CS 361
Software Engineering I

Oregon State University
Dept. of EECS
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CS 361: Software Engineering I

Instructor

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What is Software Engineering?

“Software Engineering”

The term was first used in 1968 at the NATO Software Engineering in Garmisch, Germany.

“Deliberately provocative” title attributed to Professor Fritz Bauer

Motivated by “software crisis”: in late 60’s, “the computer industry at large was having a great deal of trouble in producing large and complex software systems”.

http://homepages.cs.ncl.ac.uk/brian.randell/NATO/index.html

What is Engineering?

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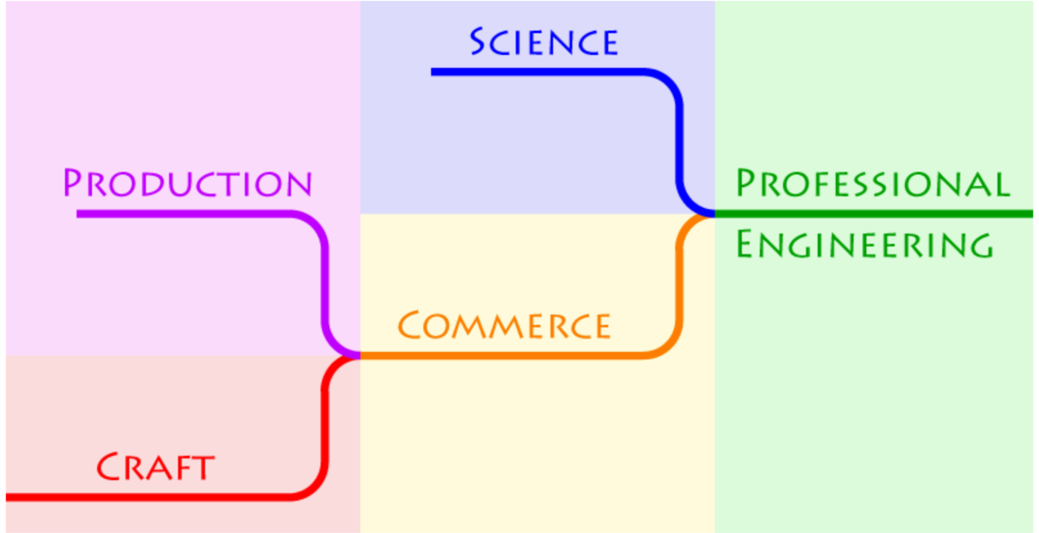

Engineering is the application of well-understood scientific methods...

...to the construction, operation, modification and maintenance of useful devices and systems.

What is Software Engineering?

- Solving practical problems

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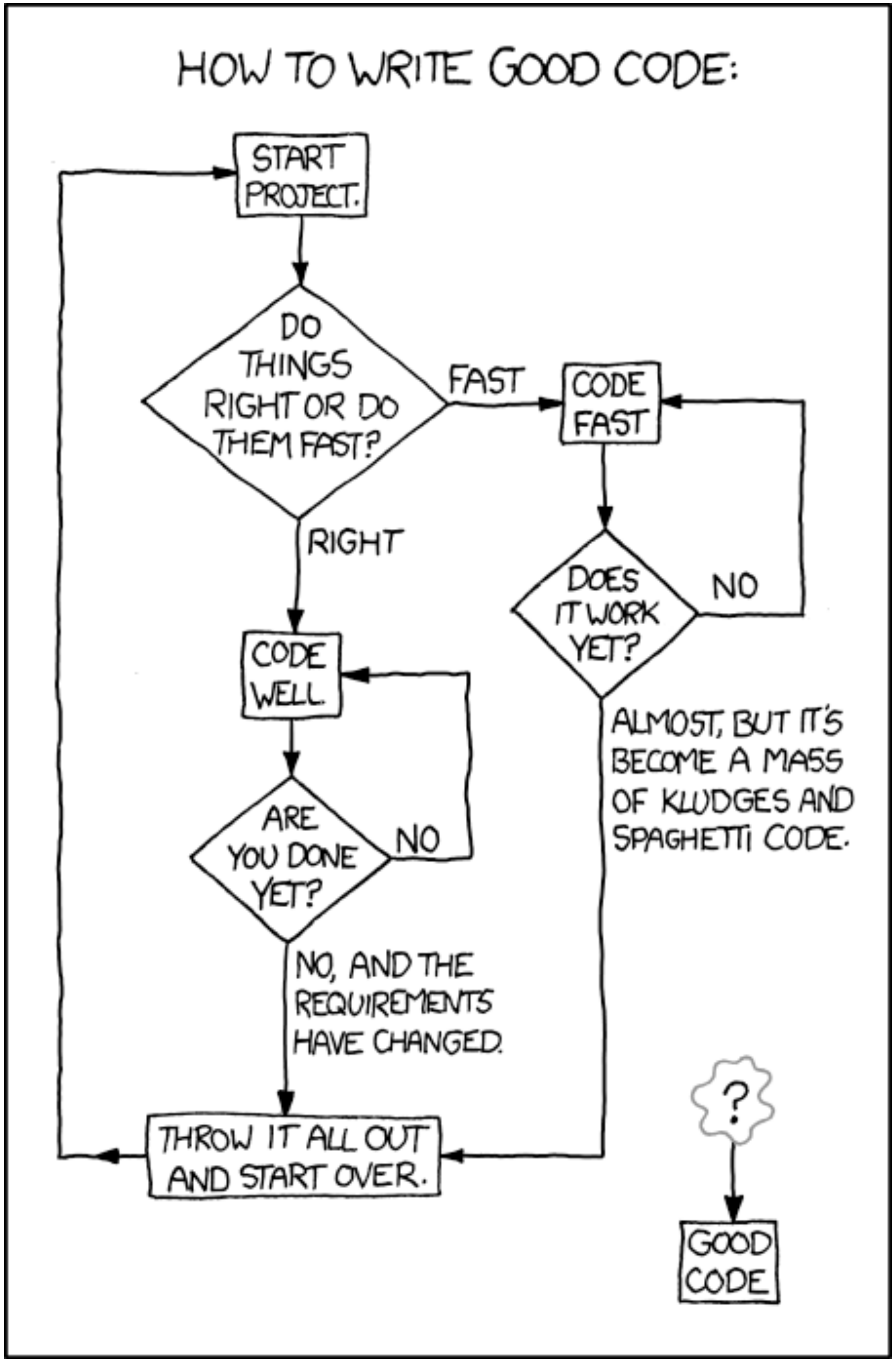
- Using scientific knowledge & sound engineering principles
- To build reliable, efficient, maintainable software
- In a cost-effective way

