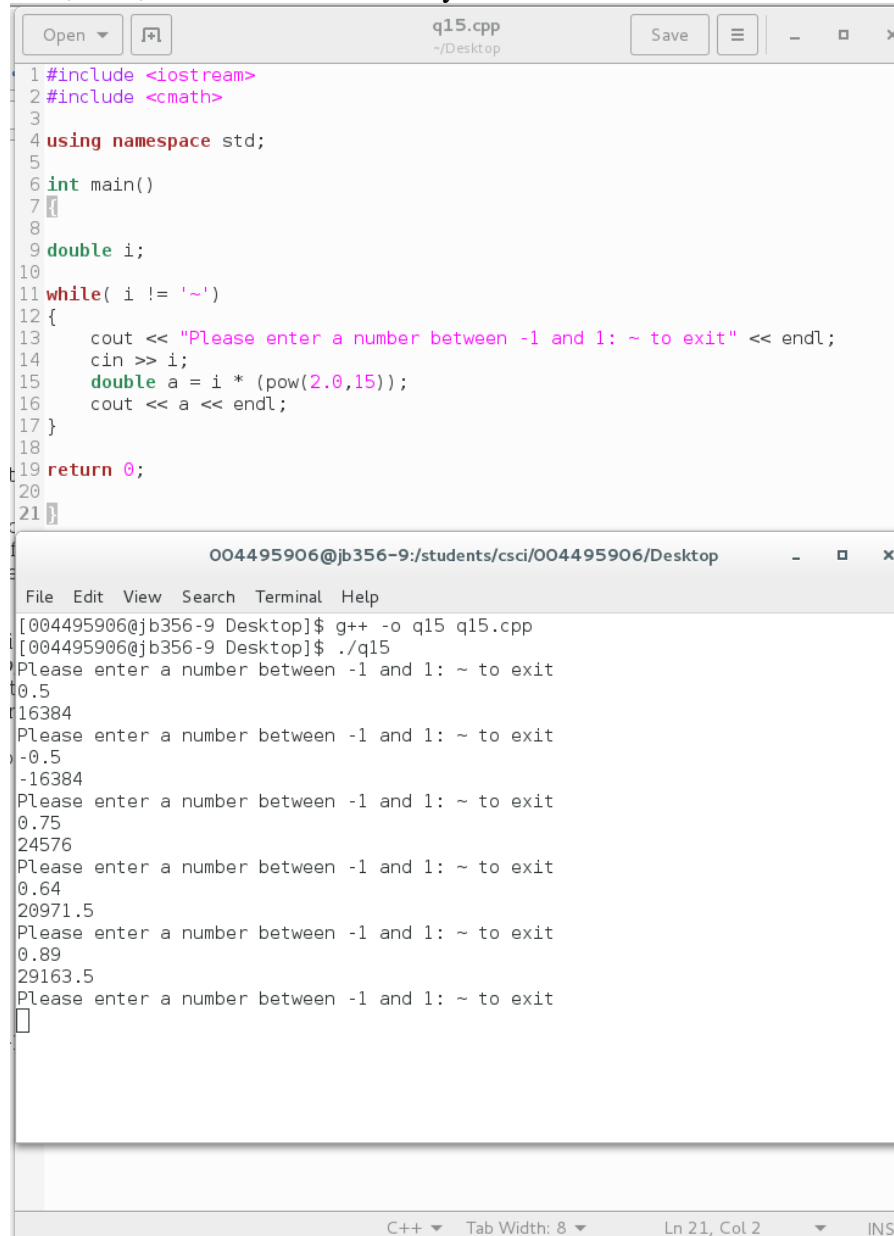


Rogelio Giron
CSE 310
Homework 3

1. Write a C/C++ program that converts a decimal real number between -1 and 1 to the **1.15** binary format. Print out the 16 bits of the binary number. You may test it with the numbers: 0.5, -0.5, 0.75, -0.75, 0.64, 0.89 Convert the binary number back to a real decimal to see if your conversion is correct.



```
1 #include <iostream>
2 #include <cmath>
3
4 using namespace std;
5
6 int main()
7 {
8     double i;
9     while( i != '~')
10     {
11         cout << "Please enter a number between -1 and 1: ~ to exit" << endl;
12         cin >> i;
13         double a = i * (pow(2.0,15));
14         cout << a << endl;
15     }
16     return 0;
17 }
```

004495906@jb356-9:/students/csci/004495906/Desktop

File Edit View Search Terminal Help

```
[004495906@jb356-9 Desktop]$ g++ -o q15 q15.cpp
[004495906@jb356-9 Desktop]$ ./q15
Please enter a number between -1 and 1: ~ to exit
0.5
16384
Please enter a number between -1 and 1: ~ to exit
-0.5
-16384
Please enter a number between -1 and 1: ~ to exit
0.75
24576
Please enter a number between -1 and 1: ~ to exit
0.64
20971.5
Please enter a number between -1 and 1: ~ to exit
0.89
29163.5
Please enter a number between -1 and 1: ~ to exit
~
```

C++ Tab Width: 8 Ln 21, Col 2 INS

3. Which of the following is **false**? The symbol \oplus means exclusive OR.
E. $X \oplus Y = Y \oplus X$
4. Find the POS expression equivalent of the following: $AB + CD + AC' + DE'$
A. $(A+D)(B+C'+D)(A+C+E')$
5. Find the POS expression equivalent of the following: $AB(C' + D)E + F$

D. $(A+F)(B+F)(C'+D+F)(E+F)$

6. Which of the following is **false**? The symbol \oplus means exclusive OR.

C. if $XY = 0$, then $X \oplus Y = X + Y$

7. The expression $X \oplus Y \oplus Z$ can be converted a Boolean expression which in turn can be represented by

A. $\Sigma(1, 2, 4, 7)$

8. The expression $A \oplus B \oplus C \oplus D$ can be converted a Boolean expression which in turn can be represented by

B. $\Sigma(1, 2, 4, 7, 8, 11, 13, 14)$

9. How many unused input combinations are there in a BCD adder?

B. 312

10. The adder-subtractor is used to subtract the following unsigned 4-bit numbers: $0110 - 1010$ (6 - 10). What are the input binary values of A, B and M? Choose 3.

A. 0110

B. 1010

C. 1

11. In the previous question, what are the output binary values of S and C_5 ? Choose two.

A. 1100

D. 0

12. Suppose we design a decimal adder for two digits represented in the excess-3 code. Which of the following regarding the correction after adding the two digits with a 4-bit binary adder is/are right?

A. The output carry is equal to the carry from the binary adder.

C. If the output carry = 1, then add 0011

D. If the output carry = 0, then add 1101

13. Manipulate the following Boolean expression in such a way that it can be implemented using exclusive-OR and AND gates only.

D. $(W \oplus X)(Y \oplus Z)$