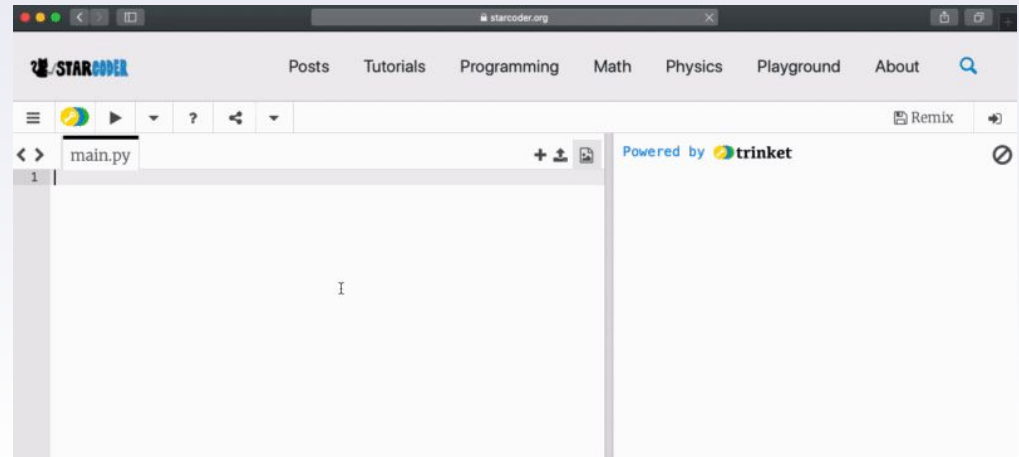# Welcome to
Lesson 3: Lists and Loops

Today's Lesson

- Lists
- List commands
- Loops
  - For Loops
  - While Loops

Python Lists

- Python List - sequence of comma separated items
  - ▷ Can be any value (str, int, bool, etc)
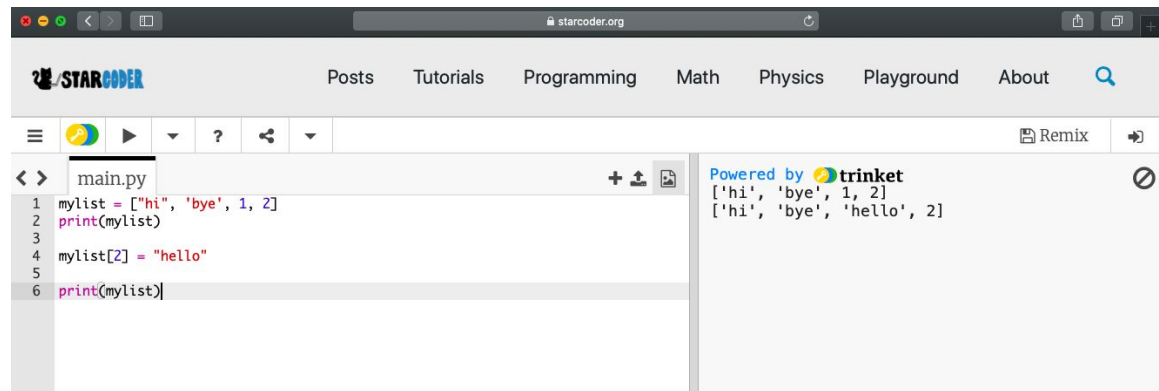
- Different types can be put into one list!

List Indexing and Values

- Just like strings
- Starts from 0, not 1

- Index: the position
- Value: the actual value at the index

List = [0, 1, 2, 3, 4, 5]

0	1	2	3	4	5

List[0] = 0   List[0:] = [0,1,2,3,4,5]

List[1] = 1   List[:] = [0,1,2,3,4,5]

List[2] = 2   List[2:4] = [2, 3]

List[3] = 3   List[1:3] = [1, 2]

List[4] = 4   List[:4] = [0, 1, 2, 3]

