Template Week 2 – Logic

Student number:570350

Assignment 2.1: Parking lot

Which gates do you need?

We need 2 AND gates.

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

Assignment 2.2: Android/iPhone

Which gates do you need?

We need to use 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

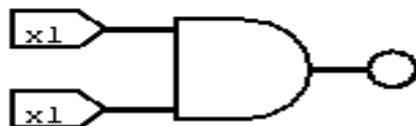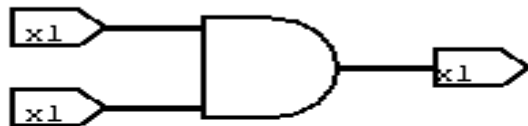| A	B	Q
0	0	0
1	0	1
0	1	1
1	1	0

How can the design be simplified?

Assignment 2.4: Getting to know Logisim evolution

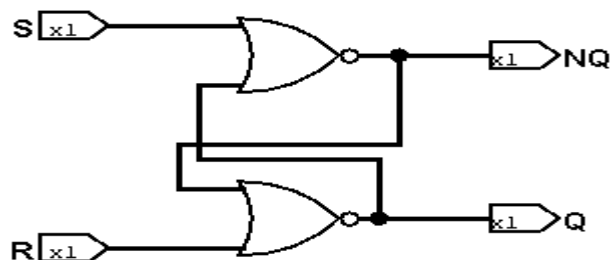Screenshot of the design with your name and student number in it:

