

Software Engineering

อ. ประจักษ์ ปิยะวงศ์วิศาล

Pratch Piyawongwisal

Today

- Course Overview & Logistics
- What is Software Engineering about?
- IT jobs today
- Past Software Engineering Fails
- Homework

Course Goals

- ศึกษาวิธีพัฒนา **Software** อย่างเป็นกระบวนการ โดยเน้น **Users** เป็นสำคัญ
 - แนวคิดของกระบวนการพัฒนา **Software** ต่างๆ (Waterfall, Agile)
 - การกำหนดความต้องการ **Requirements**
 - การทดสอบซอฟต์แวร์ **Software Testing**
 - การบริหารโครงการพัฒนาซอฟต์แวร์ **Project Management**
 - การเลือกใช้เครื่องมือในการพัฒนาต่างๆ **Tools**
 - ฝึกการทำงานเป็นทีม การติดต่อสื่อสารกับผู้ใช้ **Teamwork and Communication**
- ควรลงมาก่อน: **OOP, Advanced Programming, Database**

Topics to be covered

- Software Processes
- Version Control: Git & GitHub
- HTML, PHP/Ionic
- Agile model: Scrum
- Requirements

===== **MIDTERM** =====

- Scrum (cont.)
- Design Patterns

Tools

- Language: HTML, PHP, JS, Ionic
- IDE: Visual Studio Code
- Course site: <https://pratch.github.io/software-eng/>
- LINE



