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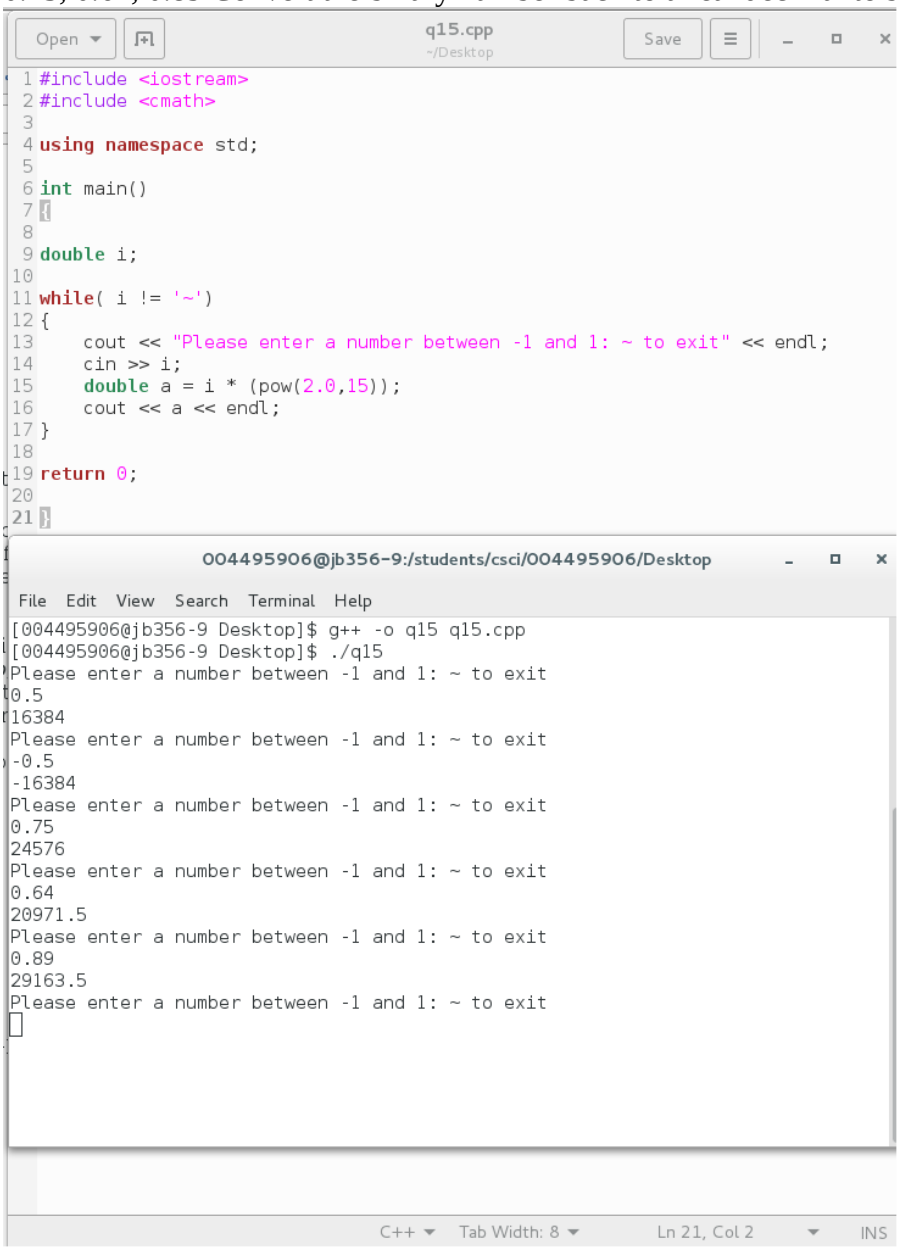
CSE 310
Homework 3

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.



3. Which of the following is **false**? The symbol ® means exclusive OR.

E. X ® Y = Y ® 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 ® means exclusive OR.

C. if XY = 0, then X ® Y = X + Y

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

A. Σ (1, 2, 4, 7)

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

B. Σ (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 ® X)(Y ®Z)