Data, Expressions, and Variables

Data Types

Exercise 1
Give examples of literal **values** for each of the following data types:

Any valid literal of the correct type is a correct solution.

boolean

Answer: eg. `True, False`

integer

Answer: eg. `-1, 0, 1`

float

Answer: eg. `-3.0, 1e5, 5.3`

string

Answer: eg. `'Hello', "Bonjour"`

Exercise 2
Provide examples of information you see everyday that could be best represented as:

(a) integer data

(b) floating point data

(c) string data

(d) boolean data

Solution

(a) Bus route number, Page numbers in a book, etc.

(b) Cost of gas, Radio station frequencies, etc.

(c) URLs, Text messages, etc.

(d) Whether items are in stock, alarm system armed/disarmed, etc.

Exercise 3
What data type(s) would we use to represent data from the following scenarios:

There are many possible solutions to the question. Consider the following as examples:

(a) Reporting which button(s) were pressed on a video game controller

Answer: eg. could use a single character, different value for each button; could map buttons to integers; could have several pieces of Boolean data, one per button

(b) Displaying information on the dash of a car

Answer: eg. floats for speed or fuel gauge, integers for mileage, Booleans for warning lights (engine trouble, low oil, etc...)

Literals

Exercise 4
Which of the following are valid Python literals, and why?

(a) `3`

Answer: integer

(b) `3.`

Answer: float

(c) `3.00`

Answer: float

(d) `-3e1`

Answer: float

(e) `3e`

Answer: Invalid (no exponent provided)

(f) `'3'`

Answer: string

(g) `"The Three Musketeers"`

Answer: string

(h) `'"All for one and one for all!"'`

Answer: string

(i) `""One for all and all for one!""`

Answer: Invalid (empty string followed by nonsense)

(j) `Musketeer`

Answer: Invalid (this is an identifier (variable), not a literal)

(k) `''`

Answer: string

(l) `true`

Answer: Invalid (bool values must be capitalized)

(m) `False`

Answer: bool