

Review

Amit Shabtay

Review

- What have we done during the course?
- Where to learn more?
- What is for the exam?

March 3rd, 2004

Object Oriented Design Course

2

Common Mistakes and Basic Design

- One page method is important.
- Do not neglect these basic rules.
 - Open Closed Principle
 - Dependency Inversion Principle
 - Interface Segregation Principle
 - Acyclic Dependencies Principle
 - Law of Demeter

March 3rd, 2004

Object Oriented Design Course

3

Design Patterns

- Use of highly tested patterns for general purposes
 - Language free
- Forms a common jargon
- Makes the design process easier and the code more modular.

March 3rd, 2004

Object Oriented Design Course

4

Unit Tests, Ant as a Framework

- TDD - Test Driven Development
 - Tests are per-functionality
 - Tests check themselves
- Ant as a framework
 - Cross-platform
 - Defining new tasks

March 3rd, 2004

Object Oriented Design Course

5

Typing Issues

- Weak vs. Strong
 - Weak typing means that you can mix types without an explicit conversion.
 - Strong typing says you cannot. All types are known at compile time
- Static vs. Dynamic
 - In dynamic typing a target may hold a binding to any kind of object

March 3rd, 2004

Object Oriented Design Course

6

LSP

- Covariance, Contravariance and NoVariance
- Liskov Substitution Principle
 - Functions that use pointers or references to base classes must be able to use objects of derived classes without knowing it

March 3rd, 2004

Object Oriented Design Course

7

Exceptions

- An *exception* is a runtime event that may cause a routine to fail terminating in a state satisfying its contract.
- Correct exception handling
 - Exception neutrality
 - Weak exception safety
 - Strong exception safety
- "A False Sense Of Security"

March 3rd, 2004

Object Oriented Design Course

8

Generic Programming

- Write the code once, and worry about the type at compile time
- Used mainly in containers and algorithms
- C++ templates, Java generics
- Solves type safety:

```
Map.put("key", "4");  
Integer i = (Integer)map.get("key");
```

March 3rd, 2004

Object Oriented Design Course

9

Dynamic Proxies

- Main idea:
 - The proxy wraps objects and adds functionality.
 - All proxy methods invocations are dispatched to the `invoke(...)` method of the instance invocation handler.
- Applications
 - Aspect-Oriented Programming: standard error handling, log & debug for all objects
 - Creating dynamic event handlers

March 3rd, 2004

Object Oriented Design Course

10

AOP & AspectWerkz

- Cross-cutting concerns
- Terminology
 - Advices
 - Pointcuts
 - Aspects

March 3rd, 2004

Object Oriented Design Course

11

Objects & Databases

- Two widely used technologies
- Most of the applications today are written using object oriented techniques and languages.
- Persistence is the key of saving data

March 3rd, 2004

Object Oriented Design Course

12

Frameworks and Components

- "A set of cooperating abstract and concrete classes that makes a reusable design for a specific class of software"
- Components vs. Framework
- Framework vs. Design Patterns

- Domain knowledge, Architecture, Object oriented design

March 3rd, 2004

Object Oriented Design Course

13

RUP and eXtreme Programming

- Rational Unified Process is a commercial product for software development process.

- eXtreme Programming
 - Small projects
 - Embracing change
 - 12 principles

March 3rd, 2004

Object Oriented Design Course

14

Technologies- Not to Memorize

- Eclipse
- Ant
 - The new build tool
- Java Generics
- O/R Mapping
 - Problems
 - Hibernate

March 3rd, 2004

Object Oriented Design Course

15

Not covered in the course

Distributed Applications

- What happened when the application run on more than one computer?
 - Web server
 - Application server
 - Database
- SOA - Service Oriented Architecture
 - a collection of services which communicate with each other

March 3rd, 2004

Object Oriented Design Course

17

Web Applications

- Many applications are written now with web interface
 - Why?
- How to design scalable and maintainable web site?
 - MVC- model ↔ view ↔ controller

March 3rd, 2004

Object Oriented Design Course

18

To Learn more

Java & J2EE

- <http://www.java.net/>
- <http://www.onjava.com/>
- <http://www.javaworld.com/>
- <http://www.theserverside.com/>

.NET & Microsoft

- <http://msdn.microsoft.com>
- <http://msdn.microsoft.com/msdnmag>

Look out for the weblogs

- <http://www.jroller.com/>
- <http://weblogs.java.net/>
- <http://weblogs.asp.net/>

In the exam

Exam material

- Theoretical exercises
- All the articles marked as "required"
- All the exercise hour material
- **NOT technologies**
 - Eclipse
 - Ant
 - Hibernate