CSE1720

Week 06, **Class Meeting 16** (Lecture 11)

Winter 2013 ◆ Tuesday, Feb 12, 2013

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Goals for today's class meeting

- Clarify: status of lab exercise (Friday's lab was a snow day)
- Opportunity to ask questions about upcoming written test on Thursday
- In-class exercises about inheritance (Ch 9)

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Week 05 Lab Exercise

- Thursday's lab (Feb 7) took place, but Friday's lab (Feb 8) did not due to university closure due to snow
- Exercise due date will be extended to Monday, Feb 18, 2013, 11:59pm
- Foad will squeeze in some discussion during this Friday's lecture

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Written Test #1

- Thursday, Feb 14th, TEL 0007; starts at **10am sharp**
- Closed book test; Appendices will be provided for any code or APIs that are covered by the test.
- Test will cover:
  - all of the material that we covered in lecture, including the code base
  - Chapters 7 and 8 of the text book.
- Types of questions:
  - questions, T/F questions, and multiple-choice questions.
  - draw UML Class Diagram, given either a small code base or the APIs for a set of classes

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Questions about Inheritance

- General properties of subclasses: **RQ 9.1 – 9.7, 9.29**
- Rationale for subclass design: **RQ 9.8 – 9.9**
- Substitutability principle: **RQ 9.10 – 9.12**
- Early vs Late Binding: **RQ 9.13 – 9.19**
- Manual Casting (in Subclass Context): **RQ 9.20 – 9.23**
- Interfaces, Abstract Classes: **RQ 9.24, 9.27 – 9.28**
- Instantiation (in Subclass Context): **RQ 9.25 – 9.26**
- Strong typing: **RQ 9.30 – 9.32**

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General Properties

RQ9.1 How do you determine whether a class extends another… :

- given the class' API?
- given a UML class diagram?
- given the code definition written in Java?

ANSWER:

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General Properties

Identify parent-child class relationships in our game codebase…

What can you say about the features about the child?

*a class's *features* are its attributes and methods

ANSWER:

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General Properties

RQ9.5 Can a child class have more than one parent class?

Can a parent class have multiple child classes?

ANSWER:

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General Properties

Identify, in the codebase, a place where a child class has a method that has the same name as a parent's method

ANSWER:

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General Properties

RQ9.6 If a subclass has a method with the same name as a parent's method, which method will appear in the subclass API and in which table?

Will your answer change if the child's method has the same parameter list as that of the parent?

ANSWER:

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About the methods in a child class…

They fall under the following **three** categories:

- **new** method
  - if the method signature is defined **ONLY** in the child class and not defined in parent (applies even if method name is found in parent, but signature if different)
- **inherited** method
  - if the method signature defined **ONLY** in the parent class; this method is also available to child instances
- **overridden** method
  - if method signature defined in the parent class **AND also** defined in the child class
  - the child class provides another version of the method functionality that **overrides** the parent's method functionality

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About the fields in a child class…

They fall under the following **three** categories:

- **new** field
  - if the field is defined **ONLY** in the child class and not defined in parent
- **inherited** field
  - if the field defined **ONLY** in the parent class; the child can use it as its own
- **overshadowed** field
  - if a field name in the child is the SAME as a field in the parent (regardless of type). Parent field cannot be used, since the child's field will block it

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General Properties

RQ9.29 If class C extends class P, is C a descendant of the Object class?

What ***kind*** of descendant class?

A direct descendant or indirect descendant?

ANSWER:

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Review

Chapter 1, In More Depth 1.6, p. 24

What is a “type”?

ANSWER:

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Review

This description of “type” was intended for primitive types.

How do we extend the description to capture non-primitive types?

ANSWER:

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Substitutability

RQ9.10 What is the substitutability principle?

In Java? In everyday life? (RQ9.12)

ANSWER:

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Substitutability

Identify places within the codebase in which the substitutability principle has been used

ANSWER:

Substitutability

RQ9.11 In which contexts can the substitutability principle be applied?

ANSWER:

Binding

What is meant by early binding?

What is meant by late binding?

ANSWER: