Variables and Expressions

CMPT 140

Variables

Giving a name to data values

Exercise 1

Which of the following are valid variable names? If they are invalid names, why are they invalid?

(a) `jeff`

(b) `def`

(c) `hunter_name`

(d) `_is_ready`

(e) `Area9`

(f) `4_hunters_face_off_against_big_wyvern`

(g) `angry wyverns`

(h) `uSeRnAmE`

(i) `wyvern+hunter_fodder`

Exercise 2

Write a Processing program with the following behaviour:

- **When the user clicks the mouse:** A **white circle** appears at the mouse's location. If the user clicks somewhere else, a white circle appears at that location and the old circle disappears.
- **When the user presses the 'b' key:** The circle **turns black** but does not move.

Exercise 3

What are the values of these Python expressions?

(a) `3 + 2`

(b) `3.0 + 2`

(c) `7 / 2`

(d) `7.0 / 2.0`

(e) `7 / 2.0`

(f) `11 % 5`

(g) `12 % 3`

(h) `3.0 + 3 / 2`

(i) `(3.0 + 4) / 2`

(j) `"c" + "o" * 6 + "kie"`

Exercise 4

Write Python expressions for the following mathematical terms:

(a) $20 \bmod 3$

(b) $\frac{1}{2}(55.0)$

(c) $-(-3^3)$

(d) $(3 + \frac{35}{5})$

(e) $\frac{3.5+1.5}{11-6} - \frac{7}{(5-3)^8}$

Exercise 5

Pretend that the Processing canvas represents a map of a city and that each pixel is a plot of land. When the user clicks the mouse, display the **price** and **property tax** of the plot of land that was clicked.

- The **price** of a plot is `mouseX + mouseY`
- The **tax** is 14% of the price
- Use `text()` to display the price and tax on the canvas

Exercise 6

Write an interactive Processing program which keeps track of the number of keys pressed using a variable. Display the **name of that variable** and its **value** on the canvas.

- You'll need to use the keyword `global`
- Use `text()` to display the information on the canvas