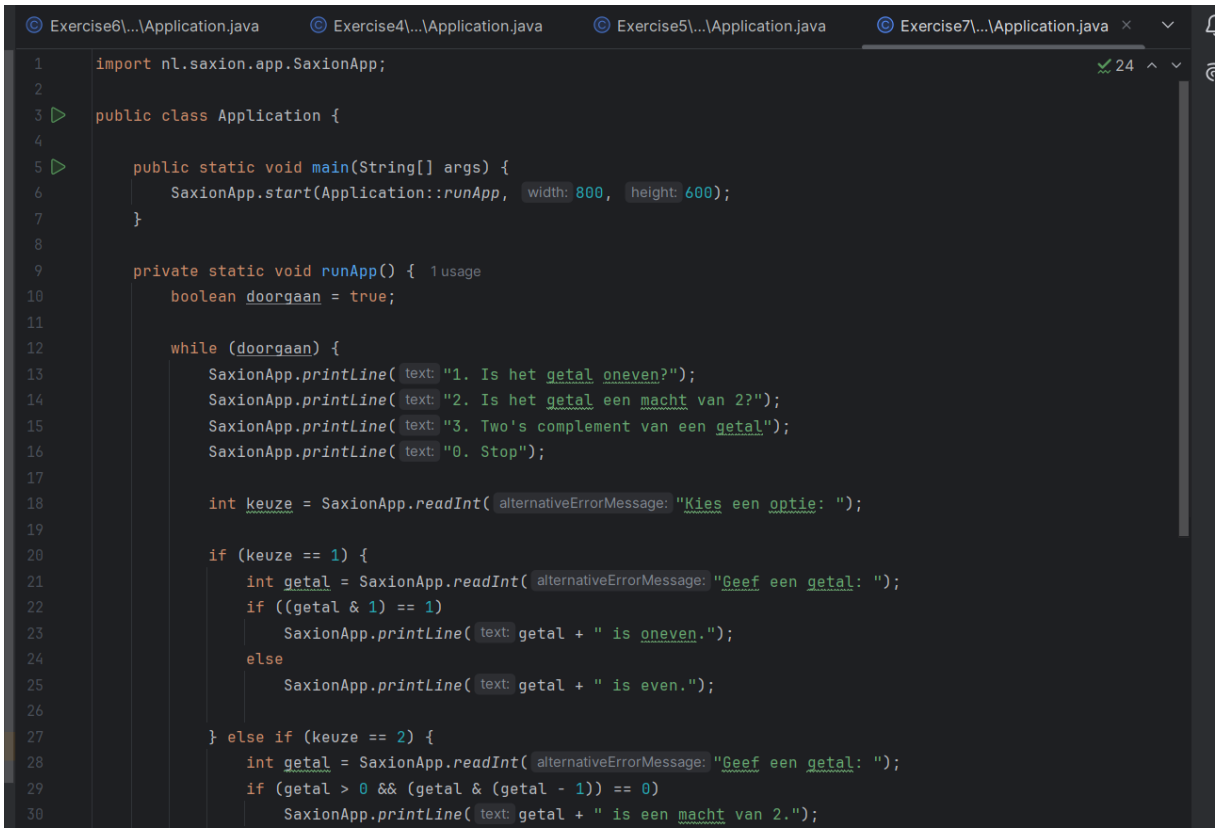
1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?

Implement the methods by using the bitwise operators you have just learned.

