Template Week 2 – Logic

Student number: 568524

Assignment 2.1: Parking lot Which

gates do you need?

AND gates with 3 inputs.

Complete this table

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

XOR gate because we only need one of the statements to be true. Each employee can only choose on brand of phone.
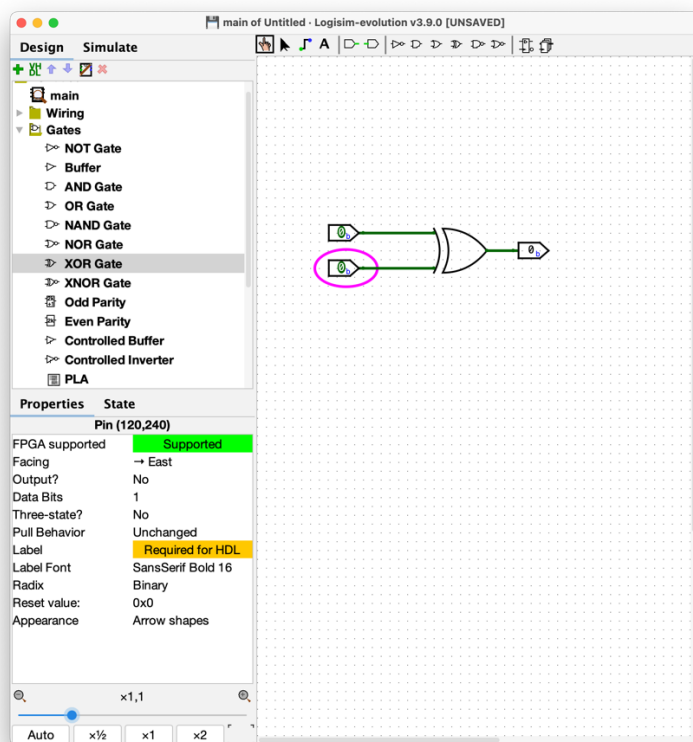
Complete this table

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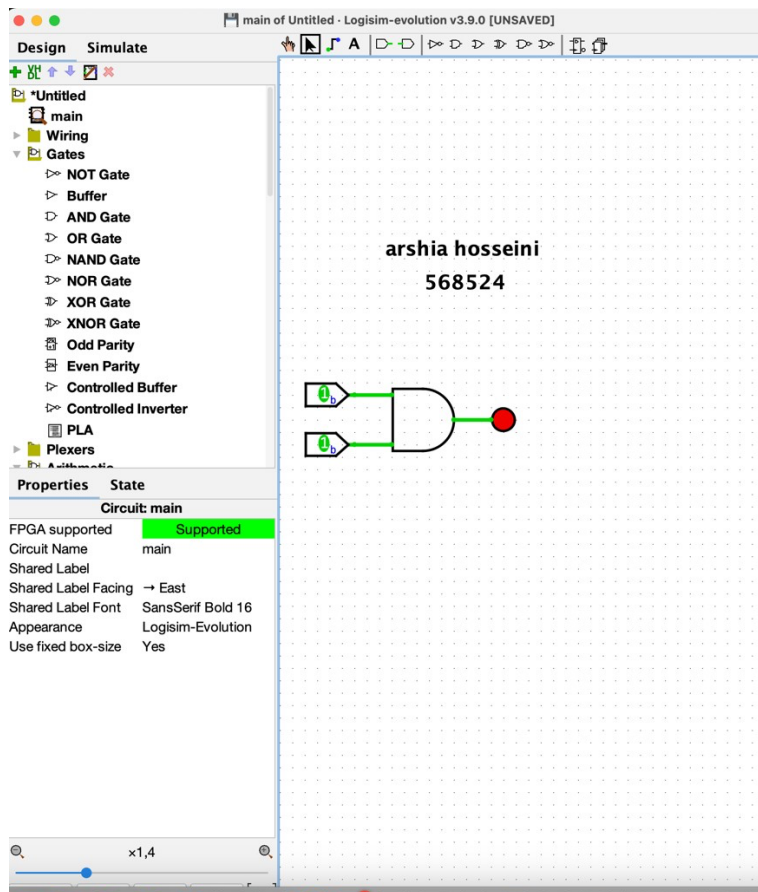
A	B	Q
1	1	0
1	0	1
0	1	1
0	0	0

How can the design be simplified? The table is illustraSng XOR truth table so the simplified version will look like this:
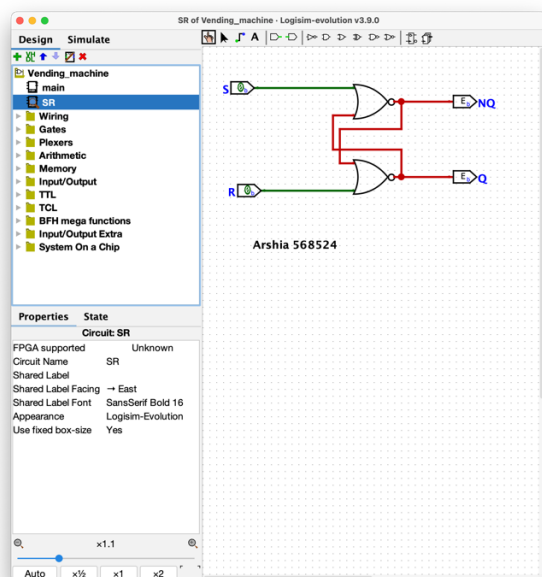