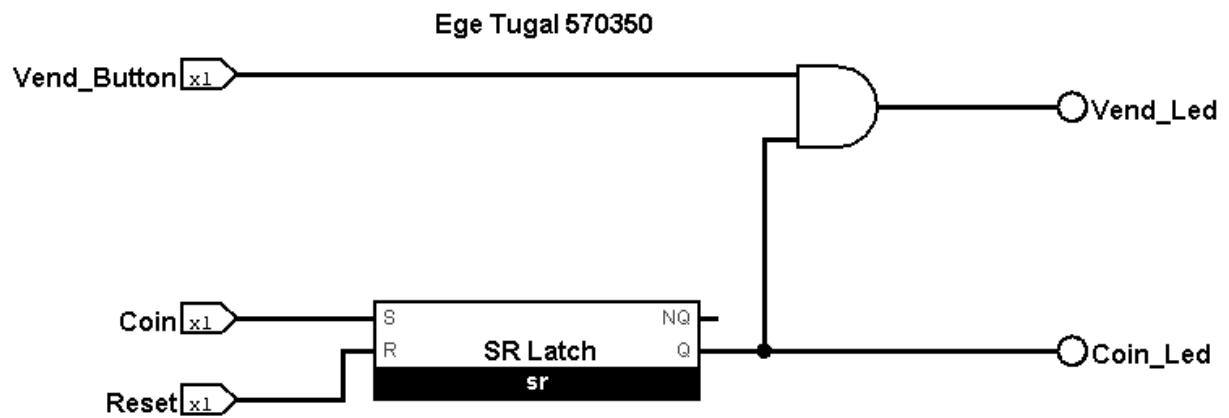Ege Tugal 570350

Assignment 2.5: SR Latch

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

Ege Tugal 570350

Assignment 2.6: Vending Machine

Screenshot Vending Machine in Logisim with your name and student number:
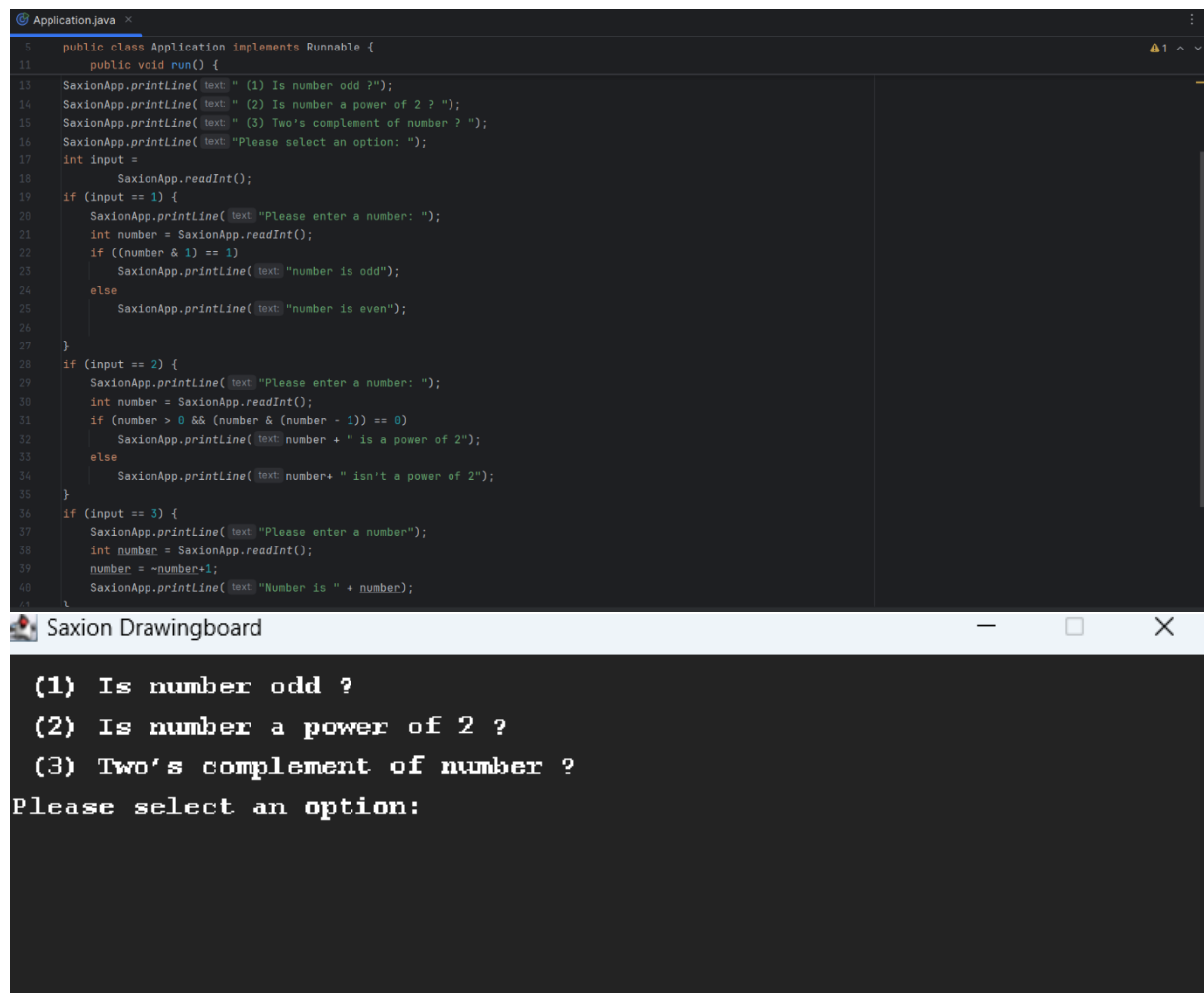
Bonus point assignment – week 2

