Template Week 2 – Logic

Student number: 582567

Assignment 2.1: Parking lot

Which gates do you need?

Waarschijnlijk AND-Gate (Zou ook met OR kunnen, maar in dit geval is het denk ik wel AND)

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?

Deze is duidelijk een 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

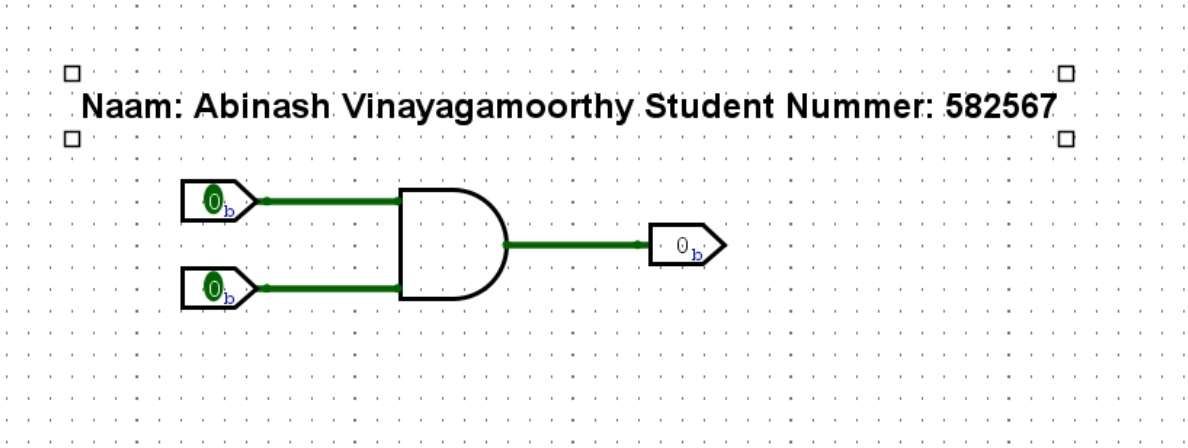
Complete this table

A	B	Q

How can the design be simplified?

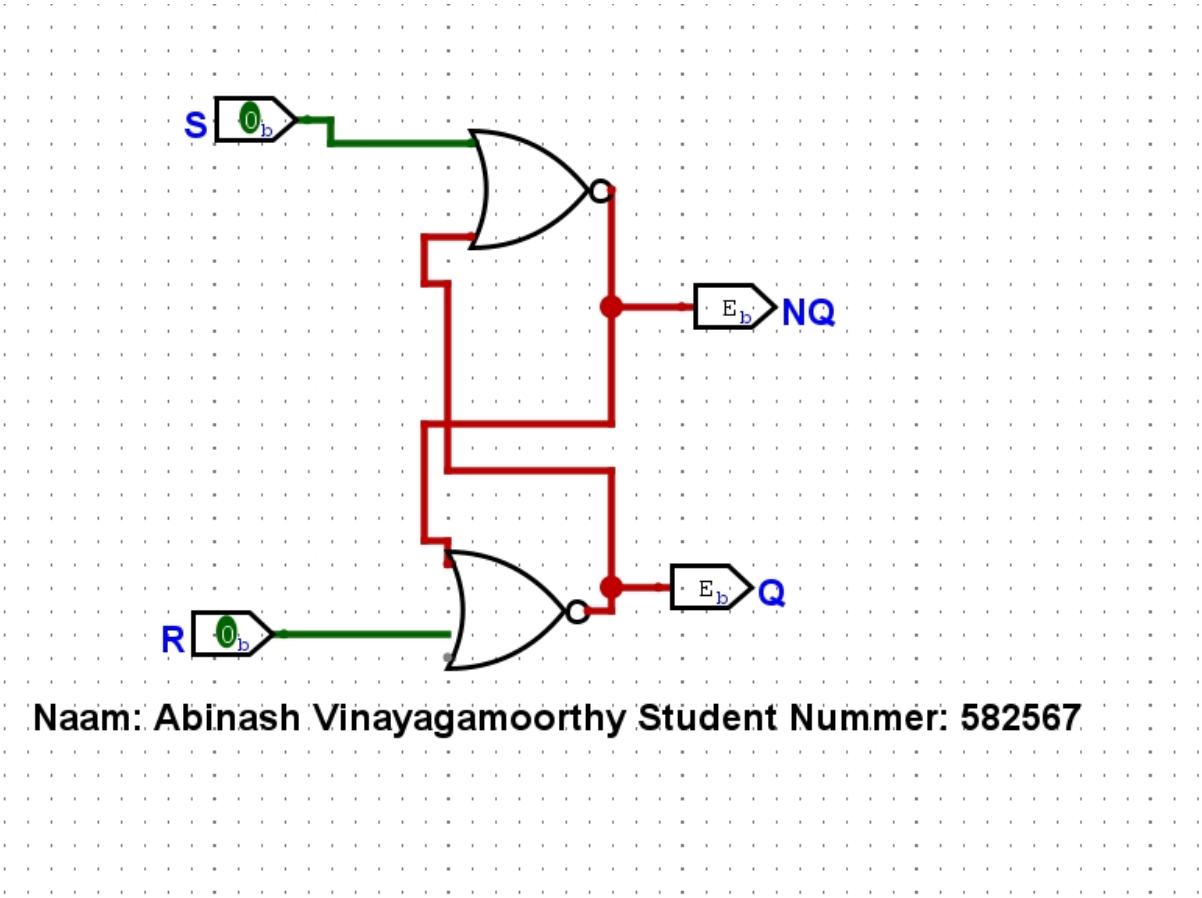
Assignment 2.4: Getting to know Logisim evolution

