

Are Object Protocols Burdensome?

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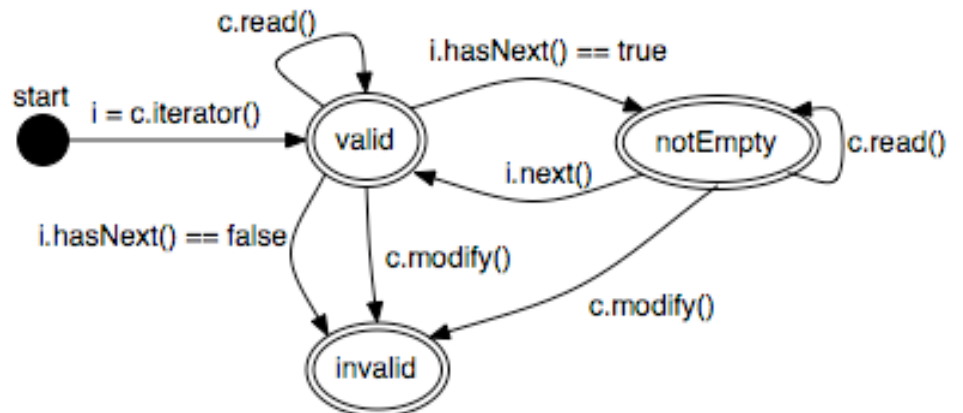
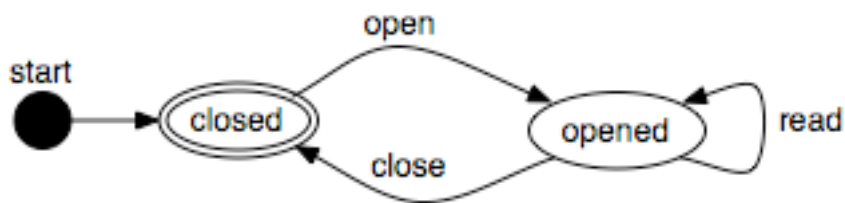
Jonathan Aldrich

Carnegie Mellon



Protocols

- Correct way to use an object or set of objects
- Canonical examples
 - File protocol
 - Iterator/Collection protocol



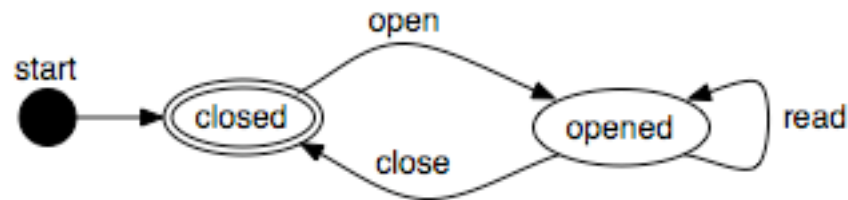
- Significant amount of work
 - Specification languages and static analyses
 - Dynamic miners to infer them
 - Specification competitions at SAVCBS
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Protocols in the wild

- Prior work from Beckman, Kim, and Aldrich
 - >7.2% of studied classes defined a single object protocol
 - 13% of studied classes used one of the protocols
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Questions still to answer

- Do we really believe developers break the File protocol?



- When a developer does break a protocol, is it difficult to debug?
 - In practice, are object protocols **burdensome** for developers?
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Debugging strategies

- Read the code
 - Read documentation
 - Search online for the problem
 - Ask your colleagues
 - And when all else has been exhausted...
post on a forum or mailing list
-

Web Forms

	Thread		Last Post	Replies	Views
	IFrame by cartaysmm		Re: IFrame by cartaysmm a few seconds ago	3	76
	Querystring question by fbachofner		Re: Querystring... by GillouX 4 minutes ago	13	532
	add windows application to web application by tarikkandil		Re: add windows... by tarikkandil 22 minutes ago	3	108
	checkbox problem by xakou		Re: checkbox problem by tarikkandil 22 minutes ago	3	60
	Updating ses by oclon23			1	24
	Using a progr by arreeny			2	23
	How to get location form IP address? by linux_nd		Re: How to get location... by asifchouhan 37 minutes ago	3	76
	jquery and postback problem by maryamsh		Re: jquery and postback... by asifchouhan 55 minutes ago	2	54
	Web Forms and data storage by clownshoes2009		Re: Web Forms and... by clownshoes2009 1 hour, 1 minutes ago	18	1,142
	trying to Email GridView Update		trying to Email...		

