Template Week 2 – Logic

Student number:

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	
0	0	1	
0	1	0	

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

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:
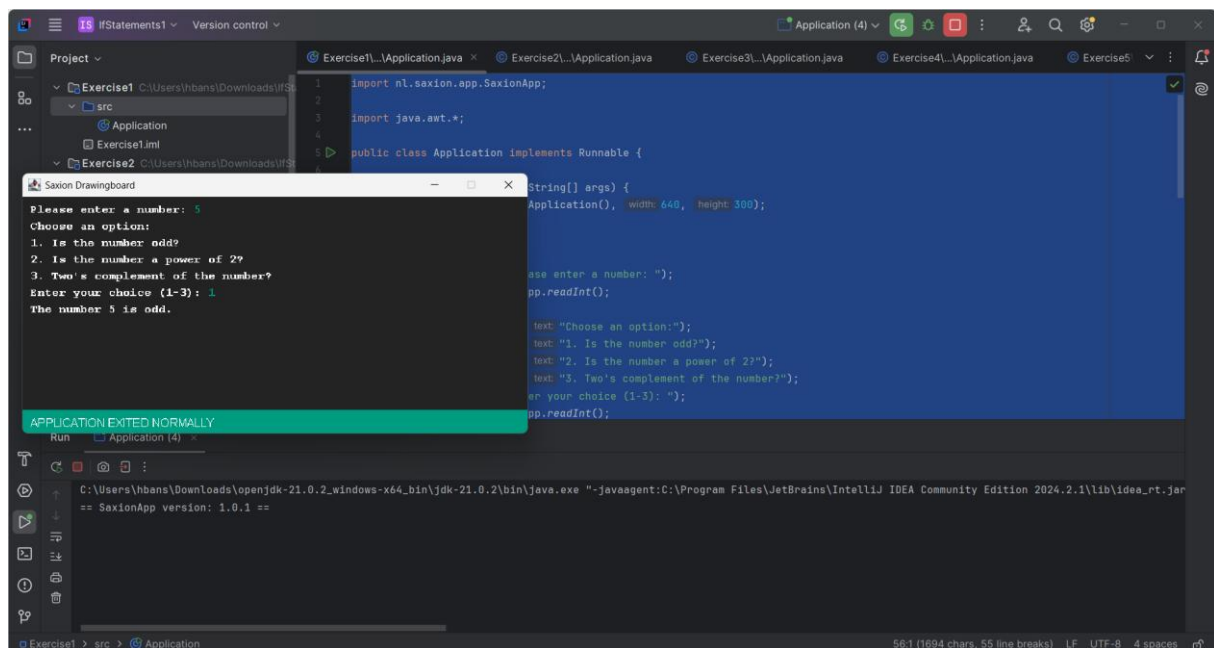
Bonus point assignment – week 2

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.

import nl.saxion.app.SaxionApp;

import java.awt.*;

public class Application implements Runnable {

  public static void main(String[] args) {
    SaxionApp.*start*(new Application(), 640, 300);
  }

  public void run() {
    SaxionApp.*print*("Please enter a number: ");
    int number = SaxionApp.*readInt*();

    SaxionApp.*printLine*("Choose an option:");
    SaxionApp.*printLine*("1. Is the number odd?");
    SaxionApp.*printLine*("2. Is the number a power of 2?");
    SaxionApp.*printLine*("3. Two's complement of the number?");
    SaxionApp.*print*("Enter your choice (1-3): ");

```java
        int choice = SaxionApp.readInt();

        switch (choice) {
            case 1:
                boolean isOdd = isOdd(number);
                SaxionApp.printLine("The number " + number + " is " + (isOdd ? "odd." : "even."));
                break;

            case 2:
                boolean isPowerOfTwo = isPowerOfTwo(number);
                SaxionApp.printLine("The number " + number + " is " + (isPowerOfTwo ? "" : "not ") + "a
power of 2.");
                break;

            case 3:
                int twosComplement = getTwosComplement(number);
                SaxionApp.printLine("The two's complement of " + number + " is " + twosComplement + ".");
                break;

            default:
                SaxionApp.printLine("Invalid choice!", Color.RED);
        }
    }

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


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

    private int getTwosComplement(int number) {
        return number + 1;
    }
}
```

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