

Template Week 2 – Logic

Student number:

563790

Assignment 2.1: Parking lot

Which gates do you need?

The only logic gate we need is an 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
1	0	0	0
1	1	0	0
1	0	1	0
0	1	1	0
1	1	1	1

Assignment 2.2: Android/iPhone

Which gates do you need?

The only logic gate we need is a XOR gate

Complete this table

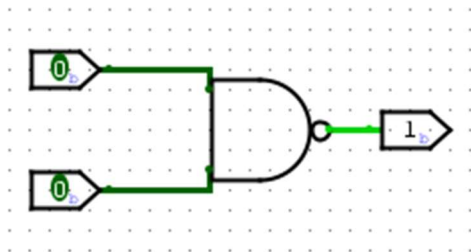
Android phone	iPhone	Result (Phone in possession)
0	0	0
1	0	1
0	1	1
1	1	0

Assignment 2.3: Four NAND gates

Complete this table

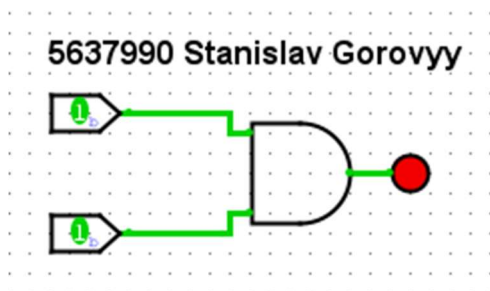
A	B	Q
0	0	0
1	0	1
0	1	1
1	1	0

How can the design be simplified?



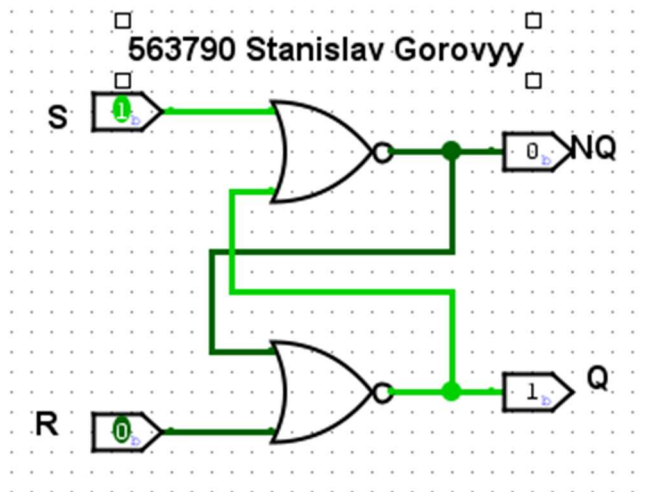
Assignment 2.4: Getting to know Logisim evolution

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



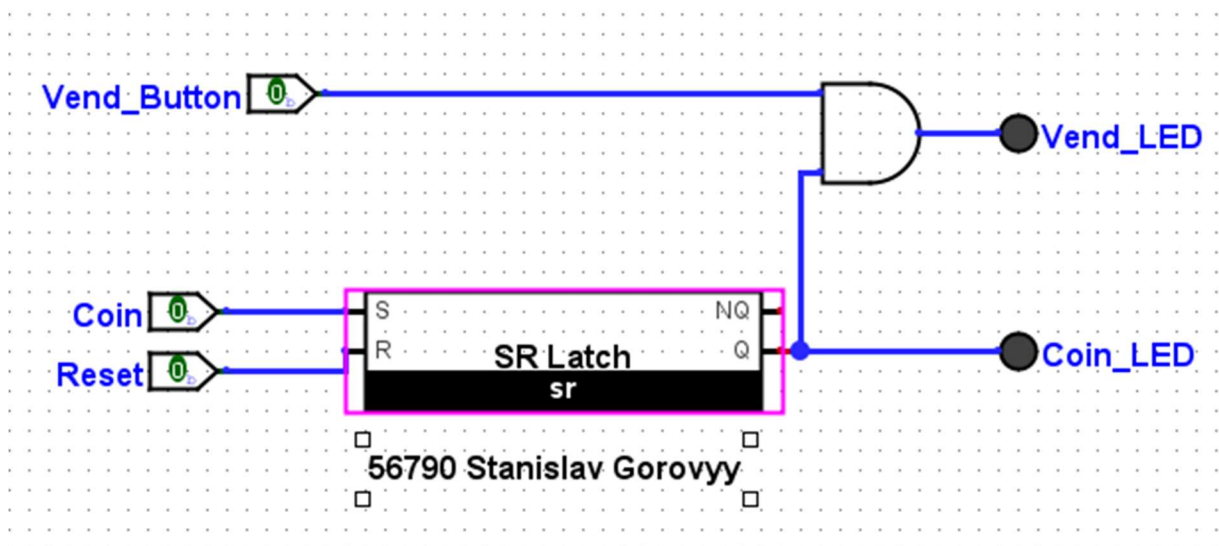
Assignment 2.5: SR Latch

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:



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?

