

CSC 7003 : Basics of Software Engineering

J Paul Gibson, D311

paul.gibson@telecom-sudparis.eu

<http://www-public.telecom-sudparis.eu/~gibson/Teaching/CSC7003/>

Design

</~gibson/Teaching/CSC7003/L4-Design.pdf>

NICE DESIGN....
BUT YOU HAVEN'T
QUITE MASTERED
THE TECHNOLOGY!



search ID: mmo0009

© Original Artist
Reproduction rights obtainable from
www.CartoonStock.com

Some Software Design Quotes

The designer of a new kind of system must participate fully in the implementation.

—Donald E. Knuth

... the designer of a new system must not only be the implementor and the first large-scale user; the designer should also write the first user manual. ... If I had not participated fully in all these activities, literally hundreds of improvements would never have been made, because I would never have thought of them or perceived why they were important.

—Donald E. Knuth

Some Software Design Quotes

I have yet to see any problem, however complicated, which, when you looked at it in the right way, did not become still more complicated.

—Poul Anderson

There are two ways of constructing a software design. One way is to make it so simple that there are obviously no deficiencies. And the other way is to make it so complicated that there are no obvious deficiencies.

—C.A.R. Hoare

... with proper design, the features come cheaply. This approach is arduous, but continues to succeed.

—Dennis Ritchie

Some Software Design Quotes

It's hard to read through a book on the principles of magic without glancing at the cover periodically to make sure it isn't a book on software design.

—Bruce Tognazzini

Good judgement is the result of experience ... Experience is the result of bad judgement.

—Fred Brooks

Programs must be written for people to read, and only incidentally for machines to execute.

—Abelson and Sussman

Some Software Design Quotes

To keep large programs well structured, you either need superhuman will power, or proper language support for interfaces.

—Greg Nelson

Design and programming are human activities; forget that and all is lost.

—Bjarne Stroustrup

The hardest part of design ... is keeping features out.

—Donald Norman

Beauty is more important in computing than anywhere else in technology because software is so complicated. Beauty is the ultimate defense against complexity.

—David Gelernter

Some Software Design Quotes

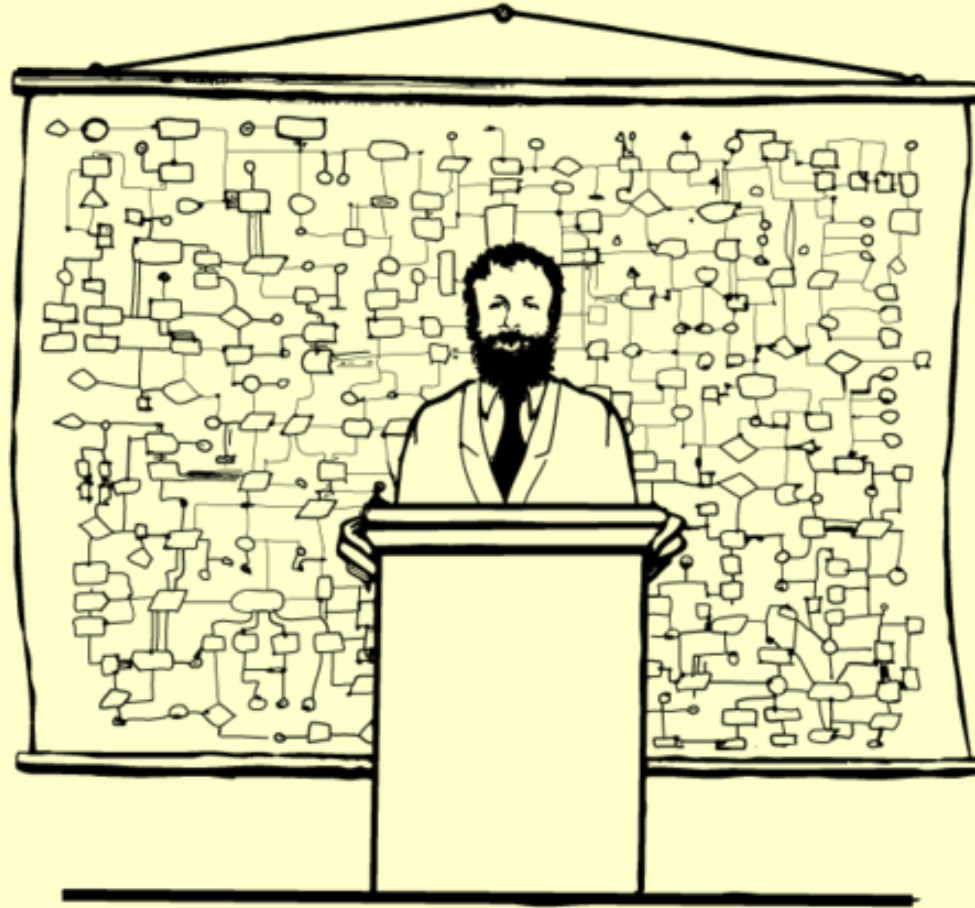
Design is the art of separation, grouping, abstraction, and hiding. The fulcrum of design decisions is change. Separate those things that change for different reasons. Group together those things that change for the same reason.

