CS 432 Midterm Review Guide.

Guzdial chapters 0 – 4 (or other on-line Smalltalk reference), C# chapters 1 - 9, class lectures (Introduction to OO Concepts - C# interfaces – collections, and interfaces), and posted examples.

What you should be able to read / do:

**Smalltalk**  read code and understand it, know the major operators, language concepts: messages (object receiver, or object method), super new initialize, conditional expressions, inheritance, iterators (timesRepeat:, whileTrue, to:by:do:, do, reject, select, collect, detect, inject:into:, satisfyAll ...), blocks, collections (array, string, indexed, ordered, sorted, dictionary), sort block ...
There will be no questions on Morphic, but turtle graphics drawing and color could be used.

**C#**  read code and understand it, know switch, if, Console.WriteLine w/ format list, enum, foreach, class, property, inheritance, virtual, override, new, base, abstract, sealed, struct, interface, arrays, collections and their interfaces.

**Exam Questions:**  half to a third multiple choice, T/F and half to a third essay.  Currently I’m thinking about a three part midterm: multiple choice, essay, design.

**Multiple choice, T/F**
1. definition of terms: class instance variables, super
2. output of methods: given method and call select result
3. design choices: choose among collection, iterators

**Design** (UML lite) psuedocode solution to small problem.  The design problems we have done in lecture have a complexity like the problems I will try to use.
1. Look at the design problems posted off the class page.
   Midterm problem could be a subset of one of these problems (for example #2 below).
2. represent a deck of cards {shuffle, deal} and players for a card game
3. represent a todo list of items (rank and description) {add, delete, modify items and rank}

**Essay**
1. Describe encapsulation and inheritance in Smalltalk.  What is visible and what is hidden?
2. Describe the strengths and weakness of Smalltalk as an application development OOP language; specifically the collection classes.
3. Describe the relationship between instance objects and class objects (meta classes) in Smalltalk.
4. Describe C# properties and contrast their use with get*() set*() methods in Java or C++.
5. Describe **abstract**, **virtual**, **override**, and **new virtual** with respect to C# methods.
6. Describe and compare the uses of regular C# classes with abstract, sealed classes, and structs.
7. Describe the use of interfaces to support C# collections.  IEnumerable, ICollection, IComparer / CompareTo(...), IList.  Understand ArrayList and its usage.