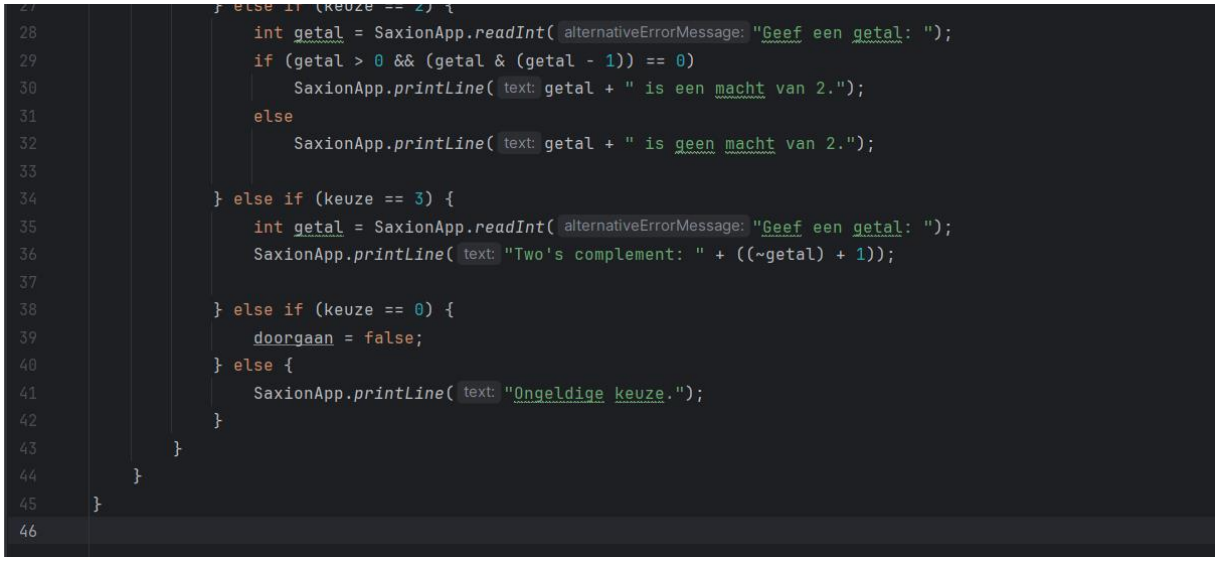
Organize your source code in a readable manner with the use of control flow and methods.

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

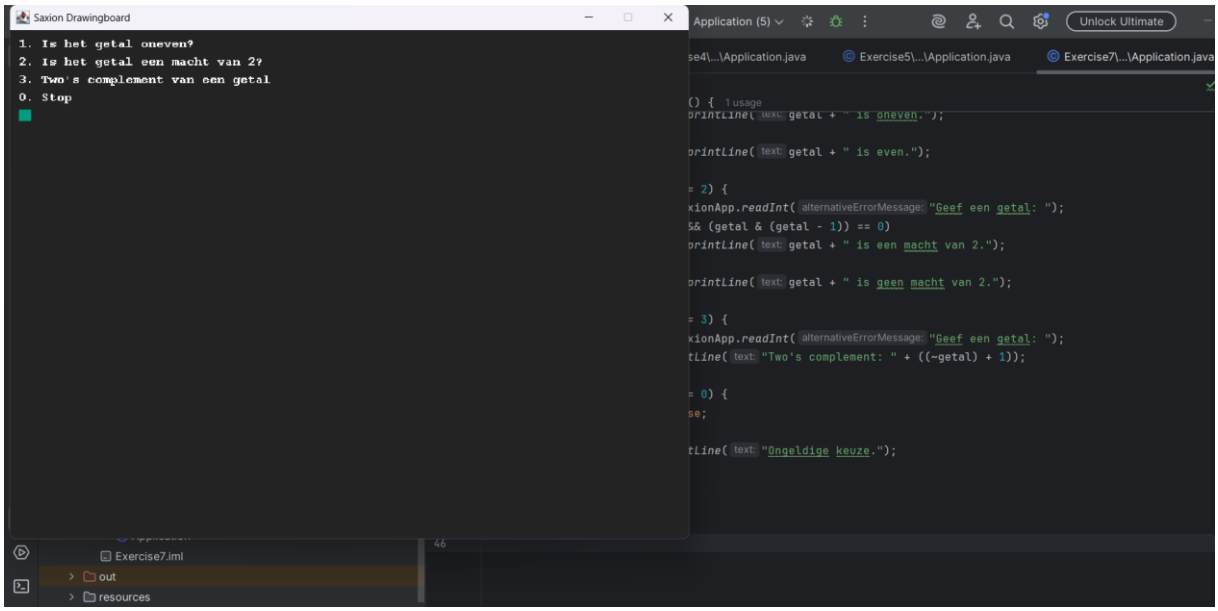
Paste source code here, with a screenshot of a working application.

