Exam 1 Study Guide:

What is a GIS?

What are the basic capabilities of ArcView?

What are the basic types of geographic data that ArcView supports?

What is an ArcView project?

What types of documents are in an ArcView project?

What is a Graphical User Interface (GUI)?

What are the components of a Graphical User Interface in ArcView?

What is structured application development?

Why use a structured approach to application development?

What is the number one rule in application development?

What are the four steps that your book outlines for structured application development?

What is the purpose of a requirement study?

What is involved in developing a prototype interface?

Describe structured testing. What are the strengths of structured testing?

What is the purpose of documenting your code?

What are the key components of documentation within a script?

What sort of naming conventions exist for variables?

What are the capitalization rules for different parts of a script (such as variable names, classes, key words, and enumerations)?

What is the difference between a local and a global variable?

The following block of code shows an example of indenting. Be prepared to look at a similar block of code, and find indenting errors. (There are no errors in this block)

```avenue
if (_crossMode) then
  for each aButton in av.GetActiveGUI.GetButtonBar
    oTag = aButton.GetTag
    if (oTag = "@") then
      if (_scMode) then
        aButton.SetEnabled(TRUE)
      else
        aButton.SetEnabled(FALSE)
      end
    elseif (oTag = "focus") then
      aButton.SetEnabled(TRUE)
    end
  end
end
```

What are the differences between object-oriented and procedural programming languages? (Remember that Avenue is a largely procedural scripting language that works with objects)
Know the meanings of these terms:

Classes
Encapsulation
Attributes
Operations (methods, services)
Objects
Requests
Arguments (parameters)
Polymorphism
Association
Inheritance (generalization)
Multiplicity
Aggregation

Describe the relationship between classes and objects, and explain what is special about an abstract class.

Describe the relationship between requests and operations, and explain how arguments are used in requests.

Request naming goes by a convention that breaks up the request into actions and properties. Know what this means, and be able to make a guess at what a request does by looking at its name.

What does it mean if class A is a subclass of class B?

What does it mean if class A has an attribute that is an instance of class B?

What does it mean if class A has an aggregation of objects of class B?

What is an object model diagram, and what can you learn from one?

Be prepared to interpret an object model diagram. For instance, look at the diagram on the right, and be sure you can accurately explain the relationships between all of the classes.
Everything in ArcView is an object. What object contains all other objects when the ArcView application is open? What key word is used to access this object?

Describe how you would control the flow of a program with a loop (either a for-each loop, or a while loop).

Describe how you would control the flow of a program with a conditional statement (if-then-else, and elseif).

Know how to interpret comparison operators (X = Y, X > Y, X >= Y, X < Y, X <= Y).

Know how to use Boolean operators (Not X, X and Y, X or Y, X xor Y).

Describe the differences between prefix, infix, and postfix notations.

Below are some blocks of code. I want you to be able to write a brief description of what they are doing.

**Example 1:**

```plaintext
minX = 12
maxX = 22
rangeX = maxX - minX

myView = av.GetActiveDoc
myView.SetObjectTag(rangeX)
```

**Example 2:**

```plaintext
myGUI = av.GetActiveGUI
myButtonGUI = myGUI.GetButtonBar

for each aButton in myButtonGUI
    myObjectTag = aButton.GetTag
    if (myObjectTag = "@") then
        aButton.SetEnabled(false)
    elseif (myObjectTag = "focus") then
        aButton.SetEnabled(true)
    end
end
```

Be sure that you can identify the variables, the classes, the keywords, the requests, and the operators in the code above.