

Template Week 2 – Logic

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Assignment 2.1: Parking lot

Which gates do you need?

2 AND poorten. Als al de inputs 1 zijn, zal het resultaat ook 1 zijn. Alle andere inputs geven 0.

Complete this table

Parking lot 1 (P1)	Parking lot 2 (P2)	Parking lot 3 (P3)	Result (full) (F)
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

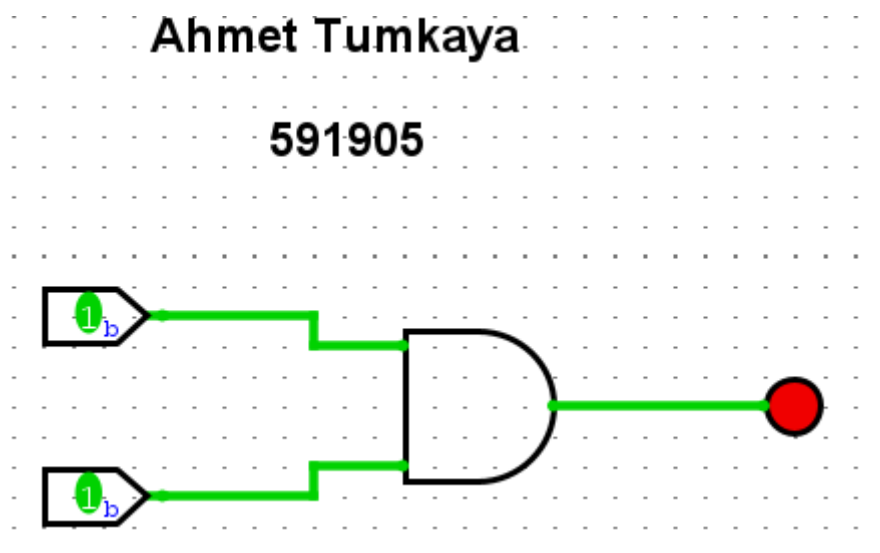
A	B	Q
0	0	0
1	0	1
0	1	1
1	1	0

How can the design be simplified?

Door 1 XOR gate te implementeren

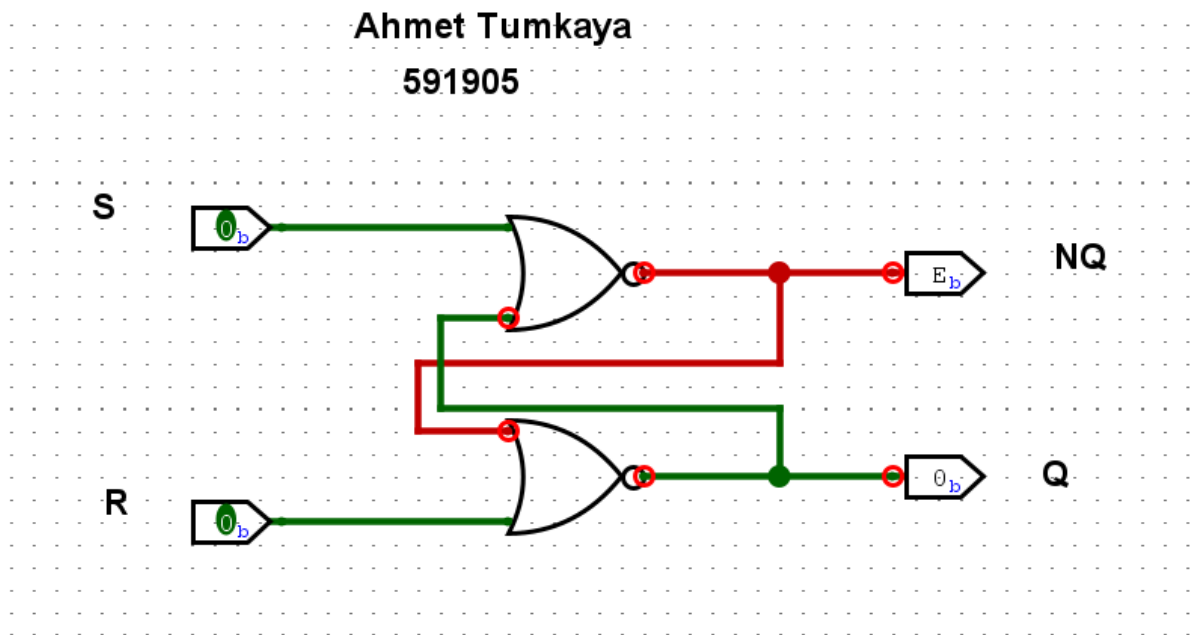
Assignment 2.4: Getting to know Logisim evolution

