How do we form compound logical statements?

- IF UNC has a game **AND** it is a home game, THEN I'll go watch.
- IF it is raining **OR** it is cold, THEN I'll grab my jacket.
- IF it is **NOT** a COMP110 assignment, THEN I will procrastinate.

The and operator

- The **and** keyword is a `boolean` operator

```
[boolean a] and [boolean b]
```

```
boolean value
```

- If **both expressions** connected by the **and** symbol **are True**, then the resulting boolean will be **True**. Otherwise it will be **False**.

and truth table

	True	False
True	**True**	**False**
False	**False**	**False**

You read a truth table like a multiplication table. Start with a finger on one column label and one row label, per each side of the operator, and trace your way in.

The `or` operator

- The `or` keyword is a `boolean` operator

```
[boolean a] or [boolean b]
```

```
boolean value
```

- If **either expression** connected by the `or` symbol **is True**, then the resulting boolean will be **True**. Otherwise it will be **False**.

`or` truth table

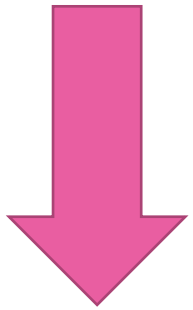
	True	False
True	**True**	**True**
False	**True**	**False**

You read a truth table like a multiplication table. Start with a finger on one column label and one row label, per each side of the operator, and trace your way in.

The `not` operator

- The `not` keyword is a unary boolean operator.

```
not [boolean a]
```



```
boolean value
```

- The expression following the `not` operator will evaluate to the opposite `boolean` value. True becomes False and False becomes True.

`not` truth table

	True	False
not	False	True

Logical Operator Reference

`and`

Expression	Is
`True and True`	`True`
`True and False`	`False`
`False and True`	`False`
`False and False`	`False`

`or`

Expression	Is
`True or True`	`True`
`True or False`	`True`
`False or True`	`True`
`False or False`	`False`

`not`

Expression	Is
`not True`	`False`
`not False`	`True`

It is worth committing these to memory. Every programming language (including Excel) shares the same ideas of logical operators.