

COMP 110/L Lecture 1

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About Me

- My research
 - Automated program testing + CS education
 - Programming language design (with JPL and ARCS)
- At CSUN since Fall 2017
- Third time teaching COMP 110/L

About this Class

- See something wrong? Want something improved? Email me about it!
(kyle.dewey@csun.edu)
- I generally operate based on feedback

Bad Feedback

- This guy sucks.
- This class is boring.
- This material is useless.

-I can't do anything in response to this

Good Feedback

- This guy sucks, *I can't read his writing.*
- This class is boring, *it's way too slow.*
- This material is useless, *I don't see how it relates to anything in reality.*

- I can't fix anything if I don't know what's wrong

-I can actually do something about this!

Questions

- CS Major/Non-major?
- Programming experience?
- Not first semester?

Why develop software?

- Computers and the Internet are the defining technology of this age
- To develop software is to command this technology to its fullest
- Linus Torvalds: programming allows you to create a world wherein you set your own rules...for better or for worse

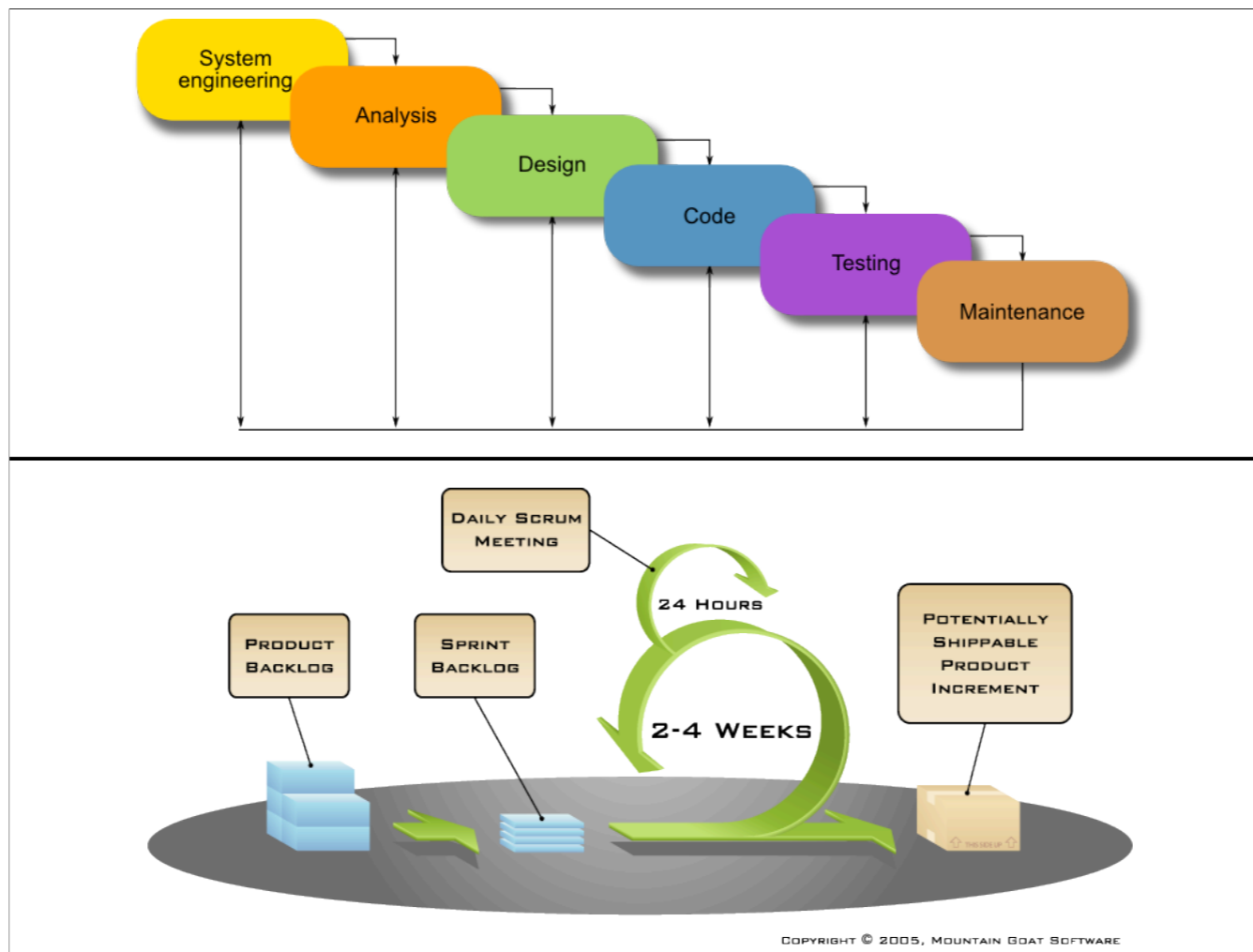
What is software development?

- Communicating with the people who want you to write the software
- Figuring out your requirements – exactly what it is you need to write
- Designing exactly what it will be that you'll write
- Testing and debugging the thing you're writing
- Actually writing the code is a small part of the process

What **isn't** software development?

<https://www.youtube.com/watch?v=dXDrvAxZDDc>

- I want to manage some expectations here
- Perception: pure typing
- Reality: mostly not typing at all. If most of your time is spent typing, you're probably doing something wrong.



- Two software development models
- The actual coding part is tiny. In practice, most time is not spent coding.
- Software development encompasses coding, but it also encompasses design and testing, among others

What is programming?

- Programming is about solving problems.
- You give a series of instructions to a machine which will diligently carry them out without concern or question. This, again, is for better or for worse.

Exercise: Make a Sandwich

Writing Correct Instructions is Hard

- Computer requires unambiguous direction
 - Humans can “figure it out”
- Many commonly-used operations
- IKEA instructions vs. computer instructions

Testing is **Big**

- Chrome: 39% of code is tests (589 thousand lines of testing code)
- Firefox: 53% of code is tests (321 thousand lines of testing code)

Testing and Debugging: Why was I late for class?

- Can ask any number of yes/no questions, each of which will hopefully lead you closer to an answer
- Develop a hypothesis why, and check the validity or invalidity of the hypothesis based on yes/no questions
- Oftentimes, the sort of questions you ask while debugging can be formulated as tests

Programming is a Skill

- Years of practice needed
- You won't be able to write Facebook when you're done with the class
- This class gives a basic foundation to build on

-Just like swimming or playing an instrument

Syllabus