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



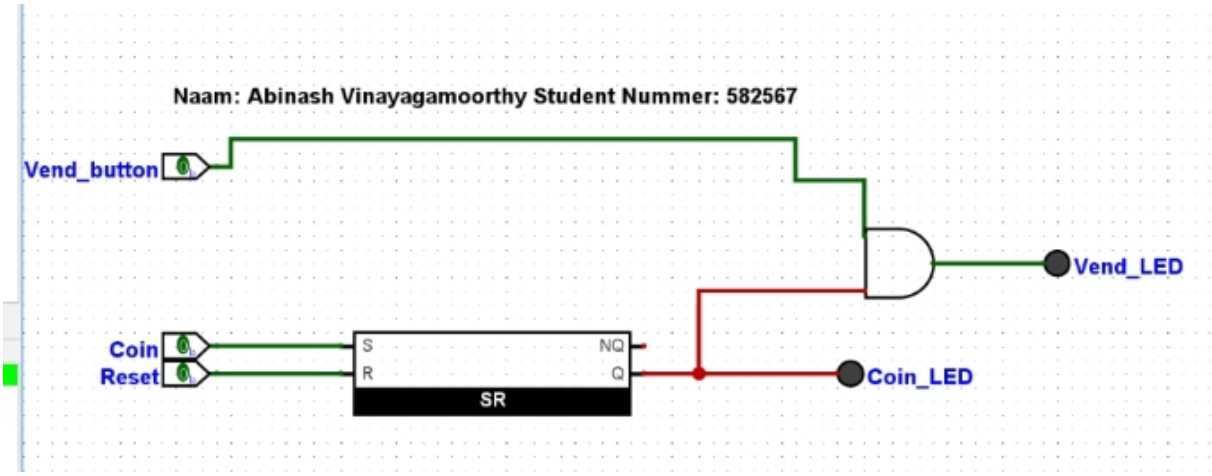
Assignment 2.5: SR Latch

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
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");
        }
    }
}
```

```
5 is odd
```

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.
(Edit: Eerste foto heb ik van Week 6 gepakt, toen ik bezig was met Week 6, keek ik even naar mijn code van deze week en zag dat ik een foutje had gemaakt, maar het principe is volgens mij wel duidelijk neem ik aan, toch?)

```java
import java.util.Scanner;

public class Main {

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Typ een getal in: ");
        int number = scanner.nextInt();

        System.out.println("De waarde in binaire code: " + Integer.toBinaryString(number));

        System.out.println("\nKies een van de opties hieronder, om door te gaan.");
        System.out.println("1. Is het getal oneven?");
        System.out.println("2. Is het nummer een macht van 2?");
        System.out.println("3. 2-complement van uw getal?");
        System.out.println("\n4. Bereken netwerksegment (Dit hoort bij week 6 trouwens.)");
        System.out.print("Uw keuze: ");
        int choice = scanner.nextInt();
```

```
System.out.println(" ");
System.out.println("Aan het laden...");

switch (choice) {
    case 1:
        checkIfOdd(number);
        break;
    case 2:
        checkIfPowerOfTwo(number);
        break;
    case 3:
        calculateTwosComplement(number);
        break;
    case 4:
        calculateNetworkSegment(scanner);
        break;
    default:
        System.out.println("Keuze is ongeldig, start het programma opnieuw op.");
```

```
    }

    scanner.close();
}

public static void checkIfOdd(int n) {  1 usage
    if ((n & 1) != 0) {
        System.out.println(n + " is Oneven!");
    } else {
        System.out.println(n + " is Even!");
    }
}
```

```
public static void checkIfPowerOfTwo(int n) {  1 usage
    if (n > 0 && (n & (n - 1)) == 0) {
        System.out.println(n + " is een macht van 2!");
    } else {
        System.out.println(n + " is niet een macht van 2!");
    }
}

public static void calculateTwosComplement(int n) {  1 usage
    int result = ~n + 1;
    System.out.println("Het 2-complement van het getal " + n + " is: " + result);
}
```

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