Logical Expressions

Math and Computer Science

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Logical Expressions

- ()
- !
- <, <=, >, >=
- ==, !=
- &&
- ||

Logical Expressions

- Produce true false results
- Used as conditions in ifs and loops
- Again precedence matters, use () to over ride precedence
- <lexpr> is any logical expression in my notes.

Simple Logical Operators

- ! <lexpr> – not operator
  - If lexpr is true, not true yields false
  - If lexpr is false, not false yields true

- <, <=, >, >= -- less than and greater than operators
  - x < y, x <= z, x > y, y >= z

- == , != -- equality tests
  - X == Y, X != Y

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&& - and operator

- Combines two <lexpr> to produce a t/f result.
- <lexpr> && <lexpr>
- The result is true only when both logical expressions are true.

&&	True	False
True	True	False
False	False	False

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|| - or operator

- Combines two <lexpr> to produce a t/f result.
- <lexpr> || <lexpr>
- The result is false only when both logical expressions are false.

||	True	False
True	True	True
False	True	False

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Incorrect Evaluation

- <lexpr> || <lexpr> && <lexpr>

T	||	T	&&	F	<- lexpr produced
	T			&&	F	<- do the || first
			F			<- the && produces

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Correct Evaluation

- <lexpr> || <lexpr> && <lexpr>

T	||	T	&&	F	<- lexpr produced
T	||		F		<- do the && first
	T					<- the || produces