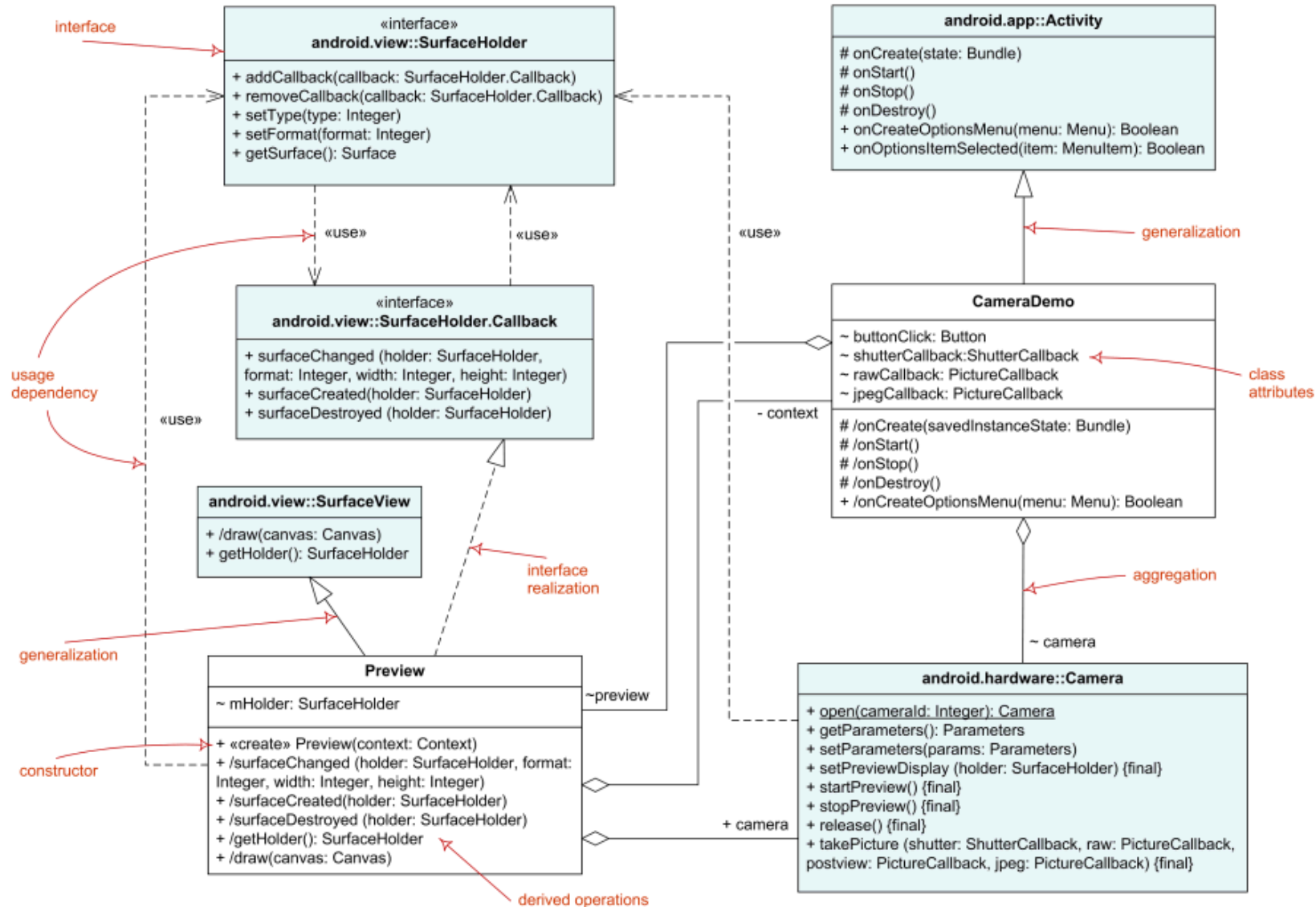
Grading

- Project Deliverables (40%)
 - Project Proposal
 - Report
 - Code
 - Final Demo & Presentation
- Midterm (25%)
- Final (25%)
- Attendance (10%)

Lecture Time

- SEC1
 - **Lecture** **Thu 8.00 – 11.00**
- ห้อง: ทค.1-201

Building a Complex Software...



What is Software Engineering about?

- Software engineering concerns all aspects of software development
 - Requirement -> Design -> Development -> Maintenance
- Goals
 - Produce “**good**” software that can be delivered **on time**
 - Programmers <---> Clients

What is good software?

- General traits
 - Functionality
 - Usability
 - Maintainability
 - Efficiency
 - Security

What is good software?

- General traits

- Functionality ใช้งานได้ตามวัตถุประสงค์
- Usability ใช้งานง่าย
- Maintainability ดูแลรักษาง่าย
- Efficiency มีประสิทธิภาพ
- Security ปลอดภัย

