Midterm 2 Review

The midterm will focus on object-oriented concepts and the Java language, though there will be some questions involving Python. Following are topics and sample questions:

Navigating a complex object (e.g., the Python Google program)

If University has a college AandS which has a list of Students named studentList, and each student has data members name and age, how do you total the ages of all students? In Python? In Java?

Object-Oriented Terminology (can you identify these in a program? Which are synonymous?)

instance
class
cookie
cookie cutter
object
instance variable
data member
method
this
self
constructor
string representation
object equality
user-defined type
field
strongly-typed language
declaration

Object-Oriented Concepts
Syntactically, what is the difference between an object-oriented function call and a structured (traditional) function call?

self vs. this: What are the differences between how Python and Java deal with ‘the object’ of object–oriented?

What occurs on an object creation statement (e.g., new in Java)

When is an object's toString (__str__) called?

When an object is sent as a parameter, what really gets sent?

What are the standard 'bookkeeping' methods in a class?
Writing a class

Write a class ‘Foo’ with data members ‘x’ and ‘y’, a default constructor, a constructor that takes in two parameters, a method totalXY which returns the sum of data members x and y, and a main that creates two ‘Foo’ instances, puts them in a list, then prints the total of calling each of their totalXY methods (use a loop)

Tracing an OO program

- objects live on heap
- create their boxes on object creation statement
- provide a sub-box for each data member.
- constructor called on new
- ‘this’ is an implicit parameter on every function call

Java ArrayList:

How do you declare, create, put elements in, get elements out?

W

rite code that loops through a list of Person objects to find the youngest person.

Conditions, and statement blocks

How is a statement block defined in Java? Python?

When specifying a condition in Java, what is needed that is not needed in Python?

Types

what does 'strongly typed language' mean?

what are the advantages of it? Disadvantages?

What is the difference between a 'class' and a 'type'?

What are the scalar types in Java?