



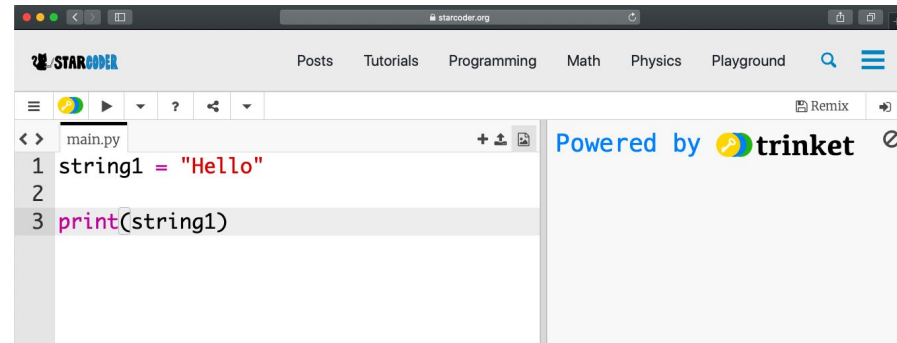
Welcome to Week 2: Flow Control

▶ 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: \



The screenshot shows a web browser window with the URL `starcoder.org`. The page header includes the **STARCODER** logo and navigation links for `Posts`, `Tutorials`, `Programming`, `Math`, `Physics`, and `Playground`. Below the header is a toolbar with icons for file operations and a `Remix` button. The main editor area shows a file named `main.py` with the following Python code:

```
1 string1 = "Hello"  
2  
3 print(string1)
```

On the right side of the editor, there is a `Powered by trinket` logo.

▶ 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: ;

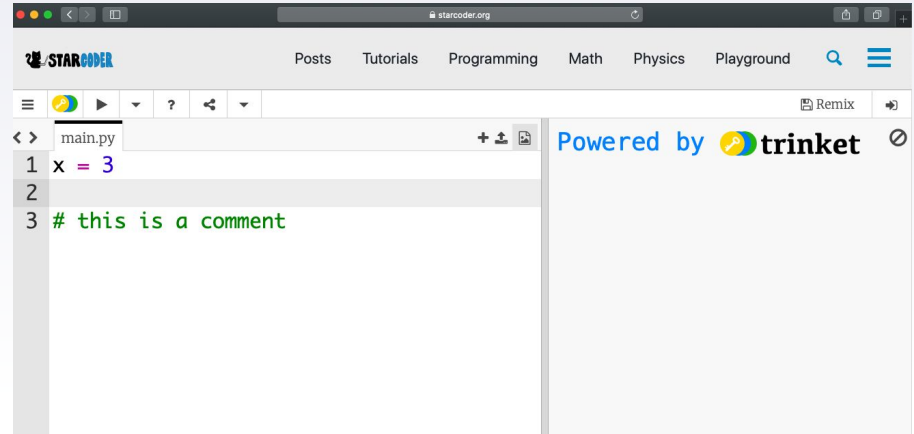
▶ Statement Examples

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

```
print(x, y, z)
```

Comments

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



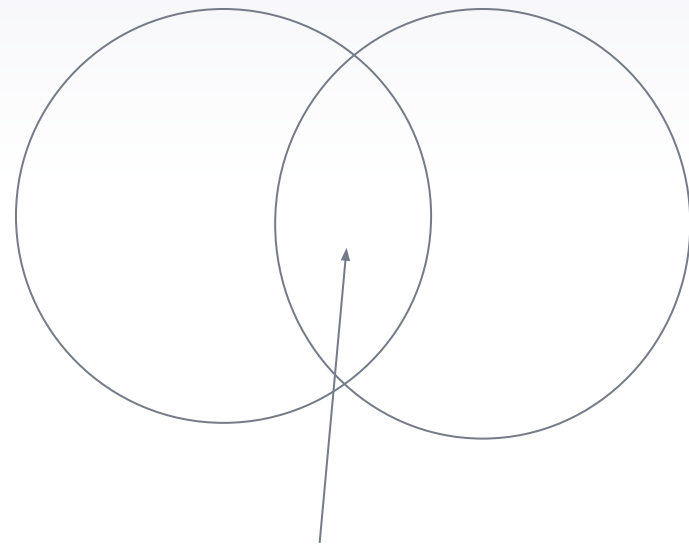
The screenshot shows a web browser window with the URL `starcoder.org`. The page has a navigation bar with links for "Posts", "Tutorials", "Programming", "Math", "Physics", and "Playground". Below the navigation bar is a toolbar with icons for home, play, help, and share. The main content area shows a code editor for a file named `main.py`. The code contains three lines: `1 x = 3`, `2`, and `3 # this is a comment`. The comment is highlighted in green. To the right of the code editor is a sidebar with the text "Powered by trinket" and a "Remix" button.

► Pre-Knowledge

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

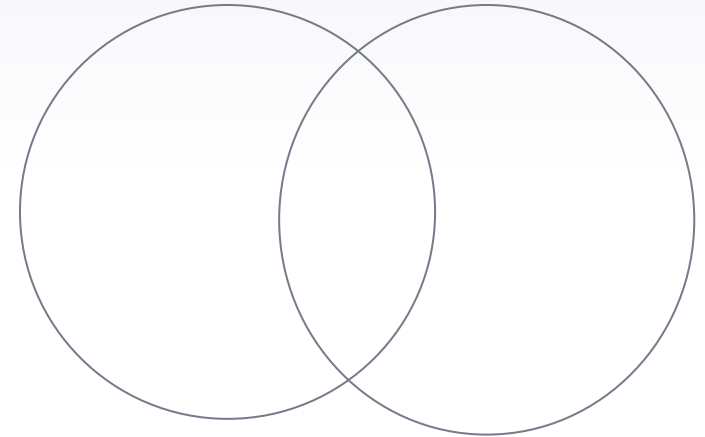
▶ Logical Operators (in detail)

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



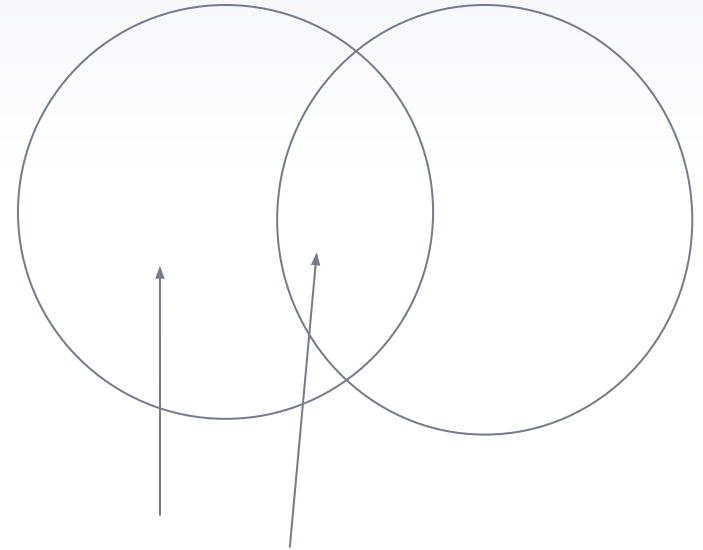
▶ Logical Operators (in detail)

- ▶ 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. $2 \geq 2$
 - a. True
3. $4 == 4.2$
 - a. False
4. $5 \neq 2$
 - 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?