

CSI 33 LECTURE NOTES (Ojakian)

Topic 2: Classes in Python and C++

OUTLINE

(References: Ch. 9)

1. Python Classes versus C++ Classes

1. Python Class Examples

Classes and child classes to write in Python.

- (a) Die and Bag-Of-Dice. Test craps?
- (b) Card (for playing games) and Deck of cards. Compute Blackjack scores? In Groups ...
- (c) Polygon and child classes: Rectangle and Triangle, with square as child of Rectangle.
- (d) Person and child classes: Student, Professor, and FictionalPerson, with BCC-Student as child of Student and Wizard as child of FictionalPerson.

2. C++ Classes

Do some in C++.

- (a) Now - make private and public.
- (b) Make inheritance public.

3. Python versus C++ Classes

- (a) Usual Differences still apply:
 - i. Bodies: Python Indentation versus C++ Braces.
 - ii. Static versus dynamic typing
- (b) Python: Everything public
- (c) C++: Options of public, protected, and private
- (d) Python: "self" parameter; C++: not
- (e) Constructor/initializer:
 - i. Python: "init".
 - ii. C++: method with same name as class
- (f) Passing an object to a function:

PROBLEM 1. *In both Python and C++ try passing an object, and changing the values to see if it persists after the function call. Try this in two ways in C++ (usual and by reference).*

- (g) Operator Overloading: Basically just different syntax

PROBLEM 2. *Overload equivalence checking so that two characters are equal if they have the same alignment and their hit points are within one of each other.*

In Python: `__eq__` (with self and other argument)

In C++: `operator==` (with one argument)