Why Does My Computer Do That? Intro to Coding with Python– User Input

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Slides based off slides courtesy of Jordan Crouser (https://jcrouser.github.io/)

Plan for Today

- Learn how to get user input
- Write a few programs

Recall: the `print()` function

- **`print()`** outputs information to the console ("the shell")

- Works on lots of different **data types** (strings, integers, floats, and many more!)

- When **`print()`** is called on ("passed") a **`variable`**, it outputs the **contents**

```
Python 3.8.2 (default, Feb 26 2020, 02:56:10)
> x = 3
> print(x)
```

Recall: the `print()` function

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> x = 3
> print(x)
3
```

Refresher exercise

- Let's write a short program that prints the following:

```
###########
#  CAIS117  #
###########
```

Discussion

What if we wanted to be able to print a banner around ANY word?
What would we need?

Discussion

What if we wanted to be able to print a banner around ANY word? What would we need?

- The word
- To be able to count how many characters are in the word

Another function: `len()`

- `len()` takes in a string and gives back the string's length (number of characters, including spaces)

- Can be called on string **literals** ("`stuff in quotes`") or on **variables** whose contents are strings

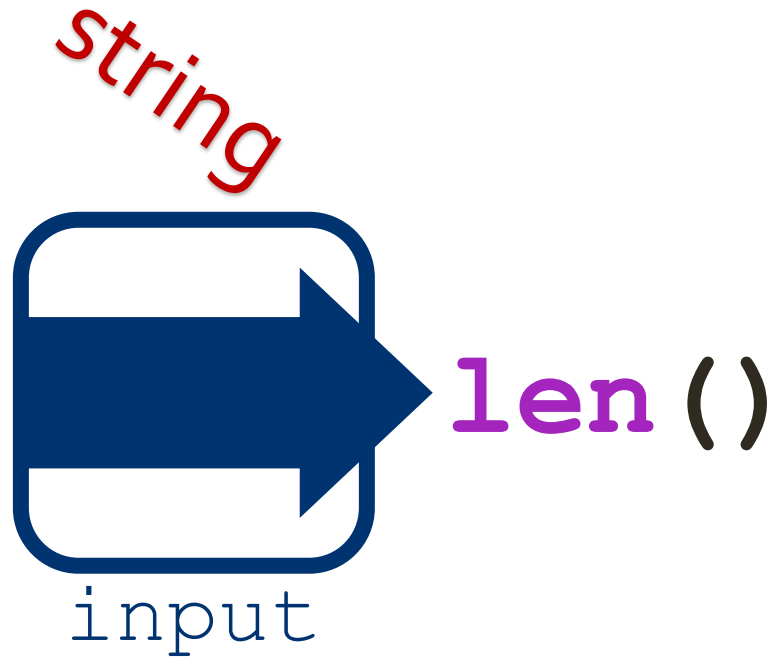- Unlike `print()`, `len()` **returns** a value

```
Python 3.8.2 (default, Feb 26 2020, 02:56:10)
> len("Jordan")
```
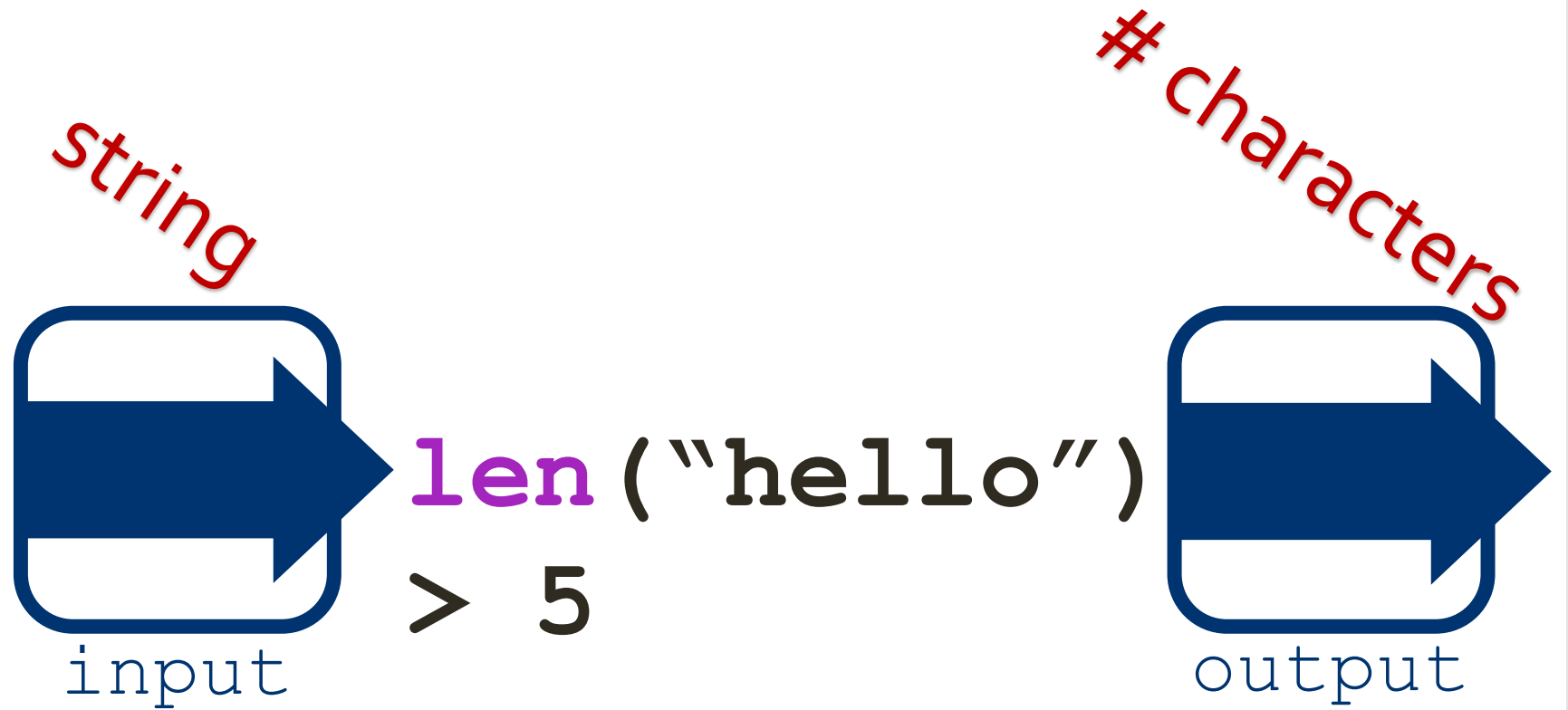
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```
Python 3.8.2 (default, Feb 26 2020, 02:56:10)
> len("Jordan")
6
```

