

Week 2 – Logic

Student number: 578776

Assignment 2.1: Parking lot

Which gates do you need?

and

Complete this table

Parking lot 1	Parking lot 2	Parking lot 3	Result (full)
0	0	0	1
0	0	1	1
0	1	0	1
1	0	0	1
1	1	0	1
1	0	1	1
0	1	1	1
1	1	1	0

Assignment 2.2: Android or iPhone

Which gates do you need?

OR

Complete this table

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

Assignment 2.3: Four NAND gates

Complete this table

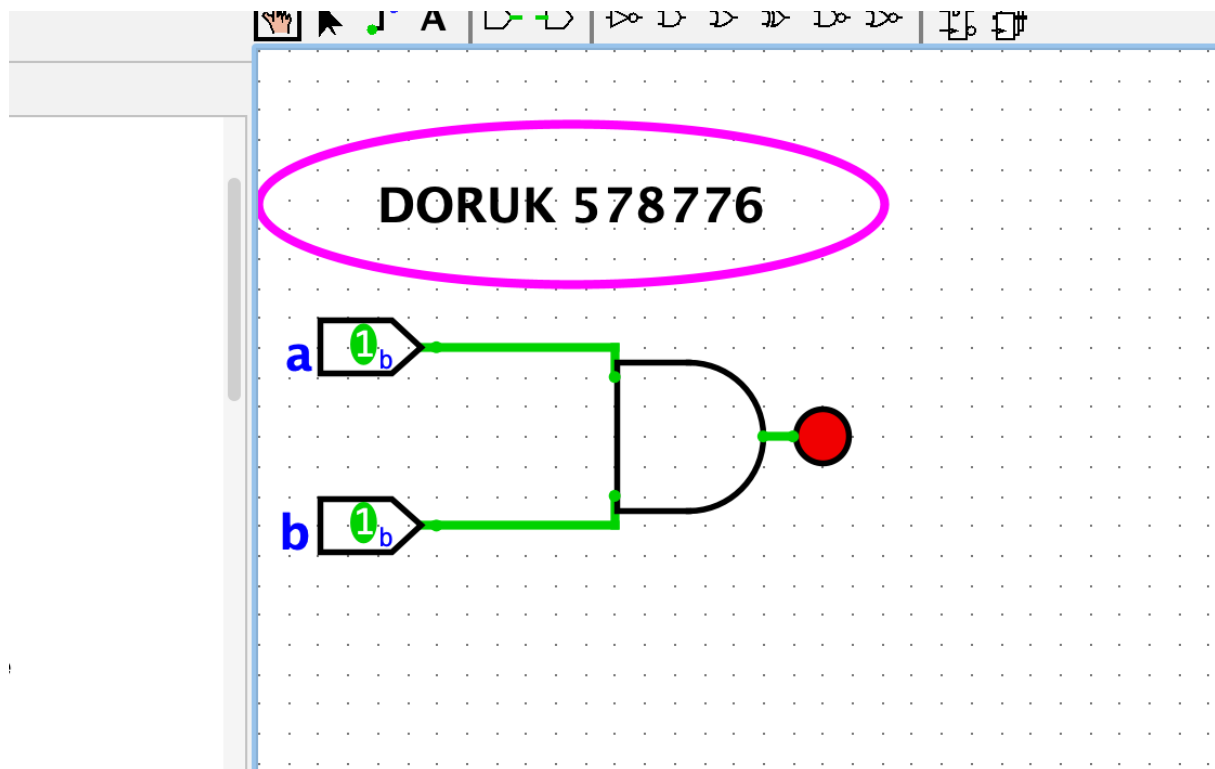
A	B	Q
1	1	1
1	0	0
0	1	0
0	0	0

How can the design be simplified?