Mined the ASP.NET and Spring forums to find examples of broken multi-object protocols

ASP.NET threads

- 1 week of threads in the Web Controls sub-forum (271 threads)
 - Removed off topic, confusing, and unreadable threads
 - Left with 66 understandable postings
 - 16 were on broken multi-object protocol
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Spring threads

- Community less responsive than ASP.NET
 - Mined threads automatically that
 - Had a response from a top-25 poster (understandable)
 - Had a `<pre>` tag (includes code)
 - Uses words “exception” or “error” (not a tutorial question)
 - Has an affirmation from poster (solved)
 - 2 years of data from the MVC sub-forum
 - Left with 156 threads
 - 53 threads on a broken multi-object protocol
-

Time consuming

- Of those that are answered...
 - ASP.NET
 - Average time: **64 hours**
 - Median time: 11 hours
 - Spring
 - Average time: **61.5 hours**
 - Median time: 22.25 hours
-

Even helpful years later...



Jay32

Member



20 Points

14 Posts

Reply

Re: Set value of TextBox with value from DataSet, looping through.

Sep 21, 2010 08:03 PM | [LINK](#)

this is precious...i did not know that...Perfect..saved me a lot of frustration :)

Sameer

Jul 13th, 2009 03:01 PM


#11

pkrasko ◦
Junior Member

Join Date: Jan 2009
Posts: 22

 **Thanks**

Thanks guys, this saved me a hassle.

 Reply With Quote



Motilm

Member



2 Points

1 Post

Reply

Re: Dynamically Loaded UserControl with AddHandler

Nov 24, 2010 11:23 PM | [LINK](#)

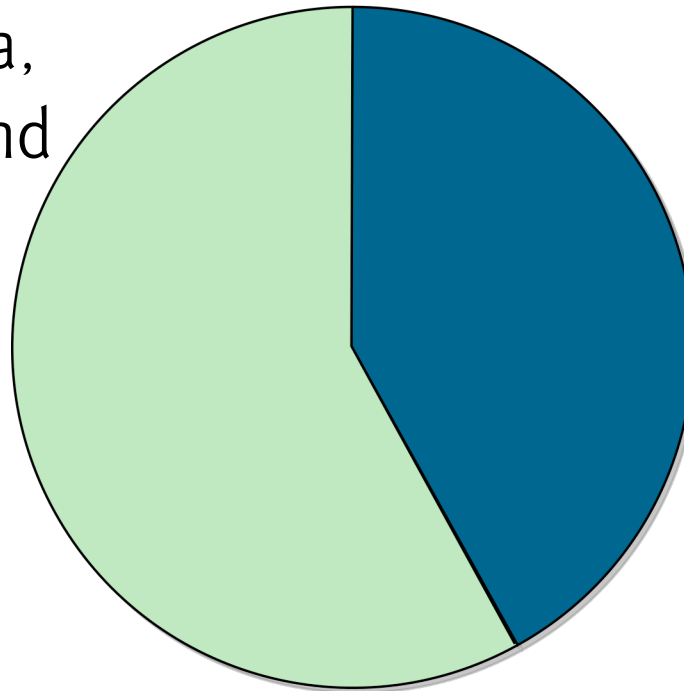
I must have read 10 or more post on how to do this but they were all so complicated I spent hours trying to understand one of them.

Yours was great, I figured it out in a few minutes. Thank you for simplest example possible.

Types of errors

Unexpected Behavior (58%)

includes wrong data,
missing controls, and
weird redirects



Exceptions (42%)

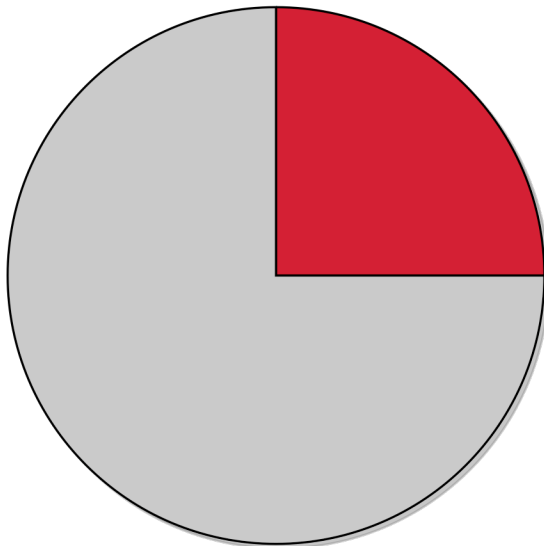
includes null
pointer and class
cast exceptions

Non-local errors

- Non-local: error does not come from the same method or element as the fault
 - Much more difficult to debug!

