

## **BINARY TO DECIMAL CONVERSION**

### **EXP NO: 26**

**AIM:** To write a C program to implement binary to decimal conversion.

### **ALGORITHM:**

- 1) Start
- 2) Read the binary number from the user, say 'n'
- 3) Initialize the decimal number, d=0
- 4) Initialize i=0
- 5) Repeat while n != 0:
  - i. Extract the last digit by: remainder = n % 10
  - ii.  $n = n/10$
  - iii.  $d = d + (\text{remainder} * 2^i)$
  - iv. Increment i by 1
- 6) Display the decimal number, d
- 7) Stop

### **PROGRAM:**

```
#include <stdio.h>

void main() {

    int num, binary_num, decimal_num = 0, base = 1, rem;

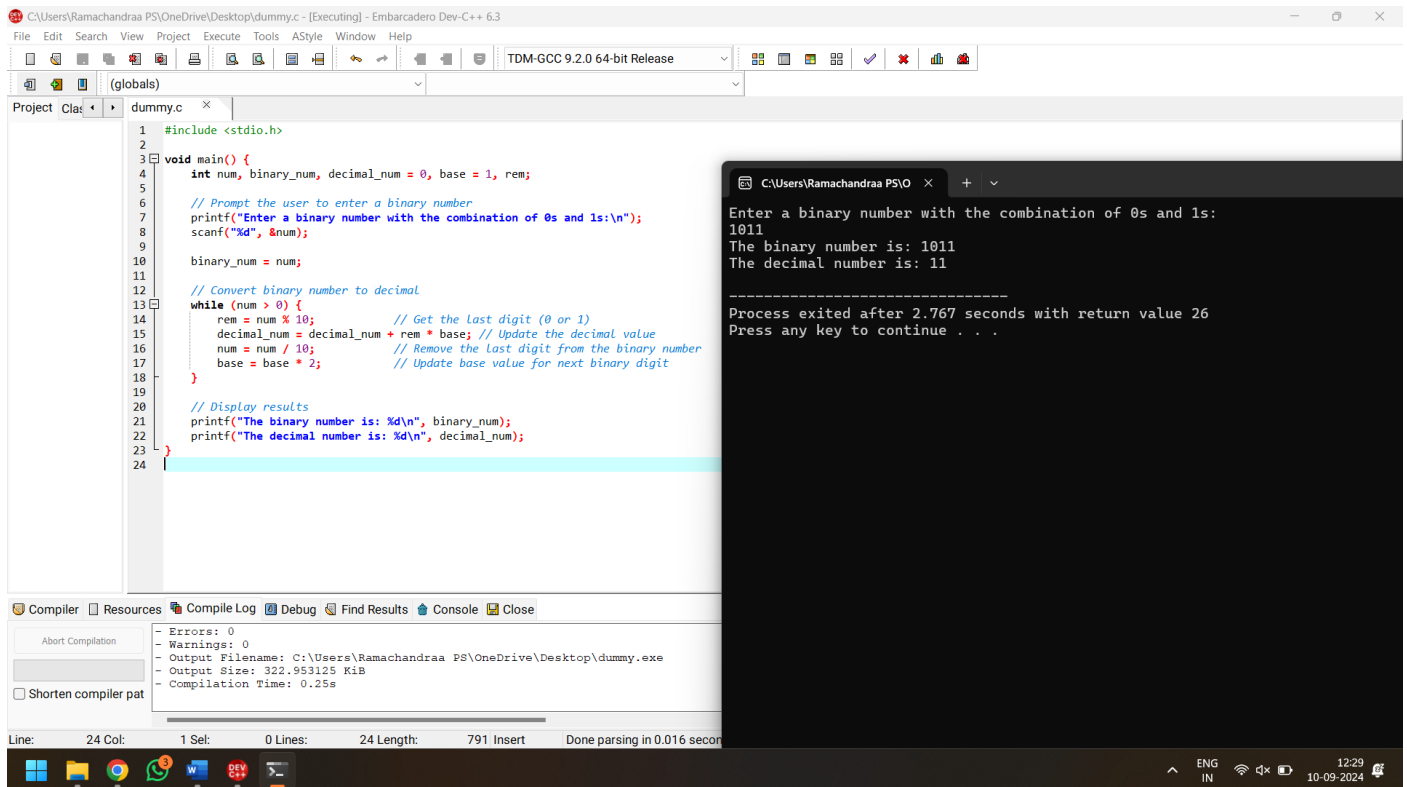
    // Prompt the user to enter a binary number
    printf("Enter a binary number with the combination of 0s and 1s:\n");
    scanf("%d", &num);

    binary_num = num;

    // Convert binary number to decimal
    while (num > 0) {
        rem = num % 10;        // Get the last digit (0 or 1)
        decimal_num = decimal_num + rem * base; // Update the decimal value
        num = num / 10;        // Remove the last digit from the binary number
        base = base * 2;       // Update base value for next binary digit
    }

    // Display results
    printf("The binary number is: %d\n", binary_num);
    printf("The decimal number is: %d\n", decimal_num);
}
```

## INPUT & OUTPUT:



The screenshot displays the DevC++ IDE interface. The main window shows the source code for a C program named `dummy.c`. The code prompts the user to enter a binary number, converts it to decimal, and displays the results. The console window on the right shows the execution output, indicating that the program ran successfully and exited after 2.767 seconds.

```
1 #include <stdio.h>
2
3 void main() {
4     int num, binary_num, decimal_num = 0, base = 1, rem;
5
6     // Prompt the user to enter a binary number
7     printf("Enter a binary number with the combination of 0s and 1s:\n");
8     scanf("%d", &num);
9
10    binary_num = num;
11
12    // Convert binary number to decimal
13    while (num > 0) {
14        rem = num % 10; // Get the last digit (0 or 1)
15        decimal_num = decimal_num + rem * base; // Update the decimal value
16        num = num / 10; // Remove the last digit from the binary number
17        base = base * 2; // Update base value for next binary digit
18    }
19
20    // Display results
21    printf("The binary number is: %d\n", binary_num);
22    printf("The decimal number is: %d\n", decimal_num);
23 }
24
```

Console Output:

```
Enter a binary number with the combination of 0s and 1s:
1011
The binary number is: 1011
The decimal number is: 11

-----
Process exited after 2.767 seconds with return value 26
Press any key to continue . . .
```

Compiler Output:

```
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Ramachandras PS\OneDrive\Desktop\dummy.exe
- Output Size: 322.953125 KiB
- Compilation Time: 0.25s
```

**RESULT:** Thus the program was executed successfully using DevC++.