CPE101
Boolean Logic, Conditionals

Winter 2019
@ Cal Poly SLO
By
Toshi

Learning Objectives

1. Boolean Logic
2. Conditionals

Boolean Expressions

- Comparison
  - ==
  - !=
  - >
  - <
  - >=
  - <=

```
x = 1
y = 2

x == y  # False
x != y # True
x > y # False
x < y # True

z = 2
z >= y # True
Z <= y #True
```

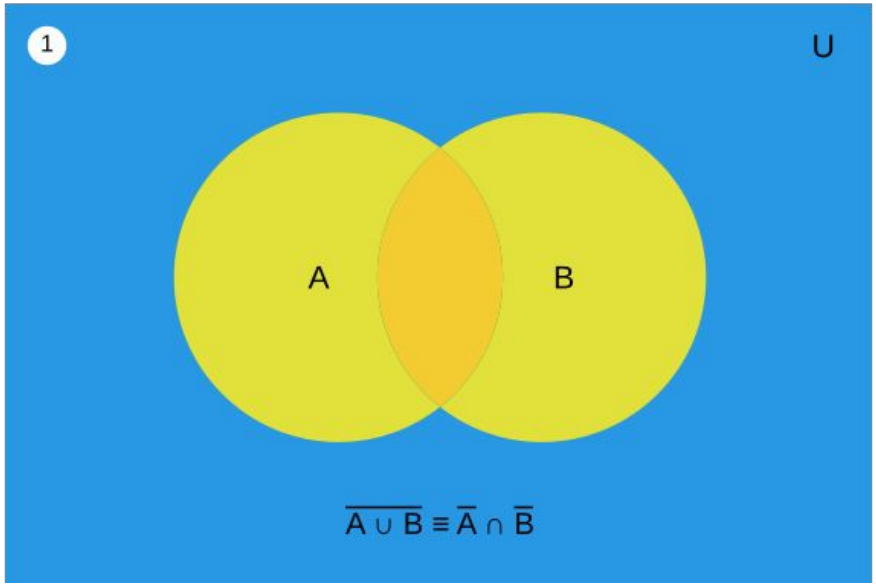
Logical Operators

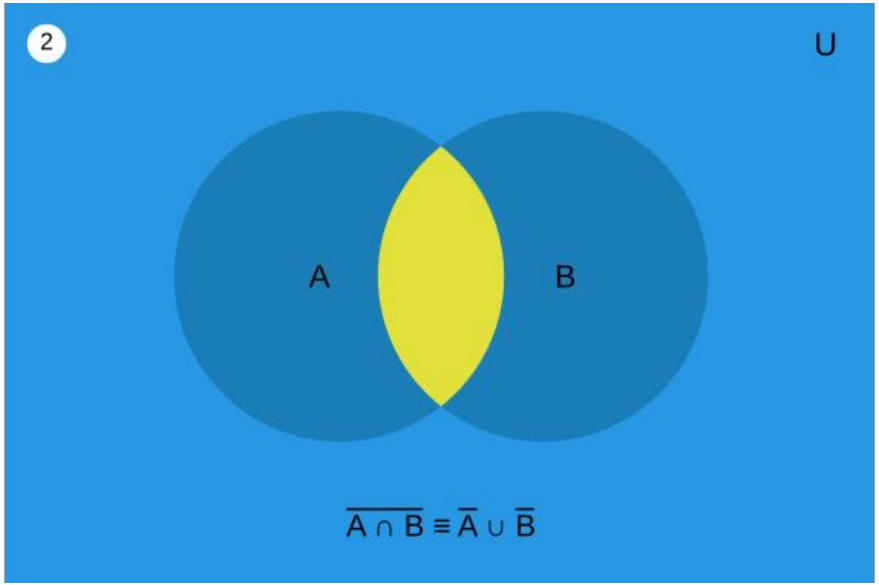
- Binary
  - and
  - or
- Unary
  - not

```
True and True # True
True and False # False
True or False # True
not True # False
```

p	q	p and q	p or q
T	T	T	T
T	F	F	T
F	T	F	T
F	F	F	F

De Morgan’s Law





Order of evaluations with Logical Operators

The left expression will be evaluated before the right expression.

- For “and”, the right expression will not be evaluated if the left expression is false.
- For “or”, the right expression will not be evaluated if the left expression is true.

```
a = True
b = False

a and b # both a and b will be evaluated

b and a # a will not be evaluated

b or a # both a and b will be evaluated

a or b # b will not be evaluated
```

Truthy and Falsy values

Non-boolean values are evaluated to be either True or False

- Truthy values
  - Non 0 numbers
  - Non empty string
- Falsy values
  - 0
  - Empty string
  - None

```
bool(1) # True
bool(-1) # True
bool('Hello') # True

bool(0) # False
bool('') # False
bool(None) # False
```