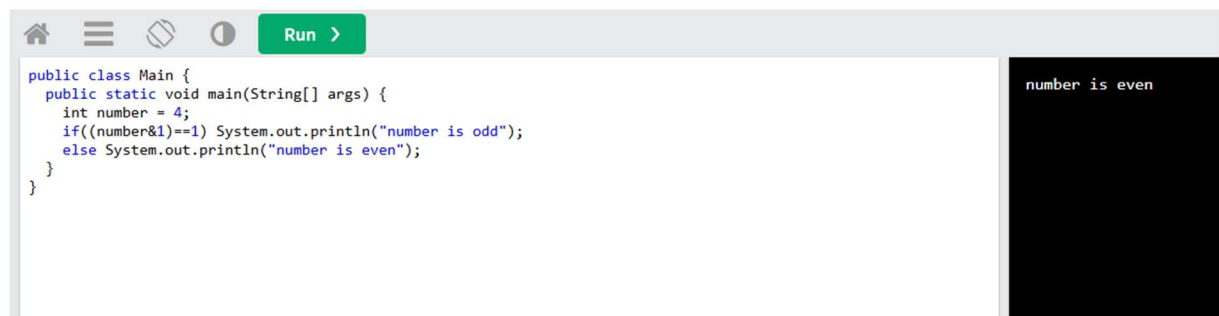
Implement the methods by using the bitwise operators you have just learned.

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.

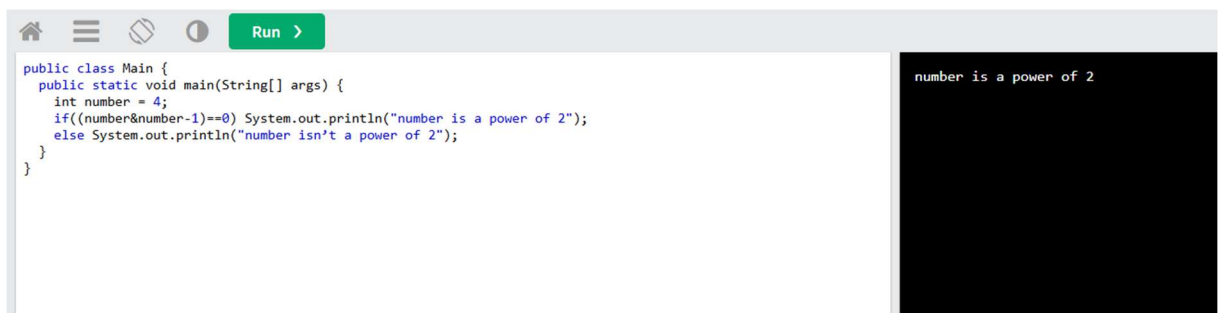
1.

```
public class Main {  
    public static void main(String[] args) {  
        int number = 4;  
        if((number&1)==1) System.out.println("number is odd");  
        else System.out.println("number is even");  
    }  
}
```



2.

```
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");  
    }  
}
```



```
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");
    }
}
```

number is a power of 2

3.

```
public class Main {

    public static void main(String[] args) {

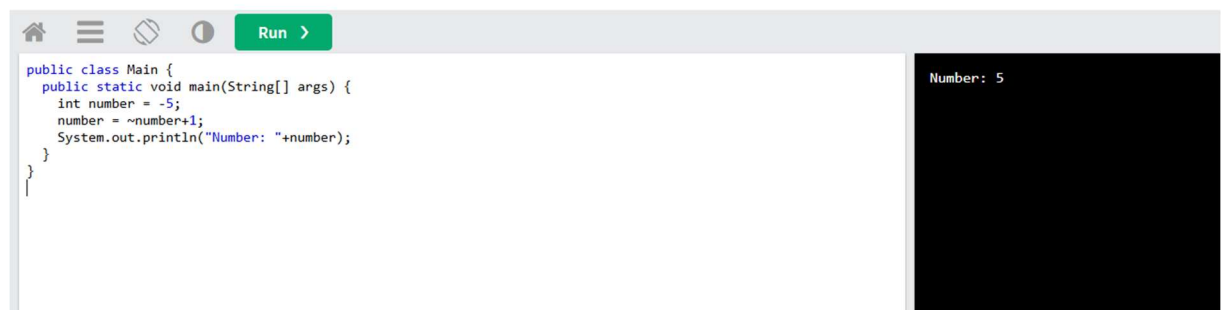
        int number = -5;

        number = ~number+1;

        System.out.println("Number: "+number);

    }

}
```



```
public class Main {
    public static void main(String[] args) {
        int number = -5;
        number = ~number+1;
        System.out.println("Number: "+number);
    }
}
```

Number: 5

BONUS

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