



## COMPUTER ENGINEERING TECHNOLOGY DEPARTMENT

### C++ Programming Laboratory Exercise

Programmer	:		Instructor	:	
Section	:	Date:	Score	:	
Title	:	Decimal-to-Binary Converter	Lab No.	:	2

#### A. Problem Statement:

The provided C++ program is intended to convert a decimal number (between 0 and 15) into its 4-bit binary equivalent.

However, the program contains bugs that prevent it from producing the correct output. Your task is to identify and fix the bugs in the program so that it matches the expected output.

#### B. Program Requirements:

- [1] Use appropriate variables to store the decimal number, quotient, and binary bits.
- [2] Use `cin` to take input from the user (a decimal number between 0 and 15).
- [3] Use `cout` to display the binary equivalent of the input decimal number.
- [4] Use proper indentation and comments in your code.

#### C. Program with bugs:

```
1  #include <iostream>
2
3  using namespace std;
4
5  int main(){
6      // variables
7      int decimal = 0 ;
8      int quotient = 0;
9      int bit_0 = 0;
10     int bit_1 = 0;
11     int bit_2 = 0;
12     int bit_3 = 0;
13
14     // prompt the user to enter decimal number
15     cout<<"Enter Decimal (0-15): ";
16     cin>>Decimal;
17
18     // 1st remainder and quotient;
19     bit_0 = decimal%2;
20     decimal = decimal/2;
21
22     // 2nd remainder and quotient;
23     bit_1 = decimal%2;
24     decimal = decimal/2;
25
26     // 3rd remainder and quotient;
27     bit_2 = decimal%2;
28     decimal = decimal/2;
29
30     // 4th remainder and quotient;
31     bit_3 = decimal%2;
32     decimal = decimal/2;
33
34     // display
35     cout<<"The binary equivalent of "<<decimal" is: ";
36     cout<<bit_0<<bit_1<<bit_2<<bit_3;
37
38     return 0;
39 }
40
```



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#### D. Expected Output:

Enter Decimal (0-15): 9

The binary equivalent of 9 is: 1001

Enter Decimal (0-15): 1

The binary equivalent of 1 is: 0001

Enter Decimal (0-15): 8

The binary equivalent of 8 is: 1000

Enter Decimal (0-15): 15

The binary equivalent of 15 is: 1111