12.7

```java
package com.mycompany.ch3.closeLab7.homework4;

import java.util.*;

public class hw4 {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter a binary number: ");
        String binary = input.nextLine();

        int decimal = bin2Dec(binary);

    }

    private static int bin2Dec(String binaryString) {
        int dec;
        try {
            dec = Integer.parseInt(binaryString, 2);
            System.out.println(binaryString + " in decimal is " + dec);
            return dec;

        } catch (NumberFormatException e) {
            System.out.println("Not a binary number.");

        }
        return 0;
    }

}
```

```
Zachs-MacBook-Pro-2:fall21Git zachhealy$  cd "/Users/zachhealy/Desktop/Programming Files/fall21Git/fall21Git" ; /usr
/bin/env /Library/Java/JavaVirtualMachines/jdk-15.0.2.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMess
ages -Dfile.encoding=UTF-8 -cp "/Users/zachhealy/Desktop/Programming Files/fall21Git/fall21Git/CS256/ch1/target/clas
ses" com.mycompany.ch3.closeLab7.homework4.hw4
Enter a binary number: 100
100 in decimal is 4
Zachs-MacBook-Pro-2:fall21Git zachhealy$ 
```

12.9

```java
package com.mycompany.ch3.closeLab7.homework4;

import java.util.*;

public class hw4pt2 {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter a binary number: ");
        String binary = input.nextLine();

        bin2Dec(binary);

    }

    private static int bin2Dec(String binaryString) throws BinaryFormatException {
        if (!isBinary(binaryString)) {
            throw new BinaryFormatException(binaryString);
        }

        int dec = Integer.parseInt(binaryString, 2);
        System.out.println(binaryString + " in decimal is " + dec);
        return 0;

    }

    public static boolean isBinary(String binary) {
        for (int i = 0; i < binary.length(); i++) {
            if (binary.charAt(i) != '1' && binary.charAt(i) != '0')
                return false;
        }
        return true;

    }

    public static class BinaryFormatException extends IllegalArgumentException {
        public BinaryFormatException(String error) {
            super("Invalid input");

        }

    }
```

```
}
Zachs-MacBook-Pro-2:fall21Git zachhealy$  cd "/Users/zachhealy/Desktop/Programming Files/fall21Git/fall21Git" ; /usr
/bin/env /Library/Java/JavaVirtualMachines/jdk-15.0.2.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMess
ages -Dfile.encoding=UTF-8 -cp "/Users/zachhealy/Desktop/Programming Files/fall21Git/fall21Git/CS256/ch1/target/clas
ses" com.mycompany.ch3.closeLab7.homework4.hw4pt2
Enter a binary number: 10000
10000 in decimal is 16
Zachs-MacBook-Pro-2:fall21Git zachhealy$ ▯
```