List[5] = 5

List Modifying

▸ Changing single values of the list

▸ Listname[index] = newvalue
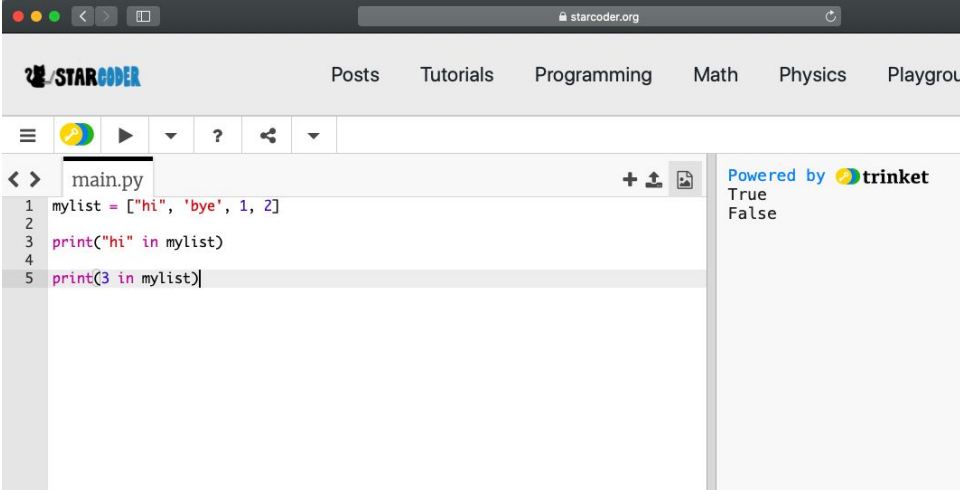
List "in"