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.

```java
public class Application implements Runnable {
    public void run() {
        SaxionApp.printLine( text: " (1) Is number odd ?");
        SaxionApp.printLine( text: " (2) Is number a power of 2 ? ");
        SaxionApp.printLine( text: " (3) Two's complement of number ? ");
        SaxionApp.printLine( text: "Please select an option: ");
        int input =
            SaxionApp.readInt();
        if (input == 1) {
            SaxionApp.printLine( text: "Please enter a number: ");
            int number = SaxionApp.readInt();
            if ((number & 1) == 1)
                SaxionApp.printLine( text: "number is odd");
            else
                SaxionApp.printLine( text: "number is even");

        }
        if (input == 2) {
            SaxionApp.printLine( text: "Please enter a number: ");
            int number = SaxionApp.readInt();
            if (number > 0 && (number & (number - 1)) == 0)
                SaxionApp.printLine( text: number + " is a power of 2");
            else
                SaxionApp.printLine( text: number+ " isn't a power of 2");
        }
        if (input == 3) {
            SaxionApp.printLine( text: "Please enter a number");
            int number = SaxionApp.readInt();
            number = ~number+1;
            SaxionApp.printLine( text: "Number is " + number);
```
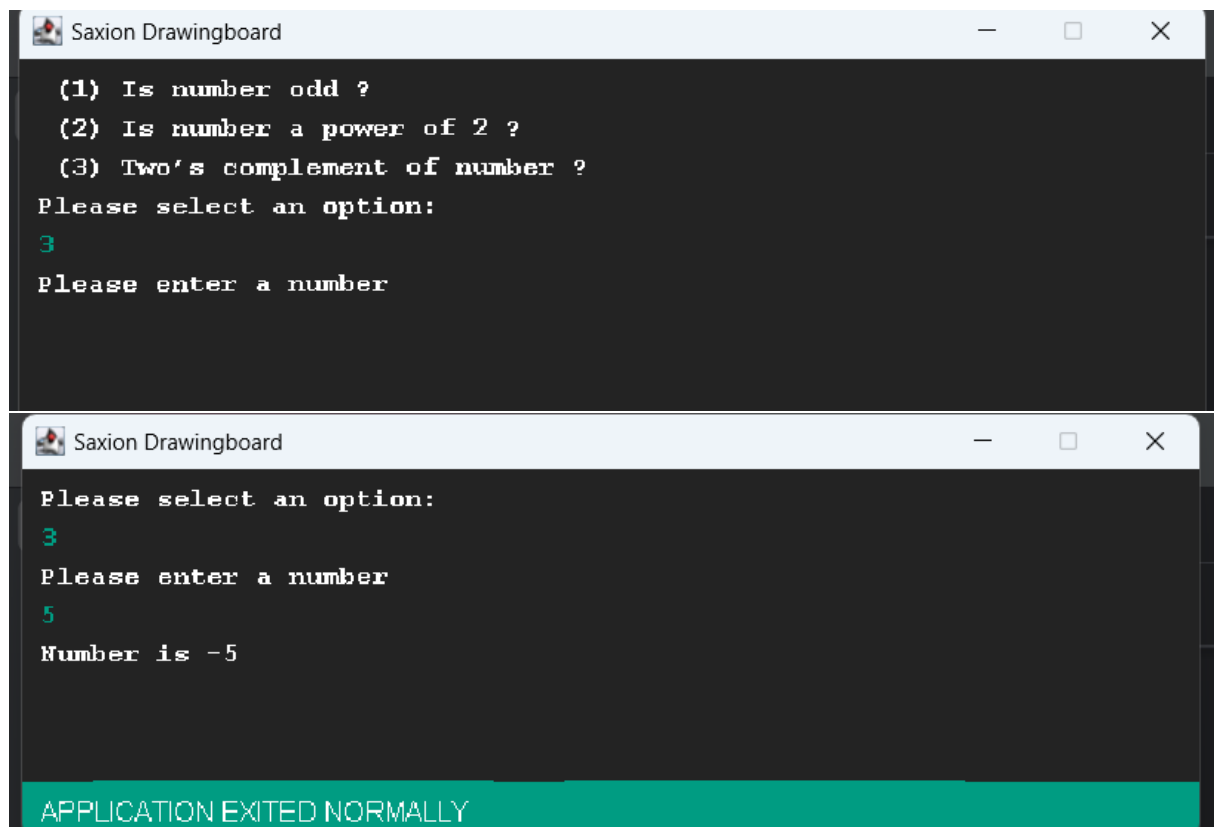
Saxion Drawingboard — □ ✕

```
(1)  Is number odd ?
(2)  Is number a power of 2 ?
(3)  Two's complement of number ?
Please select an option:
```

```
 Saxion Drawingboard                                    —    ☐    ✕

  (1)  Is  number  odd  ?
  (2)  Is  number  a  power  of  2  ?
  (3)  Two's  complement  of  number  ?
Please  select  an  option:
1

Please  enter  a  number:
█
```

```
 Saxion Drawingboard                                    —    ☐    ✕

Please  select  an  option:
1
Please  enter  a  number:
15
number  is  odd




APPLICATION EXITED NORMALLY
```

```
 Saxion Drawingboard                                    —    ☐    ✕

  (1)  Is  number  odd  ?
  (2)  Is  number  a  power  of  2  ?
  (3)  Two's  complement  of  number  ?
Please  select  an  option:
2
Please  enter  a  number:
```

```
 Saxion Drawingboard                                    —    ☐    ✕

Please  select  an  option:
2
Please  enter  a  number:
255
255  isn't  a  power  of  2




APPLICATION EXITED NORMALLY
```

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