COSC345
Software Engineering
General matters

- Lecturer http://www.cs.otago.ac.nz/staff/Richard_O'Keefe
- Lecturer http://www.cs.otago.ac.nz/staffpriv/ok
- Paper http://www.cs.otago.ac.nz/cosc345
General matters 2

- Two lectures per week
  - Tuesday 4pm, 2.06
  - Friday 9am, 2.06
- No labs or tutorials
- Internal assessment year-long 4-part group project
Software Engineering?

• the study and an application of engineering to the design, development, and maintenance of software

• the application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software

• an engineering discipline that is concerned with all aspects of software production

• the establishment and use of sound engineering principles in order to economically obtain software that is reliable and works efficiently on real machines — all from the Wikipedia
Cynic’s definition

- Developing and maintaining software in such a way that people will happily pay you to do it again.
Historic References

Historic problems (1)

- “achieving sufficient reliability in the data systems which are becoming increasingly integrated into the central activities of modern society”

- STILL a major problem.
Historic Problems 2

- “the difficulties of meeting schedules and specifications on large software projects”
- STILL a problem, as witness INCIS and NovoPay.
Historic Problems 3

- “the education of software (or data system) engineers”
- STILL a problem
The simplest program

- The UNIX command `true(1)` can be perfectly implemented by an empty file.
- One computer manufacturer broke it by adding a copyright notice, and shipped the broken version.
Even Homer nods

- The 10th of NASA’s 10 rules is “All code must be compiled, from the first day of development, with all compiler warnings enabled at the most pedantic setting available. All code must compile without warnings. ...”

- BUT
Even Homer nods (2)

- I downloaded a C preprocessor from their web site.
- The files used `<malloc.h>`, which has never been part of any C standard, and made the code uncompilable.
- After fixing that, the program choked on its own source code, reporting a nonexistent error.
Our task

- To strive to break Sturgeon’s Law.
- (http://c2.com/cgi/wiki?IdeasAreWorthless)
- To be less wrong than yesterday (Marick).
The assignment

• .../cosc345/assignment-2015.htm
• Think up a smart-watch application
• build a prototype
• running in an emulator you also build.
• Then try to use others’.