The daily software engineering life
- How to be prepared -

Martin Lippert, VMware
mlippert@vmware.com
@martinlippert

Martin Lippert

Lead of Spring Developer Tools at VMware
Founder of it-agile GmbH
Developer, Architect, Coach, Technical Lead

- I -
Software Engineering
Fundamentals

Writing something that runs is easy
Writing **good** software is **hard**

Essential:
Programming Languages
Algorithms
Data Structures

The „old" parts:

the difference between ArrayList and LinkedList?
how does a HashMap work?
how does a relational database look like?

The „new" parts:

how does MapReduce works?
what about distributed and messaging systems?
what are key/value stores, document and graph dbs?

$$O(n)$$

Concurrency

is becoming more and more important

Deep understanding necessary

e.g.
Who knows how the Java Memory Model works?
What does „notify()" mean?
What is garbage collection?
How does it affect my programming?

Parallelism

is becoming more and more important

Different thinking necessary

e.g.
parallel vs. optimized non-parallel algorithms
distribution - latency - redundancy - fault tolerance

„comments lie - code doesn't"

Modularity
Dependency Management

remember?

don't let your code look like this...

SOLID

principles

Single responsibility principle
Open/closed principle
Liskov substitution principle
Interface segregation principle
Dependency inversion principle

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Domain Driven Engineering

Knowing the technology is essential
-
but it is not enough

Is the software **correct**?

But what does it mean?
Correct?

You need to understand

the **domain**,
the **problem**,
and the **context** (the „why")

Agile Software Development

Extreme Programming
Scrum
Kanban

- Inspect and adapt -

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Daily Engineering

Working with existing code

reading and understanding
refactoring code
regression testing

Test-Driven Development
Red - Green - Refactor

Programming in small steps
for all kinds of problems

„What you don't ship doesn't exist"

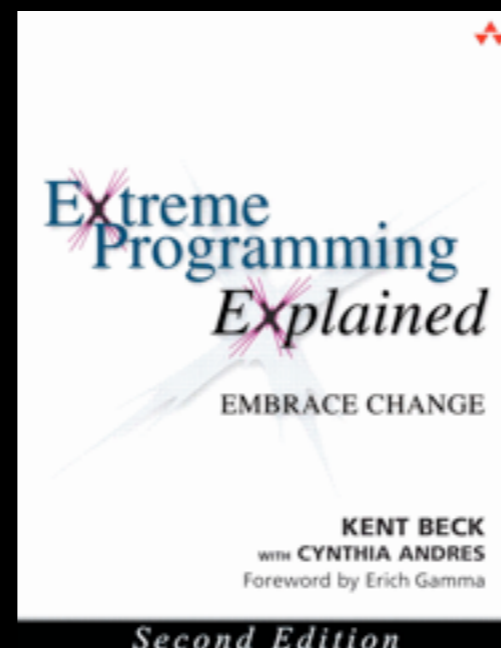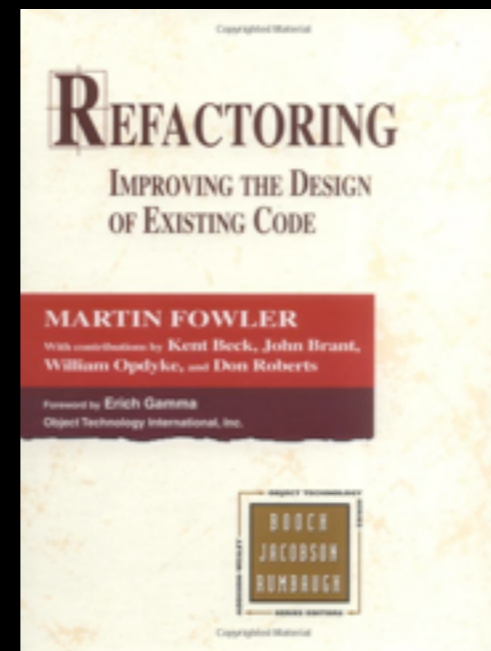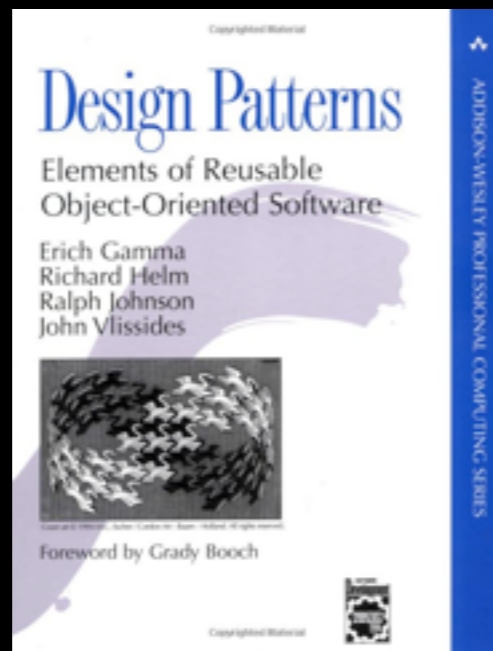# Continuous...

Integration
Delivery
Deployment

DevOps

must read...

Thank you very much!

QA

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