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



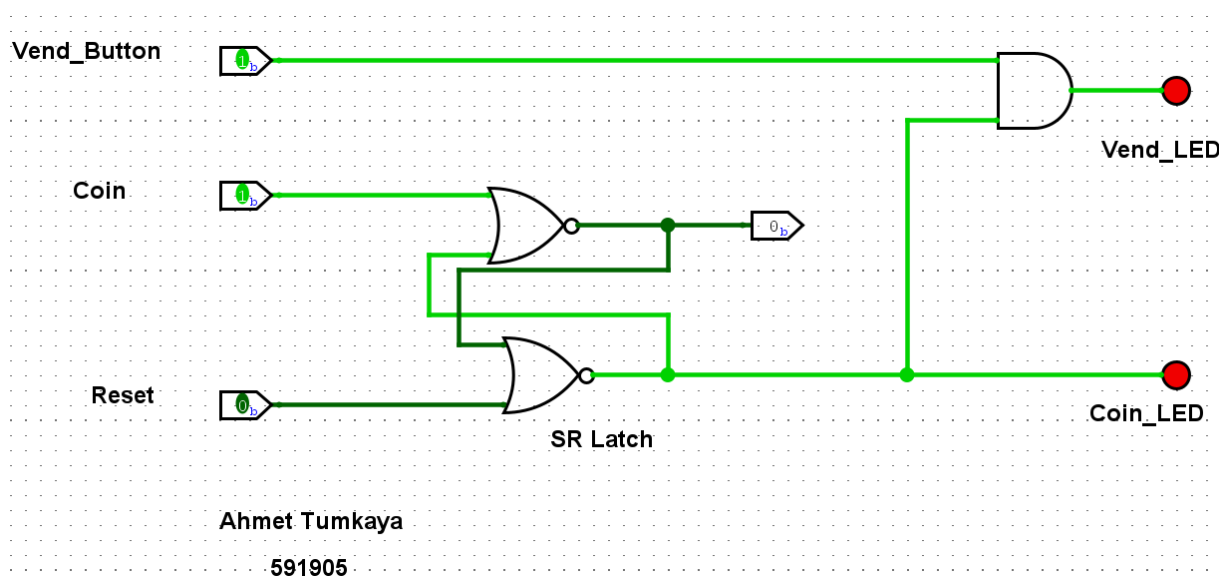
Assignment 2.5: SR Latch

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.

The screenshot shows the W3Schools Tryit Editor interface. The browser tabs include 'Homepage - 1.2 IT Fundamentals', 'ITFundamentals_week2.p...', 'Practical Assignments.pd...', 'W3Schools Tryit Editor', and 'Diagram zonder titel - dr...'. The address bar shows 'w3schools.com/java/tryjava.asp?filename=demo_output'. The editor has a 'Run' button and a 'Result Size: 492 x 530' indicator. The Java code in the editor is:

```
public class Main {  
    public static void main(String[] args) {  
        int number = 5;  
        if((number & 1) == 1)  
            System.out.println("number is odd");  
        else System.out.println("number is even");  
    }  
}
```

The output window on the right displays 'number is odd'. A green button 'Get your own Java server' is visible. On the right sidebar, there are advertisements for 'Python - Global Variables' and 'cool blue MESSCHERPE DEALS'.

