Template Week 2 – Logic

Student number: 571334

Assignment 2.1: Parking lot

Which gates do you need?

Complete this table

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

Assignment 2.2: Android/iPhone

Which gates do you need?

Complete this table

Android phone	iPhone	Result (Phone in possession)
0	0	

Assignment 2.3: Four NAND gates

Complete this table

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

```java
public class Main {
    public static void main(String[] args) {
        while (true) {
            Scanner sc = new Scanner(System.in);
            System.out.print("Enter number: ");
            int number = sc.nextInt();

            System.out.println("Choose an option");
            System.out.println("1. Is number odd");
            System.out.println("2. Is number power of two");
            System.out.println("3. Two complement of number");
            System.out.print("4. Exit\n?> ");

            int choice = sc.nextInt();

            switch (choice) {
                case 1 -> System.out.println(isOdd(number));
                case 2 -> System.out.println(isPowerOfTwo(number));
                case 3 -> System.out.println(twoComplement(number));
                case 4 -> System.exit( status: 0);
            }
        }
    }

    private static boolean isOdd(int number) { return (number & 1) == 1; }

    private static boolean isPowerOfTwo(int number) { return number > 0 && (number & (number - 1)) == 0; }

    private static int twoComplement(int number) { return ~number + 1; }
```

```
C:\Users\mmast\.jdks\corretto-2
Enter number: 2
Choose an option
1. Is number odd
2. Is number power of two
3. Two complement of number
4. Exit
?> 1
false
Enter number:
```

```
Enter number: 2
Choose an option
1. Is number odd
2. Is number power of two
3. Two complement of number
4. Exit
?> 2
true
Enter number:
```

```
Enter number: 2
Choose an option
1. Is number odd
2. Is number power of two
3. Two complement of number
4. Exit
?> 3
-2
Enter number:
```

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