What is Software Engineering?

- Solving practical problems
- Using scientific knowledge & sound engineering principles
- To build reliable, efficient, maintainable software
- In a cost-effective way
- To make people's lives better or easier!

Okay, how do we do **that?**


HOW TO WRITE GOOD CODE:
START PROJECT.
DO THINGS RIGHT OR DO THEM FAST?
FAST
CODE FAST
DOES IT WORK YET?
NO
ALMOST, BUT IT'S BECOME A MASS OF KLUDGES AND SPAGHETTI CODE.
RIGHT
CODE WELL.
ARE YOU DONE YET?
NO
NO, AND THE REQUIREMENTS HAVE CHANGED.
THROW IT ALL OUT AND START OVER.
?
GOOD CODE

No, really, how do we do it?

- Clarity
  - **Requirements:** What is the problem to be solved? What does the software need to do exactly?
  - **Notations:** An agreed-upon set of rules for describing requirements, designs, and systems.

No, really, how do we do it?

- Planning
  - **Design:** A description of something that could be created
  - **Cost and Schedule:** Reasonable estimate of the amount of money and time expended on creating a system

No, really, how do we do it?

- Communication & Collaboration
  - **Teamwork:** People striving toward a common goal
    - Distribution of work, accountability for assigned tasks
    - Efficient collaboration so everybody's code works together in a well-functioning product

No, really, how do we do it?

Other aspects not covered in this class (but in Software Engineering II...)

- Testing
- Debugging
- Maintenance

How will this class work?

- Lectures, readings, but most importantly...
- Learn by doing!
- You will be working in teams on a project with several stages
- We will be using Agile development (more about this later...)

Elements of this class

In class participation: 10%

Final Exam: 30%

Project: 60%

In class participation

Answer questions when called upon

Participate in **group activities**

Participate in **class activities**

Submit questions for the **interviews**

Be ready to discuss **readings**

Final exam

Held during the allocated slot in the Finals Week.

Comprehensive (this also includes the readings)

Project

Learn by doing

4 two-week sprints

MVC (Model-View-Controller) app built in Java with Javascript/HTML

Teams of 4.

You will use: **version control, continuous integration, sprint planning,** and many more tools/methods.

Schedule for the Term

Schedule for the Sprints is up on **Canvas**.

Expect 2-3 minor assignments to be added.

Communication channels

Slack:

- Check Canvas site for link to join the Slack Workspace
- **#announcements** - for class announcements
- Dedicated channels for each assignment (e.g. **#sprint0**)

Email for personal or grading questions only (**use [CS 361] in the subject**)

Canvas will be used for posting grades, assignments and lecture slides

Sprint 0

Posted on the class Canvas website

Due Thursday, Jan 10.

Forming teams

Due Thursday, Jan 10.

Create your group on Canvas to work on further Sprints.

This assignment is optional. If you do not form a team, you will be randomly assigned to a team on Friday evening.

Teams must have exactly 4 members.