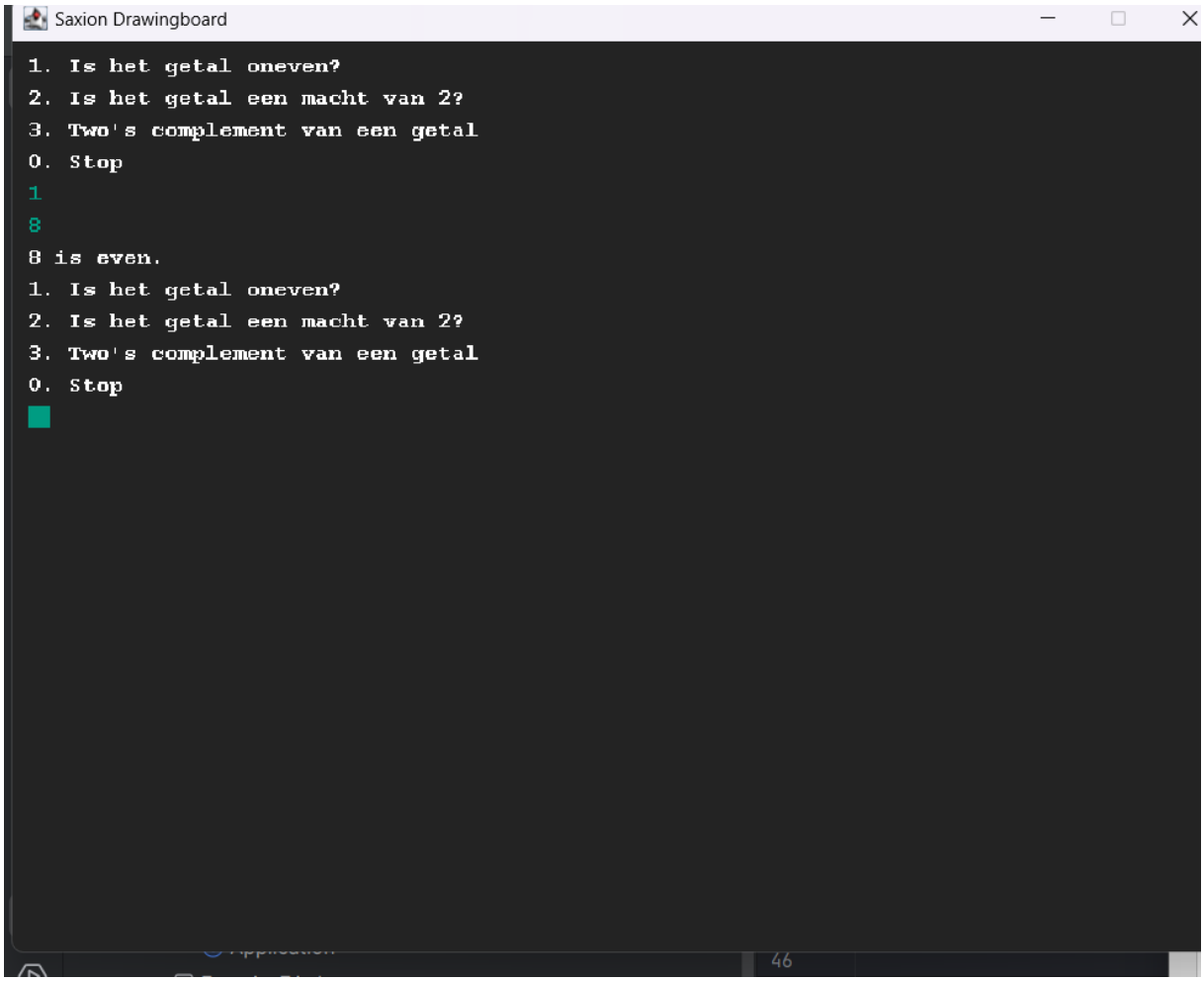


```
Exercise6\...\Application.java  Exercise4\...\Application.java  Exercise5\...\Application.java  Exercise7\...\Application.java

import nl.saxion.app.SaxionApp;                                                    24

public class Application {

    public static void main(String[] args) {
        SaxionApp.start(Application::runApp, width: 800, height: 600);
    }

    private static void runApp() {  1 usage
        boolean doorgaan = true;

        while (doorgaan) {
            SaxionApp.printLine( text: "1. Is het getal oneven?");
            SaxionApp.printLine( text: "2. Is het getal een macht van 2?");
            SaxionApp.printLine( text: "3. Two's complement van een getal");
            SaxionApp.printLine( text: "0. Stop");

            int keuze = SaxionApp.readInt( alternativeErrorMessage: "Kies een optie: ");

            if (keuze == 1) {
                int getal = SaxionApp.readInt( alternativeErrorMessage: "Geef een getal: ");
                if ((getal & 1) == 1)
                    SaxionApp.printLine( text: getal + " is oneven.");
                else
                    SaxionApp.printLine( text: getal + " is even.");

            } else if (keuze == 2) {
                int getal = SaxionApp.readInt( alternativeErrorMessage: "Geef een getal: ");
                if (getal > 0 && (getal & (getal - 1)) == 0)
                    SaxionApp.printLine( text: getal + " is een macht van 2.");
```



```
                int getal = SaxionApp.readInt( alternativeErrorMessage: "Geef een getal: ");
                if (getal > 0 && (getal & (getal - 1)) == 0)
                    SaxionApp.printLine( text: getal + " is een macht van 2.");
                else
                    SaxionApp.printLine( text: getal + " is geen macht van 2.");

            } else if (keuze == 3) {
                int getal = SaxionApp.readInt( alternativeErrorMessage: "Geef een getal: ");
                SaxionApp.printLine( text: "Two's complement: " + ((~getal) + 1));

            } else if (keuze == 0) {
                doorgaan = false;
            } else {
                SaxionApp.printLine( text: "Ongeldige keuze.");
            }
        }
    }
}
```


