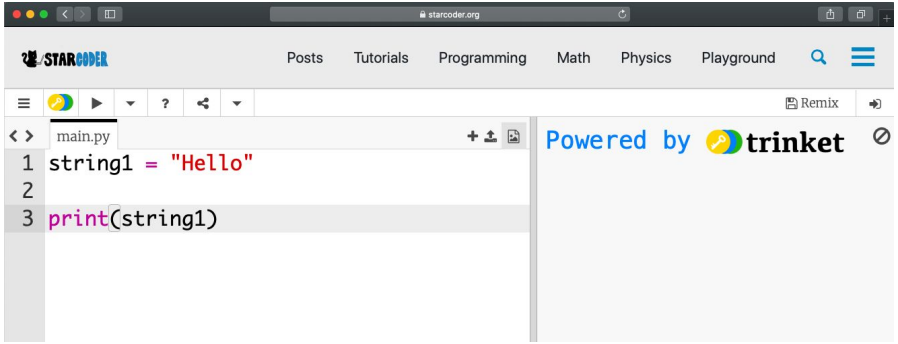
Welcome to
Week 2: Flow Control

Today's Lesson

- Statements
- Comments
- Operators
- If Statements
- Examples

Statement & Multiline

- Python Statement - A single line of python code
- Can be single line, or multilined
- Line continuation character: \



Statement Examples

```
x = 1 + 2 + \
    3 + 4 \
    + 5

print(x)
```

Statement & Single Line

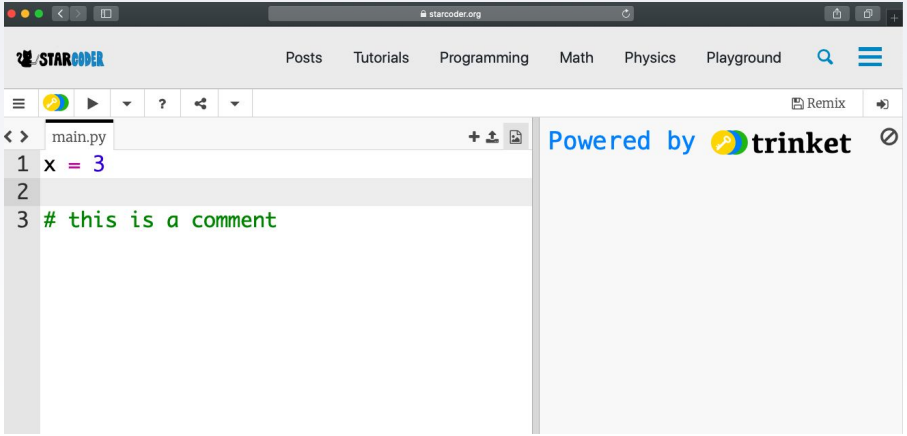
- Lines can be combined (not recommended for most statements)
- Line combination character: ;

Statement Examples

```
x = 1; y = 2; z = 3

print(x, y, z)
```

Comments



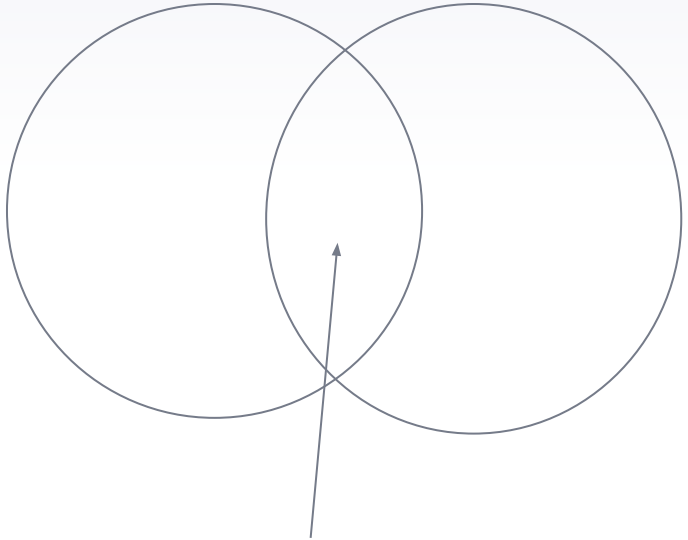
- Helps quickly understand code
- English language, doesn't change program
- Commenting Symbol: #

Pre-Knowledge

- Boolean: Variable with True or False value
- Operators basics (and, or, not)

