Students:
Section 3.19 is a part of 1 assignment: **CSC108 CH03.11-3.20 P3B**

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Includes: PA
Due: 02/25/2025, 11:59 PM EST

3.19 Short circuit evaluation

A logical operator evaluates operands from left to right. ***Short circuit evaluation*** skips evaluating later operands if the result of the logical operator can already be determined. The logical AND operator short circuits to false if the first operand evaluates to false, and skips evaluating the second operand. The logical OR operator short circuits to true if the first operand is true, and skips evaluating the second operand.

PARTICIPATION ACTIVITY 3.19.1: Short circuit evaluation: Logical AND.

Start 2x speed

```
// Read minutes and seconds
if ((minutes < 1) && (seconds < 10)) {
   // Print "Few seconds remaining!"
}
else {
   // Print "Take your time."
}
...
```

Few seconds remaining!

	operand1	operand2	result
minutes: 1 seconds: 5	(1 < 1) false	-	false
minutes: 0 seconds: 5	(0 < 1) true	(5 < 10) true	true

Captions

1. The first operand evaluates to false, so the logical AND result is false regardless of the second operand. Short circuit evaluation skips evaluating the second operand.
2. If the first operand evaluates to true, the second operand is evaluated to determine the result.

Feedback?

Table 3.19.1: Short circuit evaluation.

Operator	Example	Short circuit evaluation
`operand1 && operand2`	`true && operand2`	If the first operand evaluates to true, operand2 is evaluated.
	`false && operand2`	If the first operand evaluates to false, the result of the AND operation is always false, so operand2 is not evaluated.
`operand1 || operand2`	`true || operand2`	If the first operand evaluates to true, the result of the OR operation is always true, so operand2 is not evaluated.
	`false || operand2`	If the first operand evaluates to false, operand2 is evaluated.

Feedback?

PARTICIPATION ACTIVITY 3.19.2: Determine which operands the program evaluates.

1) `(x < 4) && (y > 3)`

What value of x results in short circuit evaluation, which skips evaluating the second operand?

- 6
- 2
- 3

2) `(y == 3) || (x > 2)`

What value of y results in short circuit evaluation, which skips evaluating the second operand?

- 2
- 4
- 3

3) `(y < 3) || (x == 1)`

What value of y does not result in short circuit evaluation, such that both operands are evaluated?

- 3
- 1
- 2

4) `(x < 3) && (y < 2) && (z == 5)`

What values of x and y do not result in short circuit evaluation, such that all operands are evaluated?

- x = 2, y = 2
- x = 1, y = 0
- x = 4, y = 1
- x = 3, y = 2

5) `((x > 2) || (y < 4)) && (z == 10)`

Given x = 4, y = 1, and z = 10, which comparisons are evaluated?

- (x > 2), (y < 4), and (z == 10)
- (x > 2) and (z == 10)
- (x > 2) and (y < 4)

Feedback?

How was this section? | Provide section feedback

Activity summary for assignment: CSC108 CH03.11-3.20 P3B

96 / 96 points

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96 / 96 points submitted to BlackboardLearn

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