The screenshot shows the W3Schools Tryit Editor interface. The browser tabs and address bar are the same as in the previous screenshot. The Java code in the editor is:

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

The output window on the right displays 'number is a power of 2'. The 'Get your own Java server' button is present. The right sidebar shows advertisements for 'Python - Global Variables' and 'cool blue MESSCHERPE DEALS'.

Homepage - 1.2 IT Fundamentals - ITFundamentals_week2 - Practical Assignments.pdf - W3Schools Tryit Editor - Diagram zonder titel - d

w3schools.com/java/tryjava.asp?filename=demo_output

Run > Result Size: 492 x 530 Get your own Java server

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

User has read permissions

Python - Global Variables ...

GLOBAL VARIABLE

Up next

CONTINUE

CHANGE

cool blue

MESSCHERPE DEALS

Sikkle korting.

Nu Gillette scheermesjes en Philips OneBlade voor geen pepermunt.

Homepage - 1.2 IT Fundamentals - ITFundamentals_week2 - Practical Assignments.pdf - W3Schools Tryit Editor - Diagram zonder titel - d

w3schools.com/java/tryjava.asp?filename=demo_output

Run > Result Size: 492 x 530 Get your own Java server

```
public class Main {
    public static void main(String[] args) {
        final int READ = 4;
        final int WRITE = 2;
        final int EXECUTE = 1;

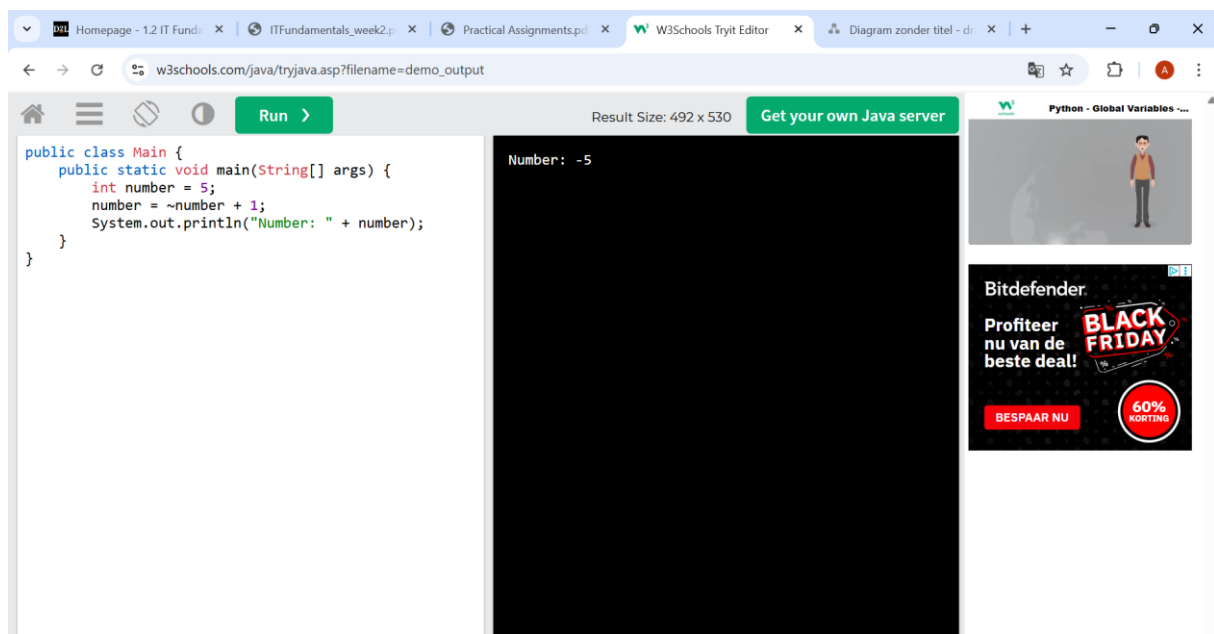
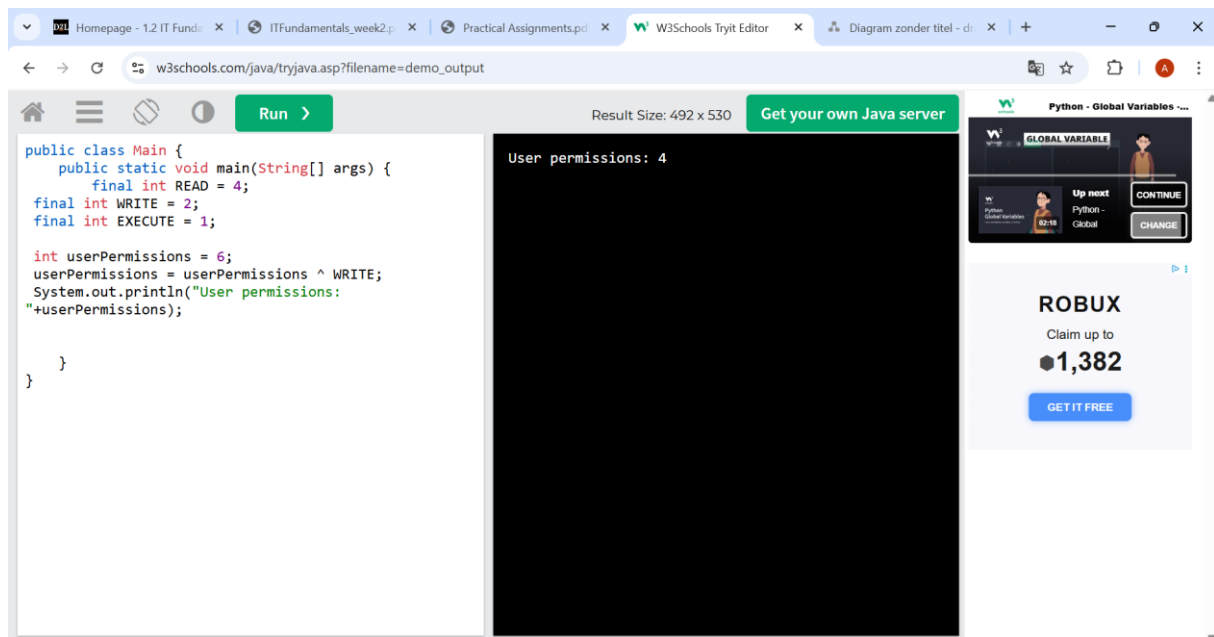
        int userPermissions = READ | EXECUTE;
        System.out.println("User permissions: " + userPermissions);
    }
}
```