Assignment 2.4: GeDng to know Logisim evoluHon

Screenshot of the design with your name and student number in it:
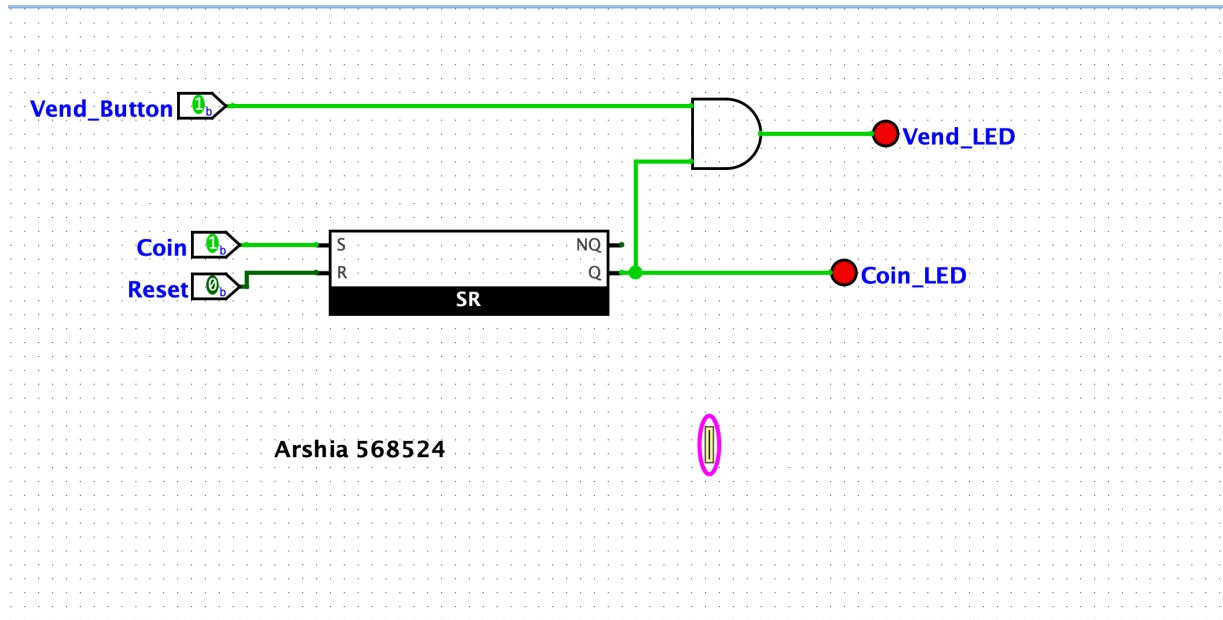
Assignment 2.5: SR Latch

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 opSons.

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 applicaSon.

```java
public class Application implements Runnable {
    public void run() {
        SaxionApp.print("please enter a number :");
        int input = SaxionApp.readInt();
        while (true){
            SaxionApp.printLine( text: "1.Is number odd?");
            SaxionApp.printLine( text: "2.Is number a power of two ?");
            SaxionApp.printLine( text: "3.two's complement of number ?");
            SaxionApp.printLine();
            int menuChoice=SaxionApp.readInt();
            switch (menuChoice){
                case 1 :
                    SaxionApp.printLine(IsnumberOdd(input));
                    SaxionApp.printLine();
                    break;
                case 2 :
                    SaxionApp.printLine(IsnumberPowerOfTwo(input));
                    SaxionApp.printLine();
                    break;
                case 3 :
                    SaxionApp.printLine(Two_complement_of_number(input));
                    SaxionApp.printLine();
                    break;
            }
        }
    }

    private int Two_complement_of_number(int input) { return ~input+1; }
    private String IsnumberPowerOfTwo(int input) { 1 usage
        String result;
        if((input&input-1)==0 && input>0){
            result= "the number is a power of two";
        }
        else{
            result= "the number is not  a power of two";
        }
        return result;
    }
    private String IsnumberOdd(int input) { 1 usage
        String result;
        if((input&1)==1){
            return"The number is odd";
        }
        else{
            return"The number is even";
```

Saxion Drawingboard

```
please enter a number :8
1.Is number odd?
2.Is number a power of two ?
3.two's complement of number ?

1
The number is even

1.Is number odd?
2.Is number a power of two ?
3.two's complement of number ?

2
the number is a power of two

1.Is number odd?
2.Is number a power of two ?
3.two's complement of number ?

3
-8

1.Is number odd?
2.Is number a power of two ?
3.two's complement of number ?

```

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