ECS15

boolean
Boolean expressions

- Have value **True** or **False**
- Examples:
  - `answer == "b"`
  - `x < 30`
  - `2+2 == 4`
  - `2+2 == 5`  
  - "cat" != "Cat"
Comparison Operators

- `==`; ‘a’==“a”
- `!=`; ‘a’!='A'; 4!=5
- `>=`
- `<=`
- `<`
- `>`
Boolean algebra

- Named after George Boole (1815-1864)
- Main idea: you can write down logic as mathematical formulas, as well as in sentences.
- Logic as a computational system. Python does some of this computation!


and

- True if both are true
- True and True ==
- False and True ==
- False and False ==
- True and False ==
and

- True if both are true
- True and True == True
- False and True == False
- False and False == False
- True and False == False
Or

- True if one or the other is true
- True \textbf{or} True == 
- True \textbf{or} False == 
- False \textbf{or} True == 
- False \textbf{or} False ==
Or

- True if one or the other is true
- True or True == True
- True or False == True
- False or True == True
- False or False == False
Not

- not True ==
- not False ==
Not

- not True == False
- not False == True
Operators

- and, or and not are **Boolean operators**
- Addition is a **numeric operator**
  \[ 2+2 \]
- Concatenation is a **string operator**
  "drive"+"way"
Priority

- Boolean operators have lower priority than non-Boolean operators
- Example:
  - True and 3>5
- You can easily check it out using IDLE
In if statements

- if reply != "a" and reply != "b":
  print ("Please answer a or b")
- if reply == "a" or reply == "b":
  print ("Thank you!")