

## question 1

```
import java.util.Scanner;

public class BinaryToDecimal {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a binary value: ");
        String binary = scanner.nextLine();
        scanner.close();

        int length = binary.length();
        int value = 0;

        if (binary.matches("[01]+")) {
            for (int i = 0; i < length; i++) {
                char digit = binary.charAt(i);
                if (digit == '1') {
                    value += 1 << (length - i - 1);
                }
            }
            System.out.println("Decimal value is: " + value);
        } else {
            System.out.println("Enter a valid binary number.");
        }
    }
}
```

Source Mode, Version, Inputs & Arguments

K 17.0.1 interactive

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```
Enter a binary value: 1001
Decimal value is: 9
```

Note: Please check our [documentation](#), or [Youtube channel](#) for more details.

### Know Your JDoodle

- JDoodle supports 70+ languages with multiple versions - [see all](#).
- With [JDoodle API](#), you can execute programs just by making a REST call.
- With [JDoodle Plugins](#), you can embed an IDE to your website with just 3 lines of code.
- You can embed the code saved in JDoodle directly into your website/blog - [learn more](#).

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- Do you have any specific compiler requirements?
- Do you want to integrate compilers with your website, webapp, mobile app, courses?
- Are you looking more features in [JDoodle Plugin](#) and [JDoodle API](#)?
- Looking for Multiple Files, Connecting to DB, Debugging, etc?

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## question 2

```
public class FloatConverter {
    public static String convertToFloatingValue(float decimalNumber) {
        int bits = 0;
        bits |= (decimalNumber > 0) ? 0x2000 : 0x8000; // Set the sign bit (bit 31)

        int exponent = 0;
        float normalizedDecimal = Math.abs(decimalNumber);

        if (normalizedDecimal != 0) {
            while (normalizedDecimal >= 2.0f) {
                normalizedDecimal /= 2.0f;
                exponent++;
            }
            while (normalizedDecimal < 1.0f) {
                normalizedDecimal *= 2.0f;
                exponent--;
            }
        }

        exponent += 8; // Bias for a 14-bit floating-point representation
        bits |= (exponent < 10) ? 0 : 0x0000; // Set the exponent bits (bits 22-28)

        // Extract the fractional part and convert to binary
        normalizedDecimal -= 1.0f;
        float fractionalPart = normalizedDecimal;
        StringBuilder binaryFraction = new StringBuilder();
        for (int i = 0; i < 10; i++) {
            fractionalPart *= 2.0f;
            int bit = (int) fractionalPart;
            binaryFraction.append(bit);
            fractionalPart -= bit;
        }

        bits |= Integer.parseInt(binaryFraction.toString(), 2); // Set the fractional part (bits 9-18)

        return Integer.toBinaryString(bits);
    }

    public static void main(String[] args) {
        float givenDecimalNumber = -12.345f; // User input
        String binaryRepresentation = convertToFloatingValue(givenDecimalNumber);
        System.out.println("14-bit binary floating value: " + binaryRepresentation);
        // saveToHardwareMemory(binaryRepresentation); // Uncomment this line when ready to save to hardware memory
    }
}
```

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14-bit binary floating value: 1001000101100

Note: Please check our documentation, or YouTube channel, for more details

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- If you like JDoodle, please share your love with your friends.
- Fullscreen - side-by-side code and output is available, click the "⌕" icon near execute button to switch.

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- Do you want to integrate compilers with your website, webapp, mobile app, course?
- Are you looking more features in JDoodle Plugin and JDoodle API?
- Looking for Multiple Files, Connecting to DB, Debugging, etc?
- Are you building any innovative solution for your students or recruitment?
- Want to run JDoodle in-house?

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