Back to the 4 basic tasks

string

len()

input

characters

output

Back to the 4 basic tasks

string

characters

`len``("hello")`
`> 5`

input

output

Recall: `variables`

- In CS, a **variable** is a place to store a piece of data

- In Python, variables are:
  - **declared** by giving them a name
  - **assigned** using the equals sign

- Example:

$$x = 3$$

declaring a variable x

assigning the value 3 to x

Recall: variables

- In CS, a **variable** is a place to store a piece of data

- In Python, variables are:
  - **declared** by giving them a name
  - **assigned** using the equals sign

- Example:

$$x = len("hello")$$

declaring
a variable x

assigning
the return value to x

Recall: `variables`

- In CS, a **variable** is a place to store a piece of data

- In Python, variables are:
  - **declared** by giving them a name
  - **assigned** using the equals sign

- Example:

```
myStrLen = len("hello")
```
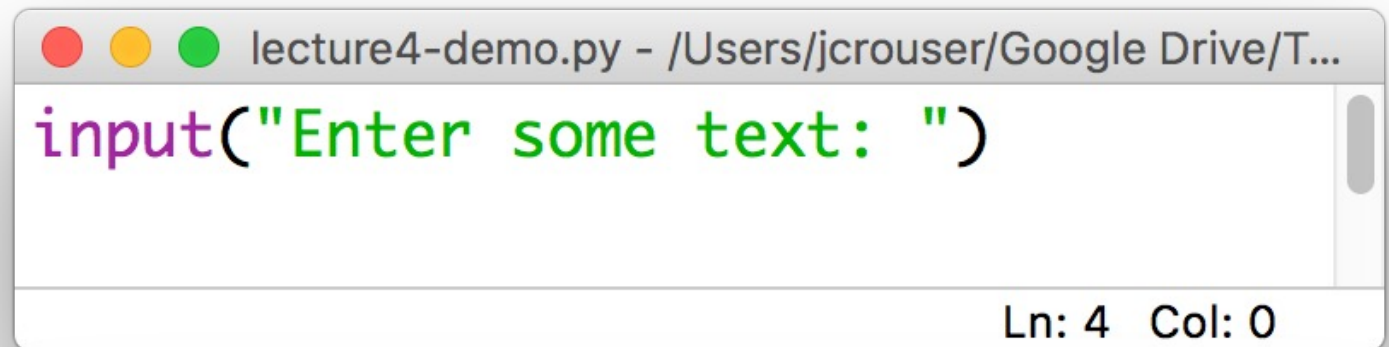
declaring
a variable

assigning
the return value

Discussion

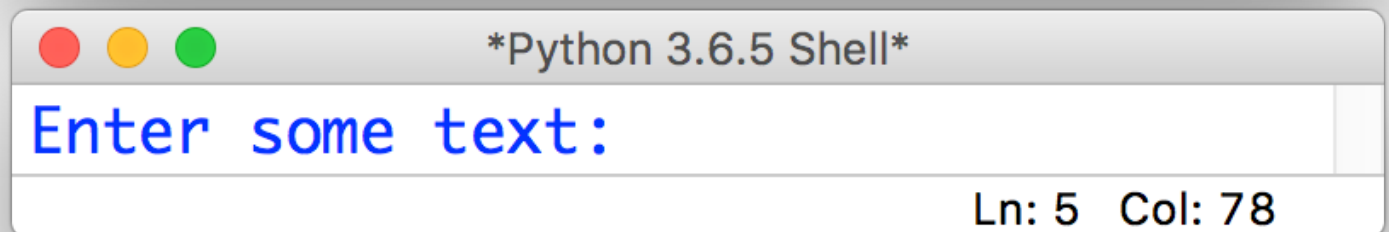What if we wanted to be able to print a banner around ANY word? What would we need?

