

CS 99: Fundamental Programming Concepts Summer 2000

Expressions

1. What is the value of `e` after each of the following assignments?

```
boolean a = true, b = false, c, d = true, e;  
e = a && b;  
e = a || b;  
e = !b;  
e = !a || b;  
e = a && b || c;  
e = a || b && c;  
e = a && b || c && d;  
e = a && !(b || c && !d);
```
2. Determine whether the following expressions are true or false. Assume `a = 2` and `b = 3`.
 - a. `(a < b) || (b < a)`
 - b. `((a == b) && (a * a < b * b)) || ((b < a) && (2 * a < b))`
3. Parenthesize to show the order of operations:

```
a == b && a * a < b * b || b < a && 2 * a < b
```
4. Write an expression using the variables `a`, `b`, and `c` that determines (i.e., is true if):
 - a. `a` is larger than `b`
 - b. `b` is strictly between `a` and `c`
 - c. `c` is the largest of the three variables
 - d. all three of the variables are equal
 - e. any two of the variables are equal