

Template Week 2 – Logic

Student number: 570107

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 java.util.Scanner;

public class bitwiseMenu {

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        while (true) {
            showMenu();
            int choice = scanner.nextInt();

            if (choice == 4) {
                System.out.println("Goodbye!");
                break;
            }

            System.out.print("Enter a number: ");
            int number = scanner.nextInt();

            switch (choice) {
                case 1 -> System.out.println(number + " is odd? " + isOdd(number));
                case 2 -> System.out.println(number + " is a power of 2? " + isPowerOfTwo(number));
                case 3 -> System.out.println("Two's complement of " + number + ": " +
twosComplement(number));
                default -> System.out.println("Invalid choice, try again.");
            }
        }

        scanner.close();
    }
}
```

```

private static void showMenu() {
    System.out.println("\n -- Bitwise Operations Menu --");
    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("Choose an option: ");
}

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 twosComplement(int number) {
    return ~number + 1;
}
}

```

The screenshot shows an IDE window with the file `bitwiseMenu.java` open. The code in the editor matches the code provided in the previous block. The `Run` tab at the bottom shows the output of the program:

```

-- Bitwise Operations Menu --
1. Is number odd?
2. Is number a power of 2?
3. Two's complement of number
4. Exit
Choose an option: 1
Enter a number: 2
2 is odd? false

```

The status bar at the bottom indicates the file is at line 34, column 58, using LF line endings, UTF-8 encoding, and 4 spaces for indentation.