

CSI 32 LECTURE NOTES (Ojakian)

Topic 4: Class Details

OUTLINE

READ: Chapter 10.

1. Pointers, etc.
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1. References to Classes

- (a) Identifier as: Reference or Pointer, separate from actual data of object.
- (b) (Roughly) Identifier = Name = Alias = Reference = Pointer
- (c) Implications of multiple names for same object.
Example: Do two names, one object.
- (d) Equality Testing and `__eq__` over-ride.
Example: Do two objects, “same” data. Use `id`.
- (e) Objects with no pointer: garbage collection.
- (f) (Possible) exception to rule: Immutable primitive classes.
Example: `Str`

2. Implications of sending objects to functions

- (a) Call by value versus call by reference.
- (b) Calling a function is equivalent to assigning the *formal parameters* in the function definition to the arguments used in the function call.
- (c) Examples
- (d) Call by Reference: Advantage in space and speed. Disadvantages in protecting unwanted modifications to an object.

3. The “self” argument

- (a) Just a variable. Try different names.
- (b) Refers to the constructed object.
- (c) Object using its own methods.

PROBLEM 1. Add a `reset` method to *Profile* (resets visited webpages), which is also called by *init*.

4. Using Classes within other data types

- (a) Preliminaries of use of `key` in sorted and sort.
- (b)

PROBLEM 2. Create a list of tuples and sort on various entries.

- (c) List of objects

PROBLEM 3. Consider Profile class from Topic 3. Create a list of profiles and sort by various parameters.

(d) In dictionaries

PROBLEM 4. Write a program that operates in 2 phases. In phase 1 the user repeatedly enters a Profile. In phase 2, the user can enter two profiles (by ID) and the program prints the web sites they both visited.

5. References in lists and tuples

Are you changing a pointer or the data being pointed to?

- (a) Lists store references, not the actual data.
- (b) Example: Trying to change value in a tuple.
- (c) Example: Trying to modify an object in a tuple.

6. Copying an Object

- (a) With lists, sets, dictionaries
 - i. Shallow list copy
 - ii. Deep list copy.
- (b) In classes: Make your own copy method!

7. Power of Aliasing

Example (ch. 10): You and spouse with accounts, 3 ways to store accounts: 1) Completely dependant, 2) Partially dependant, 3) Completely independant.