Saxion Drawingboard
1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Two's complement van een getal
0. Stop
Application (5)
Unlock Ultimate
Exercise7.iml
out
resources


Saxion Drawingboard
1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Two's complement van een getal
0. Stop
1
8
8 is even.
1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Two's complement van een getal
0. Stop

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

public class Application {

    public static void main(String[] args) {
        SaxionApp.start(Application::runApp, 800, 600);
    }

    private static void runApp() {
        boolean doorgaan = true;

        while (doorgaan) {
            SaxionApp.printLine("1. Is het getal oneven?");
            SaxionApp.printLine("2. Is het getal een macht van 2?");
            SaxionApp.printLine("3. Two's complement van een getal");
            SaxionApp.printLine("0. Stop");

            int keuze = SaxionApp.readInt("Kies een optie: ");

            if (keuze == 1) {
                int getal = SaxionApp.readInt("Geef een getal: ");
                if ((getal & 1) == 1)
                    SaxionApp.printLine(getal + " is oneven.");
                else
                    SaxionApp.printLine(getal + " is even.");

            } else if (keuze == 2) {
                int getal = SaxionApp.readInt("Geef een getal: ");
                if (getal > 0 && (getal & (getal - 1)) == 0)
                    SaxionApp.printLine(getal + " is een macht van 2.");
                else
                    SaxionApp.printLine(getal + " is geen macht van 2.");

            } else if (keuze == 3) {
                int getal = SaxionApp.readInt("Geef een getal: ");
                SaxionApp.printLine("Two's complement: " + ((~getal) + 1));

            } else if (keuze == 0) {
                doorgaan = false;
            } else {
                SaxionApp.printLine("Ongeldige keuze.");
            }
        }
    }
}
```

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