- Good software requires good **programming** and **planning**

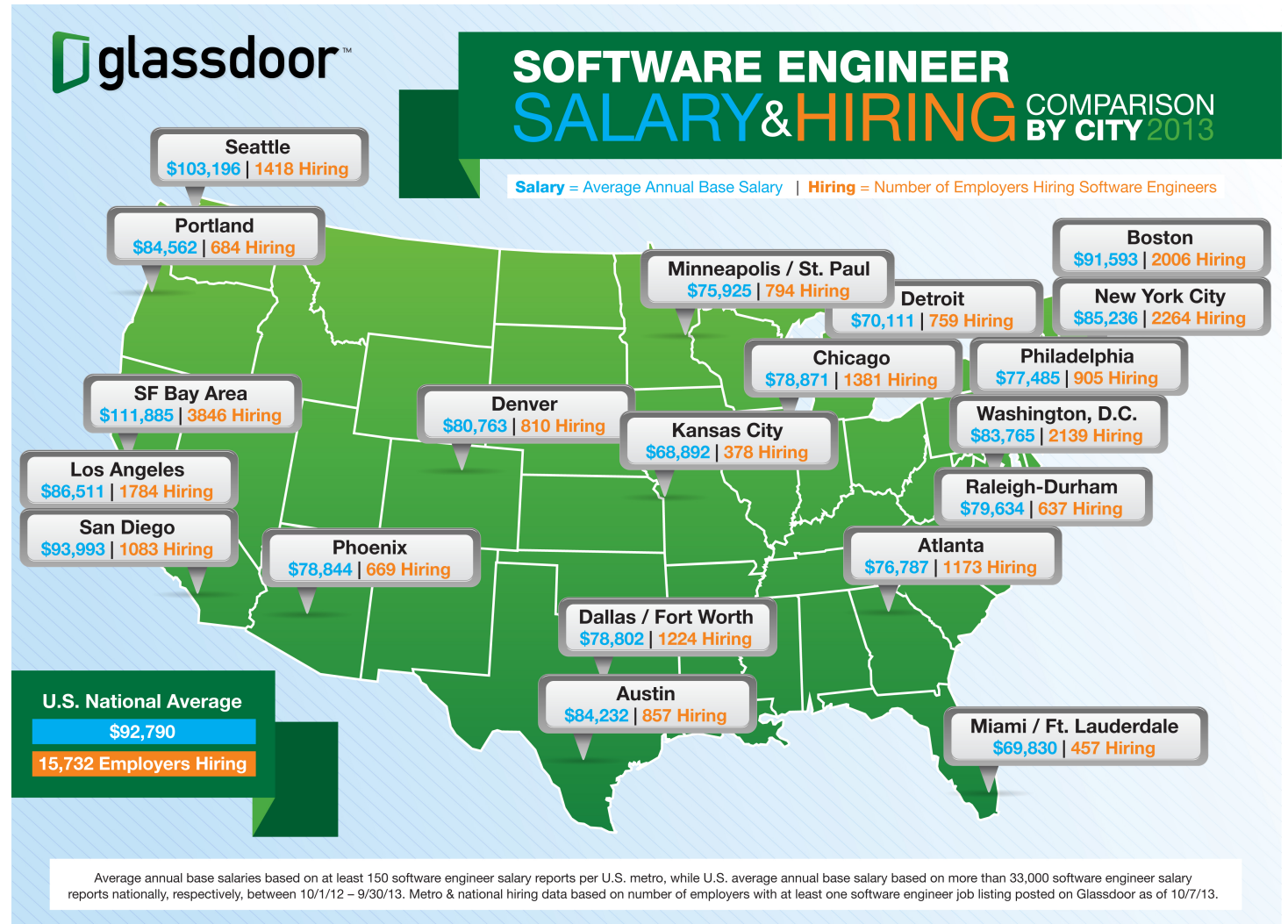
How to produce good software on-time?

- Communicate with the client
 - Every project has a trade-off between **functionality**, **cost**, and **time**
 - What's important to you?
- Work in teams
- Choose the right methodology
 - Waterfall vs Agile
 - Sequential vs Iterative
- Keep track of progress

