

Writing Boolean Expressions

Examples

- Write a C++ Boolean expression that corresponds with the following assertions:

X is not less than 2

- 1.) $X \geq 2$
- 2.) $!(X < 2)$

X is strictly between -5 and 5

- 1.) $(-5 < X) \ \&\& \ (X < 5)$
- 2.) $(X > -5) \ \&\& \ (X < 5)$

X and Y are equal to 3

$(X == 3) \ \&\& \ (Y == 3)$

X is positive

- 1.) $X > 0$
- 2.) $!(X \leq 0)$

Isosceles Triangles

- An isosceles triangle is a triangle with exactly two sides having the same length.
- Write a program that lets the user enter three numbers and determines whether the numbers could be the lengths of the sides of an isosceles triangle.

Analysis

- Input:
 - Three numbers to test
- Output:
 - Whether the three numbers could be the lengths of the sides of an isosceles triangle

Additional Information

- How do we know if the three numbers could be the sides of a triangle?
 - Three numbers a, b, and c could be the lengths of the sides of a triangle if the sum of every pair of sides is greater than the length of the remaining side.

Algorithm

- Get the three lengths from the user
- Determine whether the lengths could be the sides of an isosceles triangle
- Output the results

1.1 Prompt the user for three lengths

1.2 Read in the numbers

Algorithm, continued

2.1 Determine whether the lengths could be the sides of a triangle
triangle = ???

2.2 Determine whether the lengths could be the sides of an
isosceles triangle
isosceles = ???

Program Testing

- What situations should we test?
 - Isosceles triangle true
 - All different combinations of which sides are equal
 - Triangle true, but not isosceles
 - No sides same length
 - Three sides same length
 - Not a triangle
 - Any numbers that are not a triangle
 - Numbers that are not a triangle, but two lengths are the same