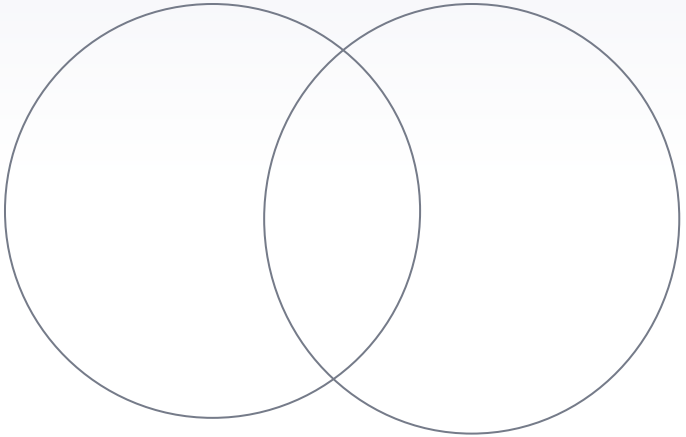
Logical Operators (in detail)

- And
  - It is raining and I have an umbrella
  - True and False
  - True and True
  - False and False



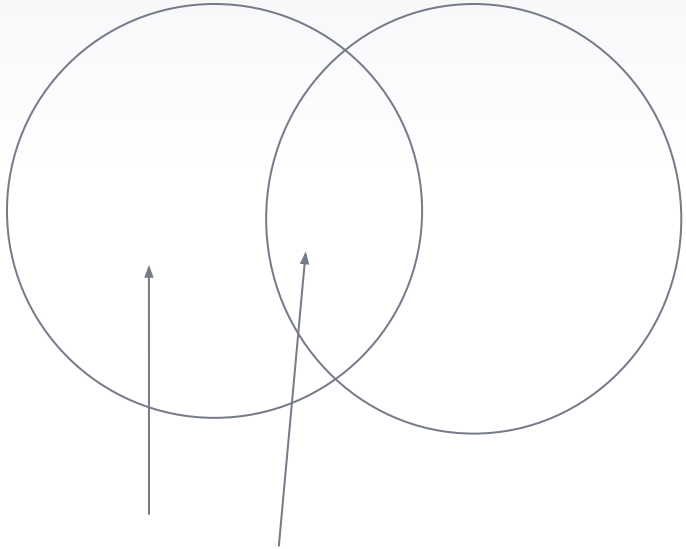
Logical Operators (in detail)

- Or
  - It is raining or I have an umbrella
  - True or False
  - True or True
  - False or False



Logical Operators (in detail)

- Not
  - Typically put first
  - Not (raining)
  - Not (I have an umbrella)
  - Not True
  - Not False



Logical Operators List (Best to Memorize)

A	B	A AND B	A OR B	NOT A
False	False	False	False	True
False	True	False	True	True
True	False	False	True	False
True	True	True	True	False

Relational Operators

- Operations performed on two numbers

Operator	Description
<	Less than
>	Greater than
<=	Less than or equal to
>=	Greater than or equal to
==	Equal to
!=	Not equal to

- True/False Value

Common Mistake!

- = is not equal to ==
  - = is for assignment
  - == is for comparison

```
a = 2
if a = 1:
    print (a)
```

Examples of Relational Operators

1. 10 > 4
    a. True
2. 2 >= 2
    a. True
3. 4 == 4.2
    a. False
4. 5 != 2
    a. True

If Statements

- If statement: only executing a block of code if a condition is true
- Condition - operators!
- Indentation is important!

```
if (something happens):
    (do this)
```

Indentation

```
x = 1
if (x > 0):
        print (x)
print("Hi")
```

VS

```
x = 1
if (x > 0):
print (x)
print("Hi")
```

If/Else Statement

- Else: only execute code when condition is NOT true.

```
if (something happens):
        (do this)
else:
        (do this)
```

Nested If Statements

- More than one condition
- Leads to different blocks of code

```
if (something happens):
        (do this)
elif (something else happens):
        (do this)
else:
        (do this)
```

Nested If Statements

```
if (something happens):
    (do this)
else:
    if (something else happens):
        (do this)
    else:
        (do this)
```

Is the Same As

```
if (something happens):
    (do this)
elif (something else happens):
    (do this)
else:
    (do this)
```

Examples of If Statements

```
x = 3
if x > 3:
        print("x is greater than 3")
elif x == 3:
        print("x is equal to 3")
else:
        print("x is less than 3")
```

```
x = 4
if x > 3:
        print("x is greater than 3")
elif x == 3:
        print("x is equal to 3")
else:
        print("x is less than 3")
```

```
x = 1
if x > 3:
        print("x is greater than 3")
elif x == 3:
        print("x is equal to 3")
else:
        print("x is less than 3")
```

Examples and Problems!

Type Your Answers in the Chat

Let's try logical operators with if statements! What does this print?

```
x = True
y = False
if (x and y):
        print ("Yes!")
else:
        print("No!")
```

What does this print?

```
hiking = False
running = True

if hiking and running:
    print ("So much exercise!")
elif hiking or running:
    print ("Just a bit...")
else:
    print ("No exercise!")
```

What does this print?

```
today = “Tuesday”
raining = True
if today == “Monday”:
    print (“Workout”)
elif today == “Tuesday”:
    if raining == True:
        print (“Ping Pong”)
    else:
        print (“Tennis”)
Else:
    print (“Homework”)
```

What does this print?