2.5. Data Types

If you are not sure what class (data type) a value falls into, Python has a function called **type** which can tell you.

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```
print(type("Hello, World!"))
print(type(17))
print("Hello, World")
print(type(3.2))

```

```
<class 'str'>
<class 'int'>
Hello, World
<class 'float'>
```

Activity: 1 -- ActiveCode (ac2_5_1)

What about values like `"17"` and `"3.2"`? They look like numbers, but they are in quotation marks like strings.

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```
print(type("17"))
print(type("3.2"))

```

```
<class 'str'>
<class 'str'>
```

Activity: 2 -- ActiveCode (ac2_5_2)

They're strings!

Strings in Python can be enclosed in either single quotes (`'`) or double quotes (`"`), or three of each (`'''` or `"""`)

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```
print(type('This is a string.'))
print(type("And so is this."))
print(type("""and this."""))
print(type('''and even this...'''))

```

```
<class 'str'>
<class 'str'>
<class 'str'>
<class 'str'>
```

Activity: 3 -- ActiveCode (ac2_5_3)

Double quoted strings can contain single quotes inside them, as in `"Bruce's beard"`, and single quoted strings can have double quotes inside them, as in `'The knights who say "Ni!"'`. Strings enclosed with three occurrences of either quote symbol are called triple quoted strings. They can contain either single or double quotes:

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```
print('''"Oh no", she exclaimed, "Ben's bike is broken!"''')

```

```
"Oh no", she exclaimed, "Ben's bike is broken!"
```

Activity: 4 -- ActiveCode (ac2_5_4)

Triple quoted strings can even span multiple lines:

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```
print("""This message will span
several lines
of the text.""")

```

```
This message will span
several lines
of the text.
```

Activity: 5 -- ActiveCode (ac2_5_5)

Python doesn't care whether you use single or double quotes or the three-of-a-kind quotes to surround your strings. Once it has parsed the text of your program or command, the way it stores the value is identical in all cases, and the surrounding quotes are not part of the value.

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```
print('This is a string.')
print("""And so is this.""")

```

```
This is a string.
And so is this.
```

Activity: 6 -- ActiveCode (ac2_5_6)

So the Python language designers usually chose to surround their strings by single quotes. What do you think would happen if the string already contained single quotes?

When you type a large integer, you might be tempted to use commas between groups of three digits, as in

`42,000`. This is not a legal integer in Python, but it does mean something else, which is legal:

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```
1 print(42500)
2 print(42,500)
3
```

```
42500
42 500
```

Activity: 7 -- ActiveCode (ac2_5_7)

Well, that's not what we expected at all! Because of the comma, Python chose to treat this as a *pair* of values. In fact, a print statement can print any number of values as long as you separate them by commas. Notice that the values are separated by spaces when they are displayed.

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```
1 print(42, 17, 56, 34, 11, 4.35, 32)
2 print(3.4, "hello", 45)
3
```

```
42 17 56 34 11 4.35 32
3.4 hello 45
```

Activity: 8 -- ActiveCode (ac2_5_8)

Remember not to put commas or spaces in your integers, no matter how big they are. Also revisit what we said in the previous chapter: formal languages are strict, the notation is concise, and even the smallest change might mean something quite different from what you intended.

Note

The examples in this online text describe how print works in Python 3. If you install Python 2.7 on your machine, it will work slightly differently. One difference is that print is not called as a function, so there are no parentheses around the values to be printed.

Check your understanding

data-5-1: How can you determine the type of a variable?

- A. Print out the value and determine the data type based on the value printed.
- B. Use the type function.
- C. Use it in a known equation and print the result.
- D. Look at the declaration of the variable.

Check me Compare me

✔ The type function will tell you the class the value belongs to.

Activity: 9 -- Multiple Choice (question2_5_1)

data-5-2: What is the data type of 'this is what kind of data'?

- A. Character
- B. Integer
- C. Float
- D. String

Check me Compare me

✔ Strings can be enclosed in single quotes.

Activity: 10 -- Multiple Choice (question2_5_2)

You have attempted 11 of 10 activities on this page

2.4. Function Calls">
nction Calls">

✔ Completed. Well Done!

2.6. Type conversion functions">

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