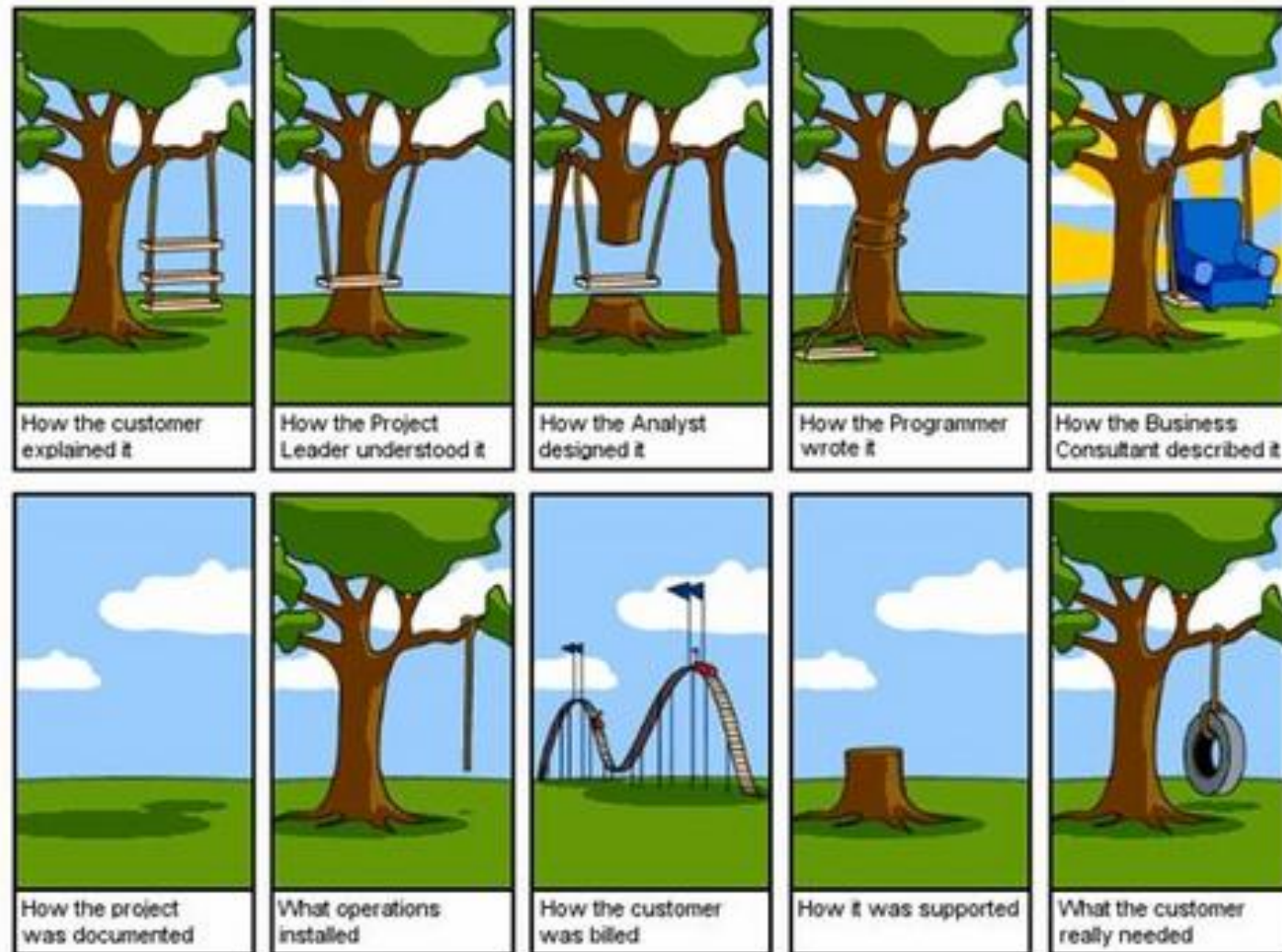
Why learn Software Engineering?

-- IT jobs today

- CTO
- System Architect
- Project Manager
- Programmer
- UI Designer
- IT Support
- Data Scientist
- Mobile Dev
- Security Engineer

