Python Basics (class slides)

CSc 110 Python Basics

Announcements

- Trouble accessing Gradescope? Use the link on D2L
- D2L grades are going to be used to calculate your final grade
- Full schedule for office hours can be found at adrianapicoral.com/csc-110/tas.html

Did you set up your workspace?

- Did you download Python 3?
- Did you download VS Code (or PyCharm, or Mu)?
- If not, that's fine, you can use replit.com

What is a program?

The `print` function

- What does the print function do?

The `print` function

- `print()` sends characters (strings) to the **standard output**
- By default, the **standard output** of a python program goes to the console.

```python
print("some characters")
```

```
some characters
```

```python
print('some characters')
```

```
some characters
```

String operations

String concatenation:

- What will the standard output display when the code below is run?

```python
print("hello" + "world")
```

String operations

In your groups, try the following operations:

- String repetition: `"abc" * 4`
- String concatenation with `+` and `,`. What is the difference?
- Combine both repetition and concatenation to print the following:

```
They sang AaAaAaAaAaAaAaAaAaAa
```

Multiple `print` statements

- What will the standard output display when the code below is run?

```python
print('Are')
print('You')
print('In')
print('College?')
```

Multiple `print` statements

- By default, the `print` function sends the output cursor to the next line after printing

```python
print('Are', end = ' ')
print('You', end = ' ')
print('In', end = ' ')
```

```
print('College?', end = ' ')
```

Are You In College?

What other characters can you use for values for the **end** parameter?

Dealing with special characters

Write a simple program that prints the following output to the python console:

Attendance

- As a group, write your answer to the previous exercise on a whiteboard
- Write on the whiteboard the name of a TA
- Submit your whiteboard answer to Gradescope (take a picture with a phone)

Variables

Variables and assignment

- Variables are names in a program that represent a stored value
- We can assign names to particular values in our program
- When we give a value a name, or update the value stored in a variable, this is called assigning a variable

Demonstration of variable assignment

Variable assignment does not produce any output to the console. Run the following code:

```
first_name = "Mary"
family_name = "Silva"
```

How would we print these variables?

Statements (vs expressions)

- *Expressions* represent values or the computation of values
- *Statements* represent executable steps in a program.
- Statements often include expressions

Here's a **statement** that invokes the `print` function with the **expression 3 + 4** as an argument.

```
print(3 + 4)
```

Basic Types

- string: `"hello"` or `'hello'`
- integer: `3`
- float: `3.14`
- bool: `True` or `False`

Use the function `type()` with each literal type.

Operations

Try the following operators with the different types in python:

Operations and Variable Assignments

Variable assignments are not like math — they can appear in equations that make no mathematical sense.

```
x = 5
print(x)
x = x + 2
print(x)
```

`x = x + 2` means "take the current value of x, add it with 2, and assign the resulting value (7) to x as its new value."

Comments

Computer program can include comments, which are simply text that is meant to be read, but not executed.

```python
# assign a radius value
radius = 3
# compute the area of a circle
area = 3.1415 * radius ** 2
```

The purpose of comments is to "document" the program so that subsequent readers can more easily understand it, or learn things about it (e.g., its original author).