- The word
- ☑ To be able to count how many characters are in the word (and store answer)

The **input()** function

- Python has a built-in **input()** function that allows us to ask the user to type in information
- The **input()** function takes in a value, which will be printed to the console as a prompt:
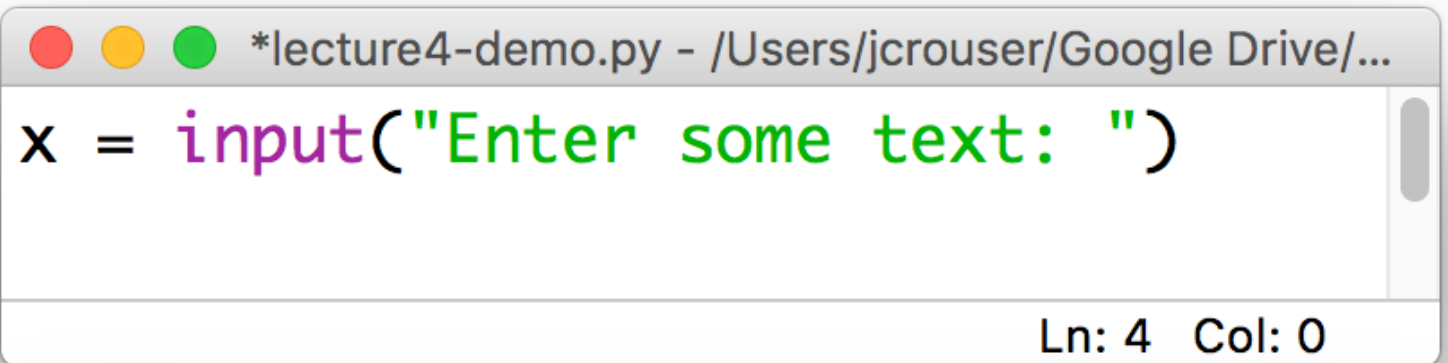
```
lecture4-demo.py - /Users/jcrouser/Google Drive/T...
input("Enter some text: ")

                                            Ln: 4  Col: 0
```
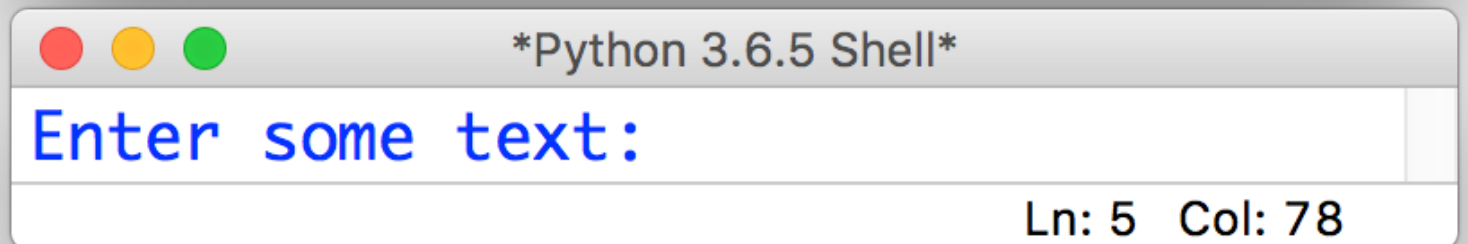
```
*Python 3.6.5 Shell*
Enter some text:

                                         Ln: 5  Col: 78
```

The `input()` function

- In general, we will want to **save** what the user enters so we can do something with it

- This means we need to **assign** the value **returned** by the `input()` function to some variable, e.g.

Discussion

What if we wanted to be able to print a banner around ANY word?
What would we need?

☑ • The word
☑ • To be able to count how many characters are in the word (and store answer)

• Let's modify our program:
https://replit.com/team/CAIS117-F23

Note: The `eval()` function

- The user's input is always returned as a **`string`**, even if they enter only numeric characters

- If we want Python to interpret it as a number, we can use the `eval()` function


```
x = eval(input("Enter some text"))
```
lecture4-demo.py - /Users/jcrouser/Google Drive/...
Ln: 3 Col: 0

- Then we can manipulate x using mathematical operations

Coding sprint: putting it all together

- In small groups, write a program that asks the user to `input()` two strings:
  - a `word`
  - a `number`
- Store the user input in appropriate **variables** (remember: `eval()` will return the *numeric value* of a *string*)
- `print()` the `word` the user-specified `number` of times
- Want a **challenge**? Also ask the user to input a `character` (a single letter or symbol), and use that to print a banner around the repeated word

Discussion

What did you come up with?