User permissions: 5

Python - Global Variables ...

codecademy

Develop yourself



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:

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

public class Application implements Runnable {

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

    public void run() {
        SaxionApp.println("Voer een getal in om te testen:");
        int number = SaxionApp.readInt();
        boolean running = true;

        while (running) {
            SaxionApp.println("");
            SaxionApp.println("MENU (Huidig getal: " + number + ")");
            SaxionApp.println("1. Is het getal oneven?");
            SaxionApp.println("2. Is het getal een macht van 2?");
            SaxionApp.println("3. Twee's complement berekenen?");
            SaxionApp.println("4. Nieuw getal invoeren");
            SaxionApp.println("0. Stoppen");

            SaxionApp.println("Maak uw keuze:");
            int choice = SaxionApp.readInt();

            if (choice == 1) {
                checkIfOdd(number);
            } else if (choice == 2) {
                checkPowerOfTwo(number);
            } else if (choice == 3) {
                calculateTwosComplement(number);
            } else if (choice == 4) {
                SaxionApp.println("Voer een nieuw getal in:");
                number = SaxionApp.readInt();
            } else if (choice == 0) {
                running = false; // Dit stopt de loop
                SaxionApp.println("Programma gestopt.");
            } else {
                SaxionApp.println("Ongeldige keuze, probeer opnieuw.");
            }
        }
    }
}
```

