Outline for October 13, 2020

Reading: §3, 5   **Assignments:** Homework 1, due October 15, 2020

1. Office hours are Wednesday and Friday at 11:00am–11:50am Pacific time; use the class Zoom link.

2. Simultaneous assignment [*swap.py*]

    (a) Simple assignment: `variable = expression`

    (b) Simultaneous assignment: `variableA, variableB = expressionA, expressionB`

3. Decision structures [*if0.py*]

    (a) `If` statement

4. Conditions

    (a) Resolves to boolean value

    (b) Literal booleans: `True, False`

    (c) Relational operators

        i. Use two arithmetic expressions connected with relational operators to create a boolean

        ii. Relational operators: $>, >=, <, <=, ==, !=$

        iii. Precedence: resolved after arithmetic operators

        iv. `6 > 2 + 3; "UCD" == "Sac State"`

5. Two-way decisions [*if1.py*]

    (a) `if ... else` statements

    (b) `else` very powerful when the positive condition is easy to describe but not the negative

6. Multi-way decisions [*if2.py*]

    (a) Can execute code based on several conditions

    (b) `elif` (else if)

    (c) *else* only reached if all previous conditions false

    (d) Compare to nested if statements

7. Iteration

    (a) Definite loops: execute a specific (definite) number of times

    (b) Indefinite loops: execute until a general condition is false

8. For loops

    (a) General form: `for i in iterator`

    (b) *Iterator* is either list or something that generates a list

    (c) Very common form: `for i in range(1, 10)`

9. `range()` in detail [*for.py*]

    (a) `range(10)` gives 0 1 2 3 4 5 6 7 8 9

    (b) `range(3, 10)` gives 3 4 5 6 7 8 9

    (c) `range(2, 10, 3)` gives 2 5 8

    (d) `range(10, 2, -3)` gives 10 7 4

10. While loops [*while.py*]

    (a) Repeats until condition is false