Just 1 and

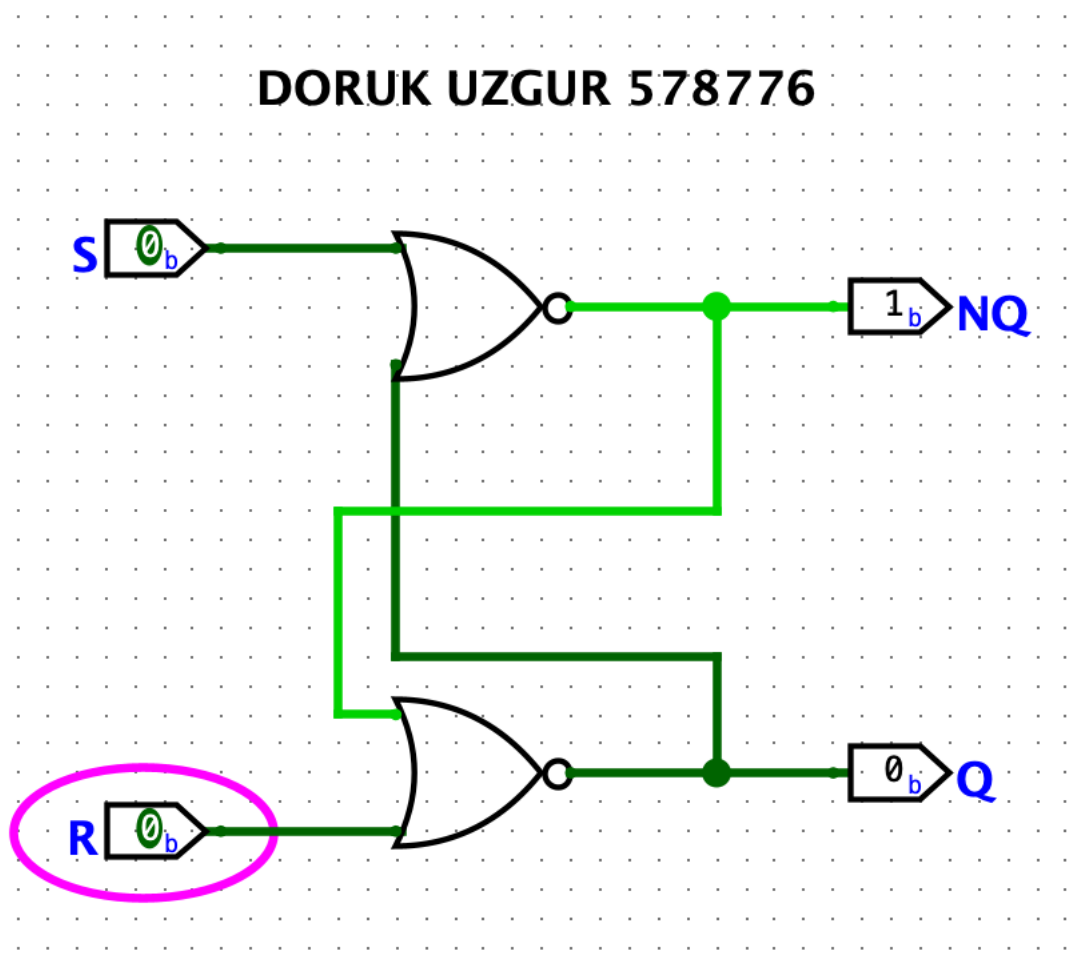
Assignment 2.4: Getting to know Logisim evolution

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



Assignment 2.5: SR Latch

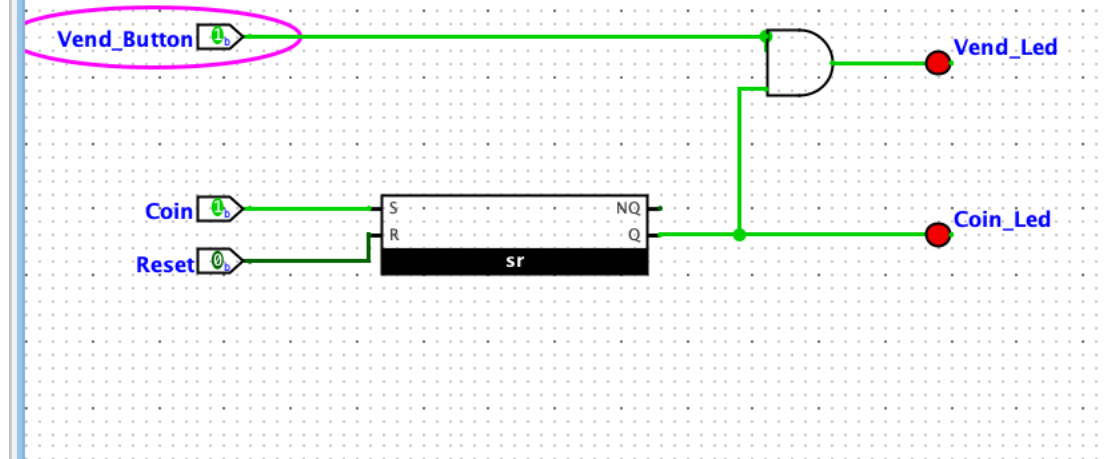
Screenshot SR Latch in Logisim with your name and student number:



Assignment 2.6: Vending Machine

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

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Assignment 2.7: Bitwise operators

Complete the java source code for bitwise operators. Put the source code here.

```
public class Main {  
    public static void main(String[] args) {  
        int number = 6;  
        if((number & 1)==1) System.out.println("number is odd");  
        else System.out.println("number 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.

```
import java.util.Scanner;

void main() {
    Scanner scanner = new Scanner(System.in);
    int number = scanner.nextInt();

    isNumberPowerOf2(number);
    isNumberOdd(number);
    twoComplementOfNumber(number);
}

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

public static void isNumberPowerOf2(int number) {
    if (((number & 1) == 0 && (number & 2) == 0 && (number & 3) == 0))
        System.out.println("number is a power of 2");
    else System.out.println("number isn't a power of 2");
}

public static void twoComplementOfNumber(int number) {
    System.out.println("Two's complement: " + ((~number) + 1));
}

8
number is a power of 2
number is even
Two's complement: -8
```

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

