

# **BaseConverter**

A simple Java utility class for converting numbers between binary and decimal formats.

## **Overview**

The BaseConverter class provides two main static methods:

- `binaryToDecimal(String binary)`

Converts a binary string (e.g., "1010" or "-1010") into its decimal (int) value.

- `decimalToBinary(int decimal)`

Converts a decimal integer (e.g., 42 or -10) into its binary string representation.

The program also includes a `main()` method that demonstrates and tests both conversions.

## **Features**

1. Handles both positive and negative numbers
2. Validates input
3. Prevents integer overflow
4. Includes automated test cases in the `main()` method
5. Performs round-trip verification (decimal → binary → decimal)

## **Error Handling**

`binaryToDecimal` throws `IllegalArgumentException` if:

1. Input is null or empty
2. Input contains characters other than '0', '1', or a leading '-'
3. Binary value exceeds the 32-bit integer range

## **How to Run**

1. Save the file as `GIT_GROUP_05.java`
2. Compile:

```
javac GIT_GROUP_05.java
```

3. Run:

```
java BaseConverter
```