

Worksheet: Binary – Integer Conversion©2024 Chris Nielsen – www.nielsenedu.com

1. Write two methods. The first to convert a given integer to a string that contains the sequence of zeros and ones that represent the binary number that corresponds to the input integer. The method signature must be:

```
public static String intToBinary(int n)
```

The second method is to convert a given binary number given as a `String` containing only the characters “0” and “1” into an integer value that is represented by that string of binary digits. The method should output -1 if it encounters any character other than “0” or “1”.

```
public static int binaryToInt(String b)
```

You must only use the methods available in the Java AP Subset `String` class and not any other methods. These are the methods: `length`, `equals`, `substring`, `indexOf`, and `compareTo`.

Here is some example code that can be used to test your code:

```
public static void main(String[] args) {  
    System.out.println(binaryToInt("11011"));  
    System.out.println(binaryToInt("110x1"));  
    System.out.println(intToBinary(0x12A5));  
    System.out.println(binaryToInt(intToBinary(1235)));  
}
```

The above code along with your methods, if correct, will output:

```
27  
-1  
1001010100101  
1235
```

Once you have written, run, and tested the code thoroughly, accurately copy it below, and / or on the reverse of this page.

// solution on the next page...

Worksheet: Binary – Integer Conversion

```
public static int binaryToInt(String b) {  
  
    int n = 0;  
  
    for(int i = 0; i < b.length(); i++) {  
        n <= 1; // or can use: n *= 2;  
        String digit = b.substring(i,i+1);  
        if(digit.equals("1")) {  
            n = n + 1;  
        } else if(!digit.equals("0")) {  
            return -1;  
        }  
    }  
  
    return n;  
}  
  
public static String intToBinary(int n) {  
  
    String s = "";  
  
    while(n > 0) {  
        if(n%2 == 1) { // or can use: ((n&1) == 1)  
            s = "1" + s;  
        } else {  
            s = "0" + s;  
        }  
        n >>= 1; // or can use: n /= 2;  
    }  
  
    return s;  
}
```