

# Template Week 2 – Logic

Student number: 563064

## Assignment 2.1: Parking lot

Which gates do you need?

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
0	1	0	0
0	0	1	0
1	1	0	0
1	1	1	1

## Assignment 2.2: Android/iPhone

Which gates do you need?

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	1	1
0	1	1
1	1	0

How can the design be simplified?

Just use 1 XOR

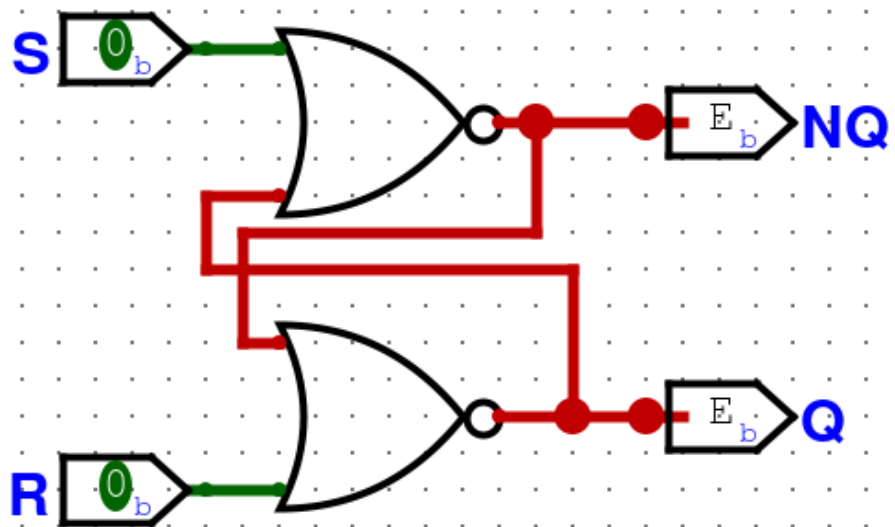
### Assignment 2.4: Getting to know Logisim evolution

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:

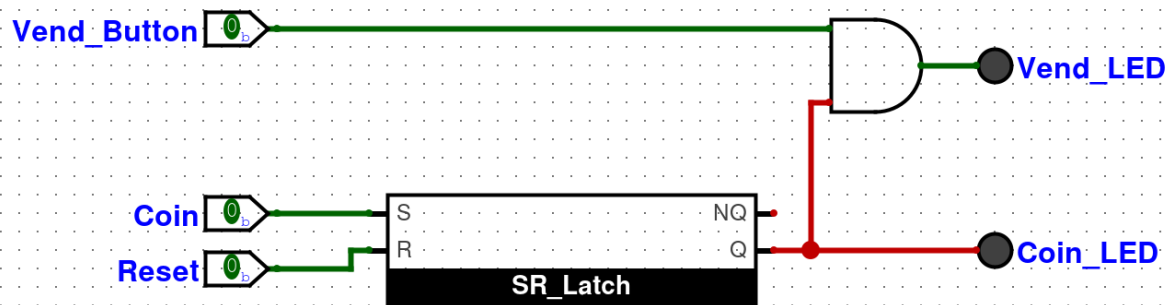
**Artur Kapustin 563064**



### Assignment 2.6: Vending Machine

Screenshot Vending Machine in Logisim with your name and student number:

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### Bonus point assignment – week 2

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.

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

```
37     private static void printIfNumberIsPower(int number) { 1
38         if (((number & number - 1) == 0)) System.out.println(
39             else System.out.println("number isn't a power of 2");
40     }
41 }

Main x
Enter number:
14
1. Is number Odd?
2. Is number a power of 2?
3. Two's complement of number?
Enter option from the menu:
1
number is even
```

<https://pastebin.com/NANSXqmV>

```
import java.util.Scanner;
```

```
public class Main {
    public static void main(String[] args) {
        new Main().run();
    }
}
```

```
public void run() {
    Scanner scanner = new Scanner(System.in);

    System.out.println("Enter number:");

    int number = scanner.nextInt();

    System.out.println("1. Is number Odd?");
    System.out.println("2. Is number a power of 2?");
    System.out.println("3. Two's complement of number?");

    System.out.println("Enter option from the menu: ");
    int option = scanner.nextInt();
}
```

```

switch (option) {
    case 1:
        printIfNumberIsOdd(number);
        break;
    case 2:
        printIfNumberIsPower(number);
        break;
    case 3:
        printTwosComplementOfNumber(number);
        break;
}
}

private static void printTwosComplementOfNumber(int number) {
    System.out.println(~number + 1);
}

private static void printIfNumberIsPower(int number) {
    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");
}

private static void printIfNumberIsOdd(int number) {
    if ((number & 1) == 1) System.out.println("number is odd");
    else System.out.println("number is even");
}
}

```

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