CSCI 141

Scott Wehrwein

`for` loops

Goals

- Know the syntax and behavior of the `for` statement (`for` loop)

- Know how to loop over a list of objects using a for loop.

Hot take: for some tasks, `while` loops are annoying.

- Often, you want: “Do `some_thing()` 10 times”
- With a while loop you need to:

```
i = 0
while i < 10:
    some_thing()
    i += 1
```

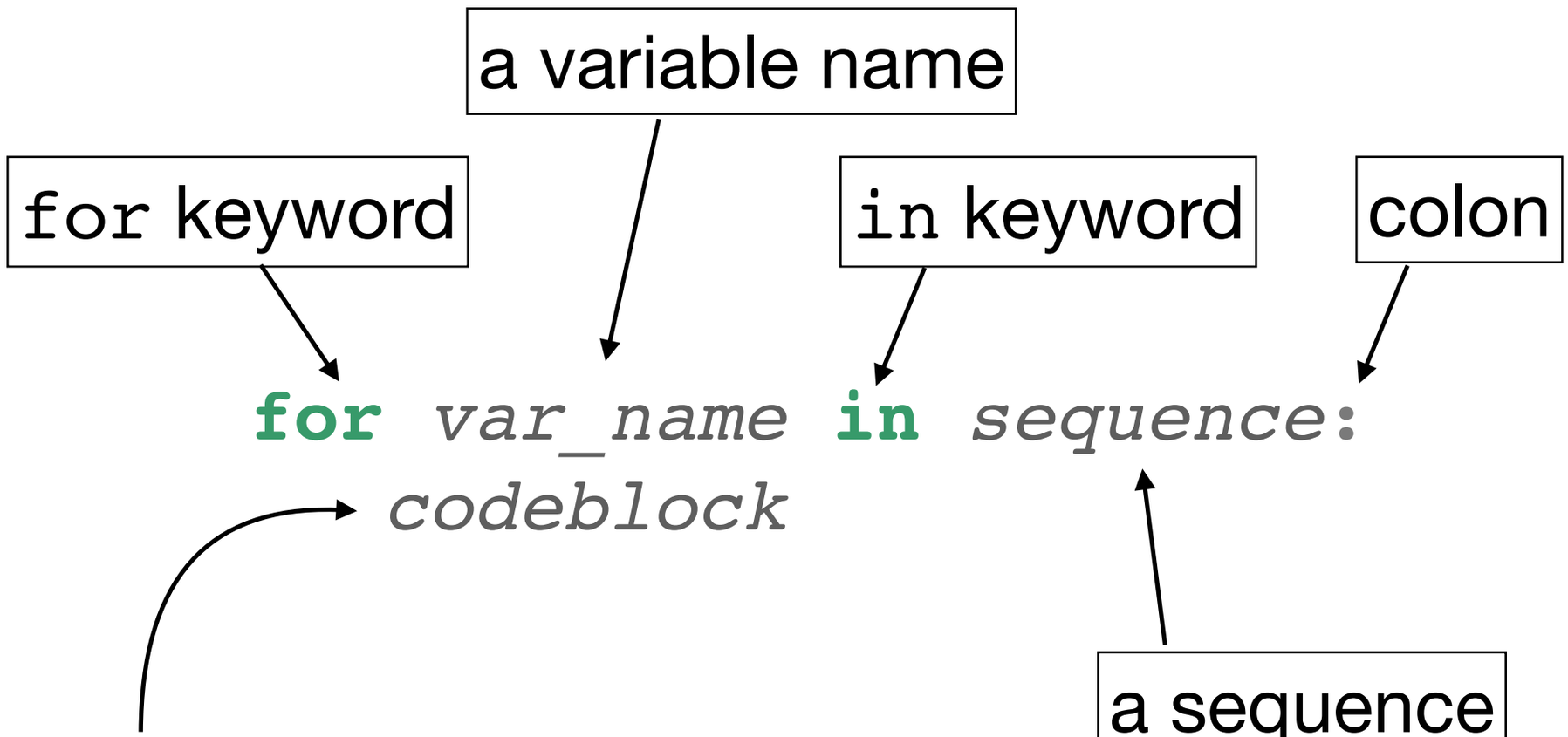
I don’t even care about `i`, it’s just bookkeeping!

- Wouldn’t it be great if we could:

```
do 10 times:
    some_thing()
```

We (almost) can! Using `for` loops.

The `for` statement: syntax



Sequences in Python: Lists

```
for color in ["red", "green", "blue"]:
    print(color)
```

This is a `list`: an ordered collection of values.
Much more on these later.

This code prints:

```
red
green
blue
```

The `for` statement: behavior

```
for color in ["red", "green", "blue"]:
    print(color)
```

The loop body is executed once **for each** value in the sequence (list).

This code prints:

```
red
green
blue
```

In *each* iteration, the loop variable (`color`) takes on a *different* value from the sequence:

(`"red"`, then `"green"`, then `"blue"`)

The `for` statement: behavior

```
for color in ["red", "green", "blue"]:
    print(color)
```

The loop body is executed once **for each** value in the sequence (list).

This code prints:

```
red
green
blue
```

In *each* iteration, the loop variable (`color`) takes on a *different* value from the sequence:

(`"red"`, then `"green"`, then `"blue"`)

Notice: the loop variable gets updated **automatically** after each iteration!

Demo

- for_demo.py
  - for loop over strings
  - for loop to square each of a list of numbers