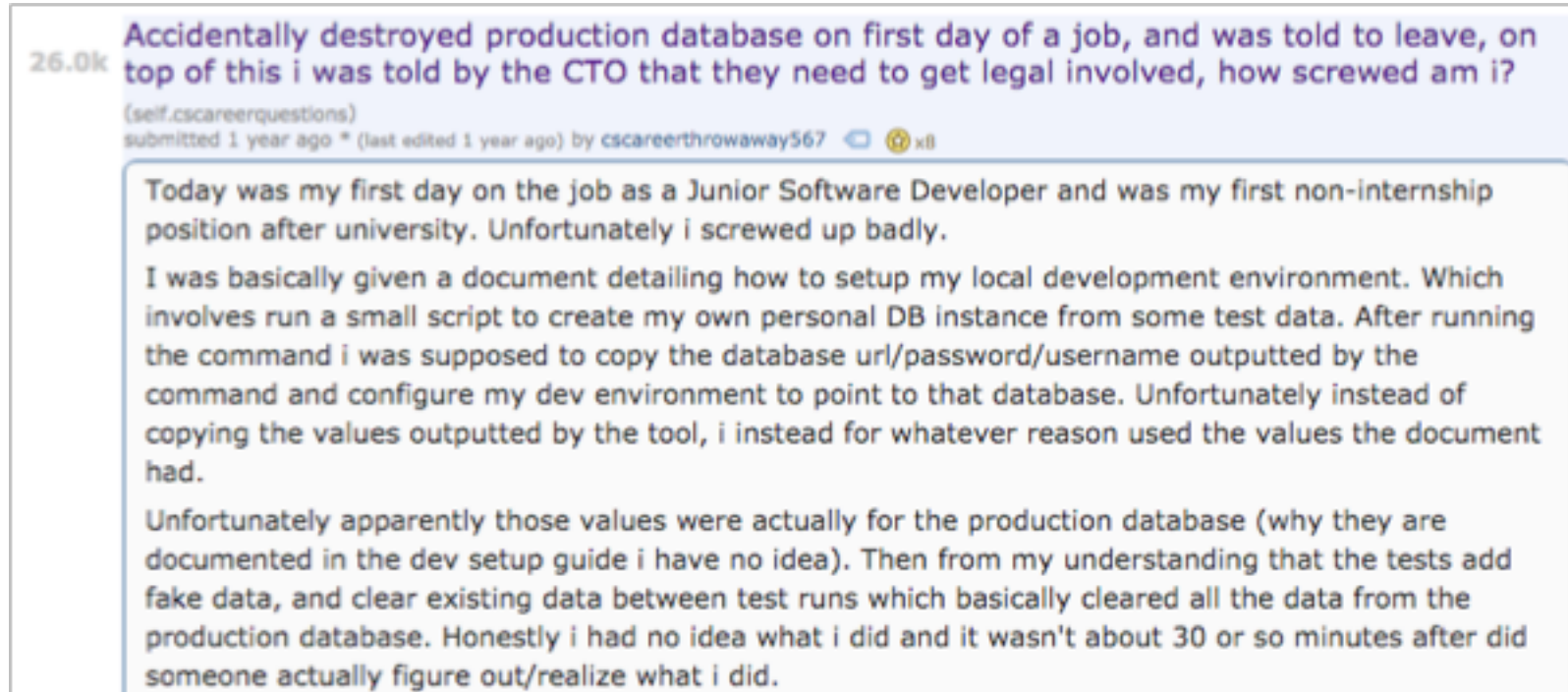


Past Software Engineering Fails



Past Software Engineering Fails

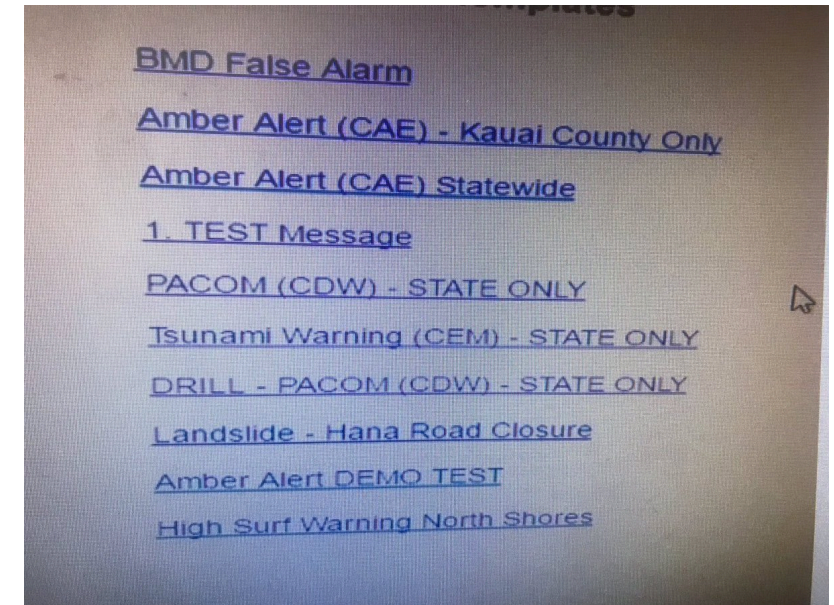
- Newly hired developer **fired** on first day after accidentally deleting company's database



https://www.reddit.com/r/cscareerquestions/comments/6ez8ag/accidentally_destroyed_production_database_on/

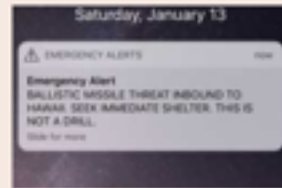
Past Software Engineering Fails

- 2018 Hawaii false missile alert caused by poorly designed GUI



Anonymous

01/13/18(Sat)17:52:22 No.42473733



71 KB JPG

Why didn't you confess your love to your crush during the missile alert?