```

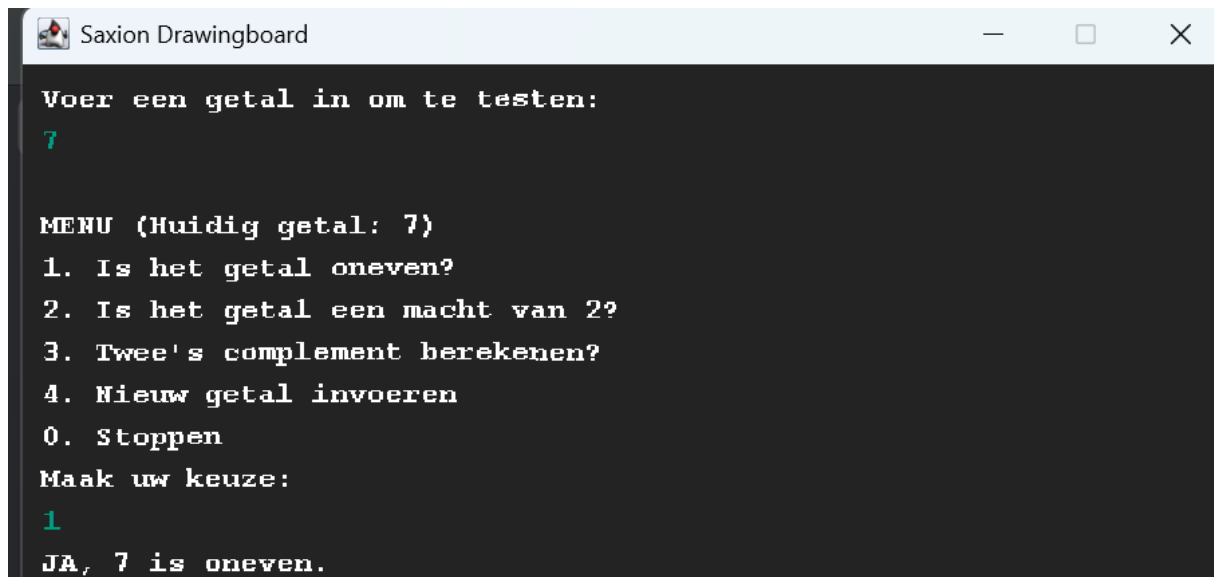
    }
}

public void checkIfOdd(int number) {
    if ((number & 1) == 1) {
        SaxionApp.println("JA, " + number + " is oneven.");
    } else {
        SaxionApp.println("NEE, " + number + " is even.");
    }
}

public void checkPowerOfTwo(int number) {
    if ((number & (number - 1)) == 0) {
        SaxionApp.println("JA, " + number + " is een macht van 2.");
    } else {
        SaxionApp.println("NEE, " + number + " is geen macht van 2.");
    }
}

public void calculateTwosComplement(int number) {
    int result = ~number + 1;
    SaxionApp.println("Het twee's complement is " + result);
}
}

```



The screenshot shows a window titled "Saxion Drawingboard" with a dark background and light-colored text. The text in the window is as follows:

```

Voer een getal in om te testen:
7

MENU (Huidig getal: 7)
1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Twee's complement berekenen?
4. Nieuw getal invoeren
0. Stoppen
Maak uw keuze:
1
JA, 7 is oneven.

```



```
Saxion Drawingboard
Voer een getal in om te testen:
7

MENU (Huidig getal: 7)
1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Twee's complement berekenen?
4. Nieuw getal invoeren
0. Stoppen
Maak uw keuze:
2
NEE, 7 is geen macht van 2.
```

```
Saxion Drawingboard
Voer een getal in om te testen:
7

MENU (Huidig getal: 7)
1. Is het getal oneven?
2. Is het getal een macht van 2?
3. Twee's complement berekenen?
4. Nieuw getal invoeren
0. Stoppen
Maak uw keuze:
3
Het twee's complement is -7
```

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