Template Week 2 – Logic

Student number:

545676

Assignment 2.1: Parking lot

Which gates do you need?

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

Assignment 2.2: Android/iPhone

Which gates do you need?

Xor gate

Complete this table

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

Assignment 2.3: Four NAND gates

Complete this table

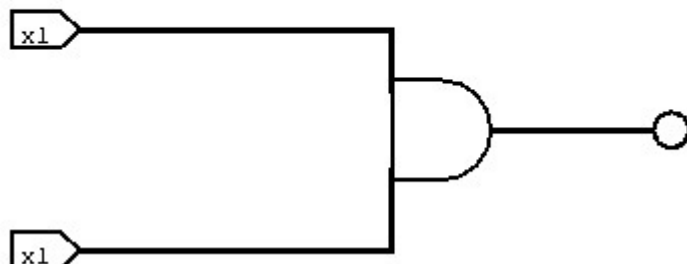| A	B	Q
0	0	0
0	1	1
1	0	1
1	1	1

How can the design be simplified?

4 nand gates act as or gate.

Assignment 2.4: Getting to know Logisim evolution

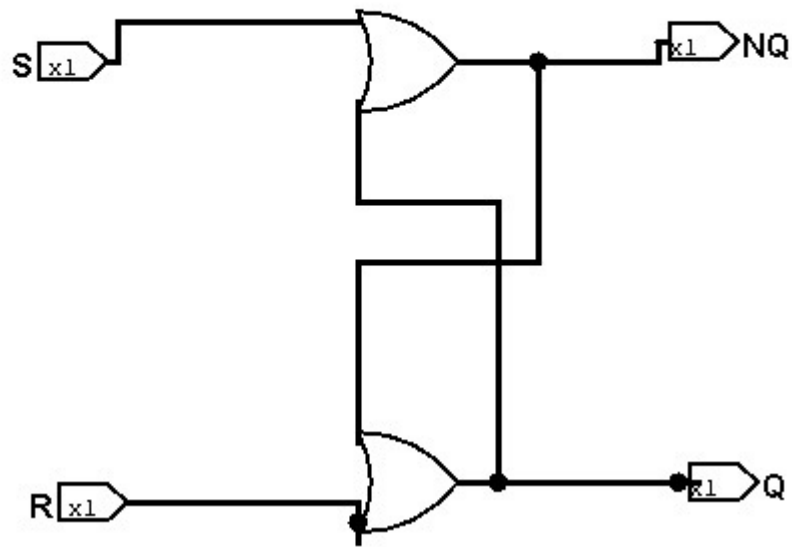Screenshot of the design with your name and student number in it:

Assignment 2.5: SR Latch

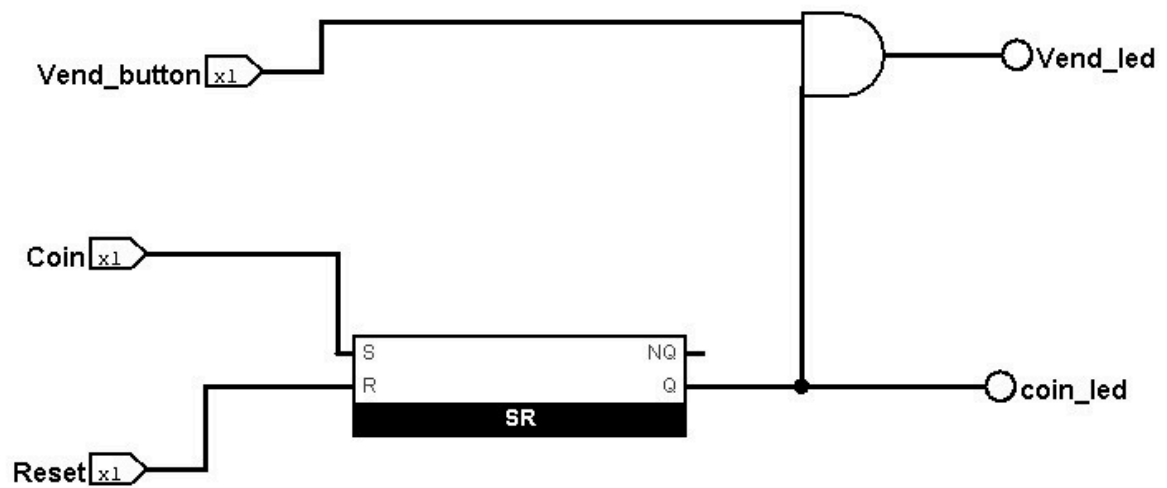Screenshot SR Latch in Logisim with your name and student number:

545676 Mehmet Alper Tas

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.

```java
import java.util.Scanner;



  public static void main(String[] args) {

    Scanner scanner = new Scanner(System.in);

    boolean app = true;

    while (app) {

      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("4. Exit");

      System.out.print("Enter your choice: ");

      int choice = scanner.nextInt();

      if (choice == 4) {

      app = false;

      break;

      }

      System.out.print("Enter a number: ");

      int number = scanner.nextInt();

      if (choice == 1){ System.out.println("Is the number odd? " + isOdd(number));}
```

```java
        else if (choice == 2) {System.out.println("Is the number a power of 2? " +
isPowerOfTwo(number));
}
        else if (choice == 3) {System.out.println("Two's complement of the number: " +
twosComplement(number));
}
        else { System.out.println("Invalid choice. Please try

        again."); }
     scanner.close();

   }


   private static boolean isOdd(int num) {

      return (num & 1) != 0;

   }


   private static boolean isPowerOfTwo(int num) {

      return num > 0 && (num & (num - 1)) == 0;

   }


   private static int twosComplement(int num) {

      return ~num + 1;

   }


}
```

Output

```
1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number?
4. Exit
Enter your choice:
```

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