COMP110: Principles of Computing

4: Session title here

Learning outcomes

- **Distinguish** the basic types of logic gate
- **Use** logic gates to build simple circuits
- **Explain** how computer memory works

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Logic gates

Boolean logic

- Works with two values: TRUE and FALSE

Not

A	NOT *A*
FALSE	TRUE
TRUE	FALSE

NOT *A* is TRUE
if and only if
A is FALSE

And

A	*B*	*A* AND *B*
FALSE	FALSE	FALSE
FALSE	TRUE	FALSE
TRUE	FALSE	FALSE
TRUE	TRUE	TRUE

A AND *B* is TRUE
if and only if
both *A* **and** *B* are TRUE

Or

A	*B*	*A* OR *B*
FALSE	FALSE	FALSE
FALSE	TRUE	TRUE
TRUE	FALSE	TRUE
TRUE	TRUE	TRUE

A OR *B* is TRUE
if and only if
either *A* **or** *B* **or both** are TRUE

Exclusive-or

A	*B*	*A* XOR *B*
FALSE	FALSE	FALSE
FALSE	TRUE	TRUE
TRUE	FALSE	TRUE
TRUE	TRUE	FALSE

A XOR *B* is TRUE
if and only if
either *A* **or** *B*, **but not both**
are TRUE