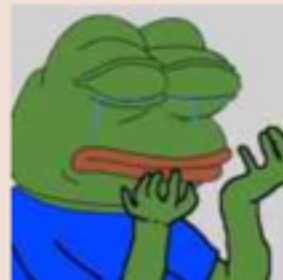
What did you have to lose?

Anonymous

01/13/18(Sat)17:59:43 No.42473887

Anonymous

01/13/18(Sat)18:02:53 No.42473933



15 KB JPG

>>42473733 (OP) #

>did this

>she actually said yes

>feel amazing

>feel even more amazing once I find out that the alert wasn't actually real and I'll get to keep

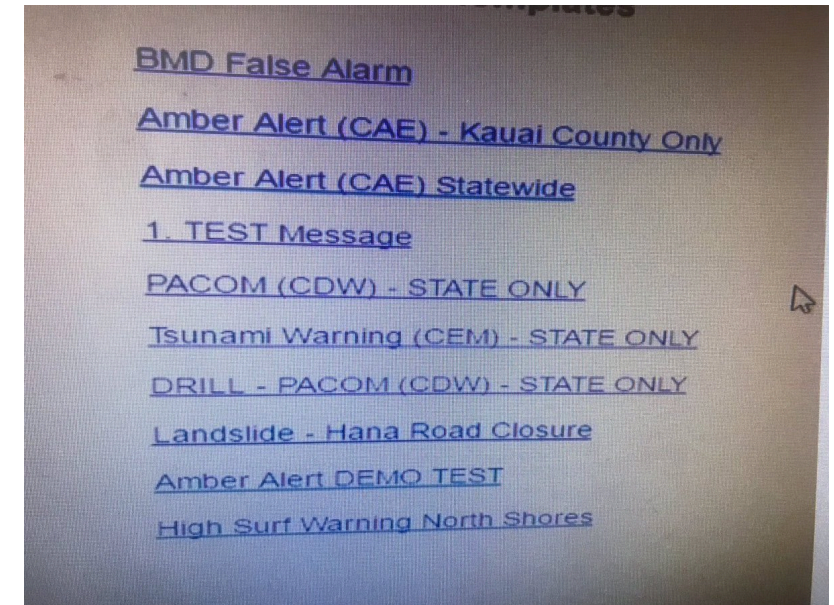
living, with her by my side

>she texts back shortly after, saying that she doesn't actually like me and only said yes because she thought we were about to die and she wanted me to be happy in my final moments

Fuck this shit. I wish I was nuked.

Past Software Engineering Fails

- 2018 Hawaii false missile alert caused by poorly designed GUI



Past Software Engineering Fails

- More instances of Software Engineering disaster: Hall of Fame
<http://www.parseerror.com/bugs/>

Software Engineering Disaster Hall of Fame						
Compiled by Ryan Flynn						
#	Name	When	Cost	Impact	Cause(s)	Industry
1	Soviet Nuclear Missile False Alarm	Sep 26, 1983	500,000,000 lives at risk	nearly-averted nuclear holocaust	= deadline pressure = faulty signal analysis = false positive	military
2	NORAD Nuclear Missile False Alarm	Jun 3-6, 1980	500,000,000 lives at risk	nearly-averted nuclear holocaust	= scope creep = corrupted data = test message was a blank attack warning message	military
3	HMS Sheffield Exocet Missile Misclassification	May 4, 1982	30 deaths 257 lives at risk £23,200,000	= failure to intercept incoming missile = ship loss	= inadequate requirements = unnecessary simplicity = insufficient maintenance	military
4	Chinook Helicopter Crash	Jun 2, 1994	29 deaths			military
5	Patriot Missile Clock Drift	Feb 25, 1991	28 deaths 98 injured	failure to intercept incoming missile	= short-sighted temporal requirements = rounding error = clock drift	military

Next week

- Software Processes
- Homework 1
 - Think about project ideas: 3 ideas per person
 - Form group of 5
 - 1 Scrum master (manager)
 - 4 Dev
 - Database
 - Programmer
 - UI
 - Tester