- in: Determine if object is in the list

- Returns True or False
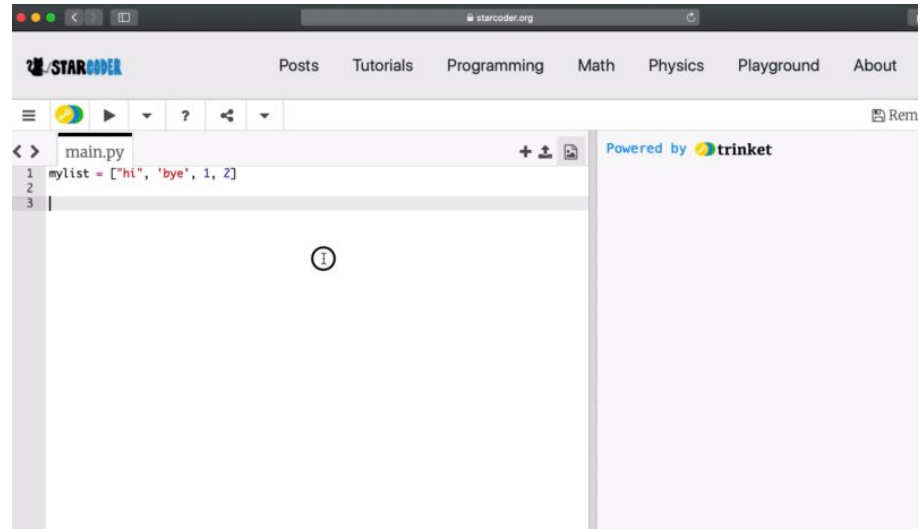
List Append

▶ Append - adding something to the list

▶ Adds to end of list
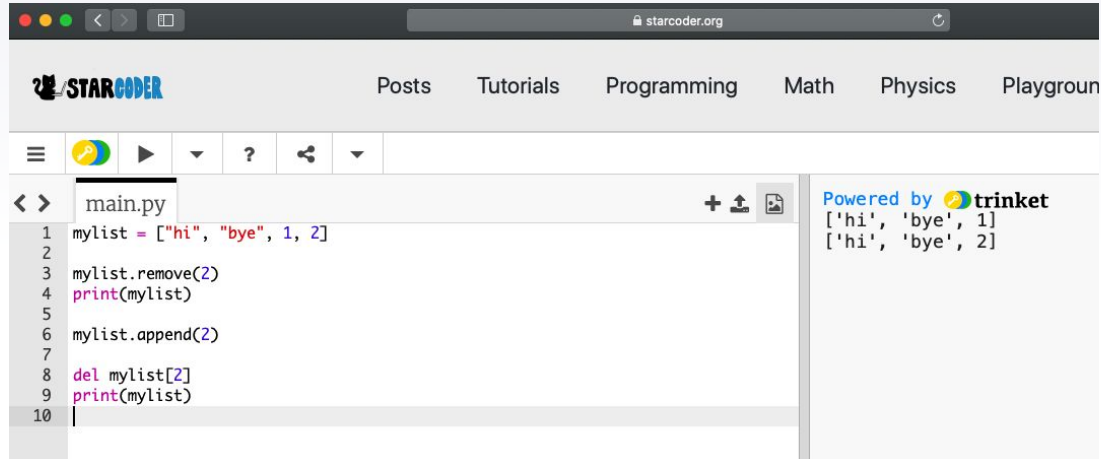
List Removing

- 2 main ways to remove
  - listname.remove(item <u>value</u>)
  - del listname[item <u>index</u>]

Example

"hi"	"bye"	1	2
0	1	2	3

Range

▸ Range - creates a list of integers with the range

  ▹ 3 parameters→

PARAMETER	DESCRIPTION
start	Optional. An integer number specifying at which position to start. Default is 0
stop	Required. An integer number specifying at which position to end.
step	Optional. An integer number specifying the incrementation. Default is 1

▸ Examples

```python
x = range(0, 10, 1)
print(x)

# We can omit the last parameter 1, as it is the default value
y = range(0, 10)
print(y)

# We can omit the first parameter 0 and last parameter 1
z = range(10)
print(z)
```

```
Powered by trinket
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
```
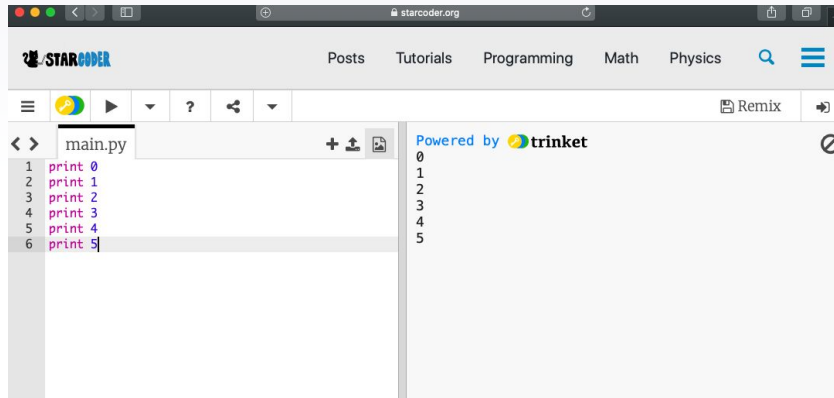
Python Loops