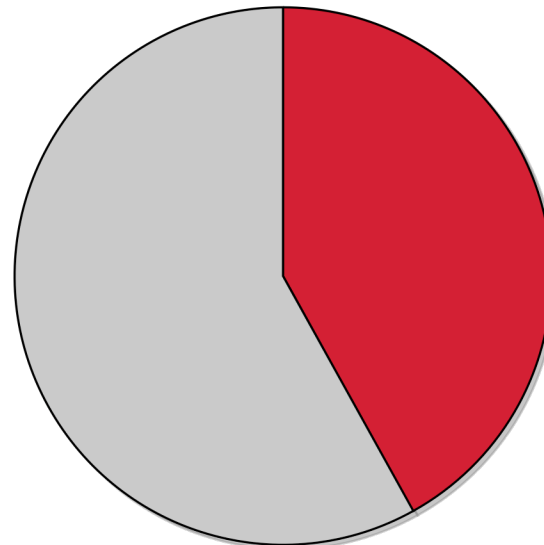
ASP.NET

25% Non-local



Spring

42% Non-local

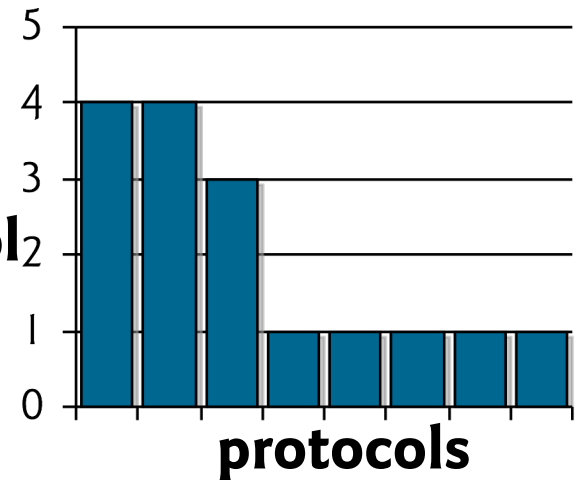


Commonly used protocols

- Threads were **not** about rare protocols
- Same protocol can result in **different error**

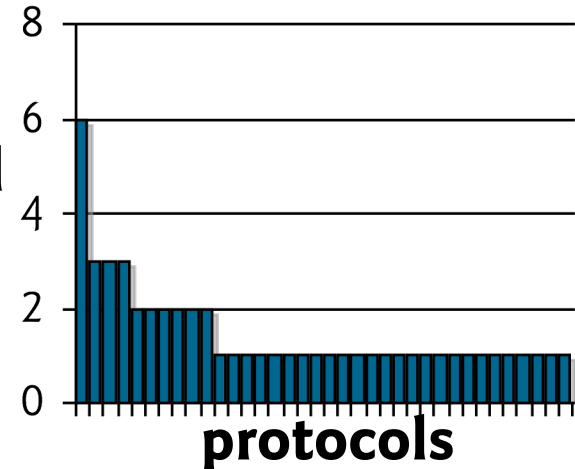
- 3 ASP.NET protocols cover 11/16 threads

#threads on same protocol



- 10 Spring protocols cover 27/53 threads

#threads on same protocol



Methodology analysis

- Able to access a lot of data quickly
 - Provides real-world code
 - Snippets are already reduced to core problem
 - Can find patterns in what developers find troublesome

 - Does not show how often this occurs for each developer
 - Does not show troublesome issues that were solved by another method (docs or search)
 - Hard to track an individual developer (unless very active)
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Burdensome object protocols

- Time consuming to debug and understand
 - Troublesome to debug
 - Unusual manifestations of errors
 - Non-local errors
 - Produce different errors for different violations
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