

“Killer Examples” for Design Patterns

The fifth annual OOPSLA “Killer Examples” workshop

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Abstract

The “Killer Examples” series of workshops are highly interactive workshops whose goals are to bring together educators and developers to share their respective design pattern and object-oriented expertise, and to provide a forum for discussion of techniques for presenting these examples and the design patterns they showcase to students.

These workshops have been an annual occurrence at OOPSLA since 2002, in Seattle. The theme of the workshop is “killer examples” for design patterns; to earn the title “killer” an example must provide clear and overwhelmingly compelling motivation for design pattern use.

While there is a formal application procedure to guarantee admission to the workshop, we do accept walk-ins if space permits and the walk-ins are determined to have adequate interest and background in the workshop theme to be able to contribute positively to the discussions.

Categories and Subject Descriptors K.3.2 [Computers and Education]: Computer and Information Science Education—Computer Science Education

General Terms Design

Keywords Object-orientation, Design Patterns

1. Introduction

killer app The application that actually makes a sustaining market for a promising but under-utilized technology.

First used in the mid-1980s to describe Lotus 1-2-3 once it became evident that demand for that product had been the major driver of the early business market for IBM PCs. The term was then retrospectively applied to VisiCalc, which had played a similar role in the success of the Apple II. After 1994 it became commonplace to describe the World

Wide Web as the Internet’s killer app. One of the standard questions asked about each new personal-computer technology as it emerges has become “what’s the killer app?”

The Jargon File

The theme of this workshop is “killer examples” for design patterns. We take these to be examples which provide clear and compelling motivation for design pattern use.

Currently both individuals and teams developing systems are being overwhelmed and bested by the two banes of software development: change and complexity. Patterns were the first effective step towards tackling these two challenges. They introduce a level of indirection that allow us to cordon off complexity and change so that they can be managed.

Today’s computer science students are tomorrow’s software developers. Since design patterns are an essential tool for managing complexity and change, it is highly desirable to teach them why design patterns are so useful and how to use them effectively. It is likewise beneficial to bring seasoned developers who are not familiar with pattern into the fold.

A question to be addressed is how to present design patterns and object oriented concepts in a grounded manner so that their purpose and applicability are plainly grasped by a beginning student or non-patterns aware developer. There is certainly no dearth of materials expounding the wonders of design patterns (e.g. [1]). These materials are, for the most part, directed at those with considerable experience with object orientation to start with. Many object-oriented programming texts lack original compelling and grounded examples to serve as motivation for fundamental object oriented concepts. An excellent text which suffers this fate is [2]: its presentation of design patterns is tied to the GOF examples and applications within the JFC/Swing classes. More variety and inspiration would surely help students understand the significance and practical usefulness of design patterns.

In [3], the authors conclude by noting that since “Design patterns and object orientation do not always scale down, care in choosing examples will help ensure that educators and students appreciate the power of design patterns.”

It is the aim of this workshop is to address this issue. We believe there are “naturally occurring” and compelling examples to motivate individual design patterns. The goals of the workshop are

1. to elicit from the participants “the application [the example] that actually makes a sustaining market [compelling argument] for a promising but under-utilized technology [design patterns],” and
2. to bring together educators and developers to share their respective design pattern and object-oriented expertise, and
3. to provide a forum for discussion of techniques for presenting these examples and the design patterns they showcase to students.

2. Workshop activities

This is a full-day workshop. The morning program consists of a short introductory presentation by the organizers, followed by presentations of the submitted examples.

In the afternoon we break into smaller groups for more intense and focused discussions. Each round consists of the presenter(s) of an example, a workshop organizer, and discussants. We mix and match the groups so that everyone gets a chance to discuss each example with its presenter(s).

A tentative schedule, modelled after last year’s, assumes we have 4 accepted example presentations:

8:30 Introduction

8:40 1st example

9:20 2nd example

10:00 Coffee break

10:30 3rd example

11:10 4th example

11:50 Morning wrap-up

12:00 Lunch

1:00 Small group discussions, round 1

1:40 Small group discussions, round 2

2:20 Small group discussions, round 3

3:00 Coffee break

3:30 Poster materials preparation

4:20 Poster materials presentation

4:50 Workshop wrap-up

The discussion periods center around understanding what makes a particular example a “killer”, how the example could be improved or adapted for use in different environments (industry training, freshman-level introductory course, senior-level software design course) and, perhaps most importantly, how best to teach the example.

3. How can I participate?

The workshop has a formal application process for those who wish to present a “killer example” and for those who wish to participate as a discussant. If space permits we happily accept walk-ins on the day of the workshop, but we do screen potential walk-ins to ensure that they have enough of an interest and background to be able to contribute positively to the workshop activities.

References

- [1] E. Gamma, R. Helm, R. Johnson, and J. Vlissides. *Design Patterns: Elements of Reusable Object-Oriented Software*. Addison-Wesley, 1995.
- [2] C. Horstmann. *Object-Oriented Design & Patterns*. John Wiley & Sons, Inc., 2004.
- [3] D. Nguyen and S. Wong. Design patterns: Pedagogical foundations for object-orientation. A workshop presented at *University of Wisconsin System Computer Science Education Workshop*, University of Wisconsin, October 13, 2000.