—Robert Martin

The tragedy of our time is that we've got it backwards, we've learned to love techniques and use people.

—Herb Kelleher

How To Judge If A Design Is Good?



“Now that you have an overview of the system,
we’re ready for a little more detail”

Some Suggested Reading

On the Criteria To Be Used in Decomposing Systems into Modules, Parnas, 1972

A Rational Design Process: How and Why to Fake It, Parnas and Clements, 1986

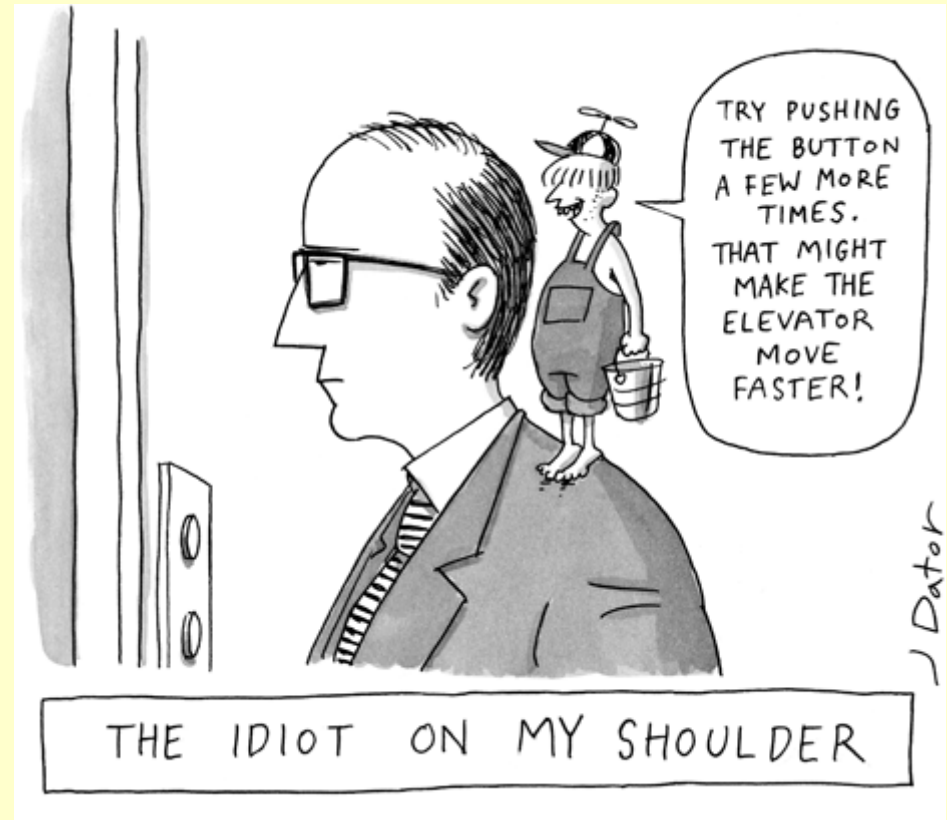
A field study of the software design process for large systems, Curtis, B. and Krasner, H. and Iscoe, N., 1988

What is Software Design?, Jack W. Reeves, 1992

Bad smells in code, Beck and Fowler, 1999

The risks of stopping too soon, Parnas, 2011

Lets Try Out Some Design With Our Lift/Elevator Problem



Propose a design for a lift controller, which can be implemented directly in a programming language of your choice