- Python Loop - a statement that executes a block of code repeatedly

- Two types
  - for loop
  - while loop

For Loop

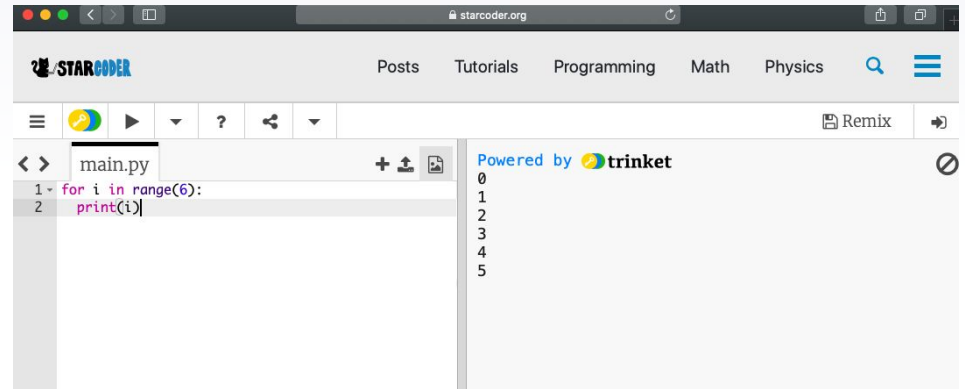▸ For loop – executes the block of code [ ] number of times.
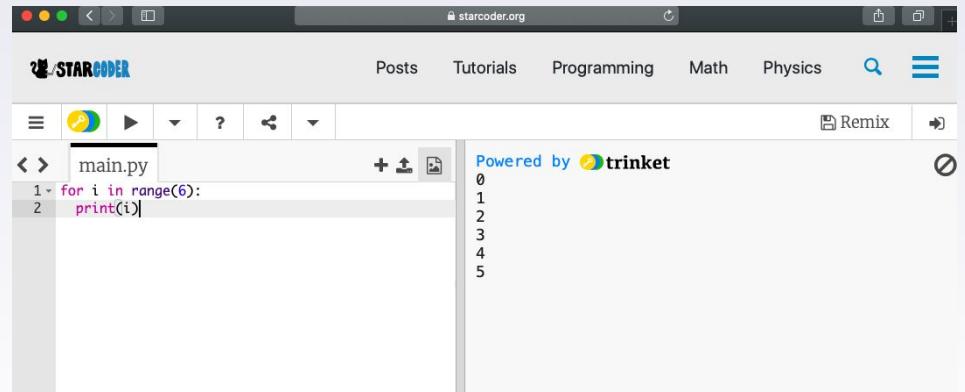
For Loop

Amount of
times it runs

for i in range(6):

    Do something

▸ Three values possible

▸ (start, end, incrementation)

▸ End is the typical

For Loop + List

i is the <u>value</u>, iterates through all values of listname

Runs for the length of the list
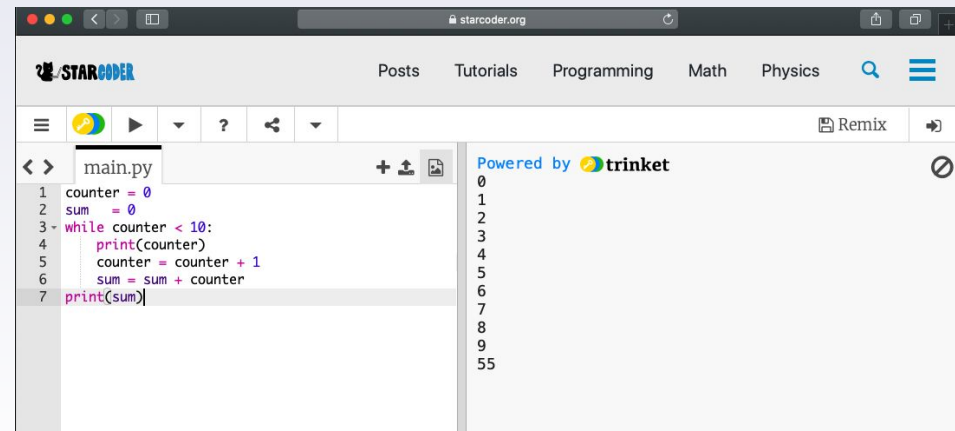
for i in listname:

    Do something

For Loop + List

i is the <u>value</u>, iterates through all values of listname

Runs for the length of the list

for i in listname:

Do something

While Loop

▸ A loop that goes on over and and over again until a certain condition is executed

  ▷ Condition is boolean

▸ Example

Break and Continue

▶ Break - stopping of the loop

▶ Continue

▷ continuing (doing nothing)

Examples and Problems!

Type Your Answers in the Chat

```
count = 0
while count < 10:
    count += 1
    if count == 11:
        print ("hi")
    If count == 2:
        print("bye")
```

What does this print?

```
list = ["one", "two", "three"];
list[1] = "four"
print(list)
```

Try it!