

Homework Assignment #2 – Selection Structures**Related Textbook Material:** Chapter 4 in C++ for Scientists & Engineers, 3rd Edition, by Bronson**Assignment:** Work all problems by hand unless specifically instructed otherwise.

1. (12 pts) If
- $x = 2$
- ,
- $y = 3$
- , and
- $z = 4$
- , determine whether each expression below is true, false, or invalid.

Part	Expression	True, false, or invalid?
1	if (x)	
2	if (x = 2)	
3	if (x == 2)	
4	if ((z = 2) > x)	
5	if (3 < x < 4)	
6	if('J' > 'j')	
7	if('J' = 74)	
8	if("stand" > "standard")	
9	if(x%2 == 1)	
10	if(x%2)	
11	if(x>2 && x > -1 x < 10)	
12	if(x>2 && (x > -1 x < 10))	

2. (5 pts) If
- $x = 2$
- ,
- $y = 3$
- , and
- $z = 4$
- , determine the value of Result.

Part	Expression	Value of Result
1	Result = (x < y) ? 5 : 10	
2	Result = (x > y) ? 5 : 10	
3	Result = (x) ? 5 : 10	
4	Result = (x - 2) ? 5 : 10	
5	Result = (x/z+x/z) ? 5 : 10	

3. (16 pts) Determine the logical result for each Boolean expression below assuming that:

int m = -5, n = 8;**double x = -3.56, y = 0.0, z = 44.7;****bool a = true, b = true, c = false;**

Problem #	Problem	True	False
1.	m <= n		
2.	x*x < sqrt(z)		
3.	2 * abs(m) <= 8		
4.	int(z) == (6 * n - 4)		
5.	(x <= y) && (y <= z)		
6.	!(x < y)		
7.	!((m <= n) && (x + z > y))		
8.	!(m <= n) !(x + z > y)		
9.	!((m <= n) (x + z > y))		
10.	!((m > n) && !(x < z))		
11.	a ! b		
12.	!(a && b)		
13.	! a ! b		
14.	(a && b) c		
15.	a && (b c)		
16.	(a && b) (a && c)		

4) (31 pts) Work the following exercises in the textbook:

Exercise 4.1, problems 1-4 (all parts)

Exercise 4.4, problem 1

6. (12 pts) Write, compile, and test a C++ program that uses an **if-else structure** to compute a shipping cost as determined by the following table for a distance less than 1000. The program should print an error message for negative distances or distances greater than or equal to 1000.

Distance	Cost
0 through 99	\$5.00
at least 100 but less than 300	\$8.00
at least 300 but less than 600	\$10.00
at least 600 but less than 1000	\$12.00

Turn in a printout of the program and printouts of the results testing all 6 possible input ranges.

7. (12 pts) Write, compile, and test a C++ program for Exercise 4.3, Problem 7, in the textbook. Additionally, the program should recognize either upper or lower case letters (c, C, f, or F). Test the program for the six inputs shown below. Turn in a printout of the program and printouts of the 6 test cases.

- a. 0 c
- b. 100 C
- c. 27 C
- d. 32 f
- e. 212 F
- f. 95 F

8. (12 pts) Write, compile, and test a C++ program that uses a **switch structure** where the user is prompted to enter a number (1-12) corresponding to a month and the program should display the name of the month. For example, if the user enters 3, the program should output March. An error message should be displayed for an invalid input.

Turn in a printout of the program and printouts of the results testing 3 of the months and one invalid input.