Ron Vaughn, January 22, 2016

Communicating customer “wants”

Our software is often “low level”, e.g. video driver

- NVidia highly depends on industry standard specifications
  - We contribute to the specs
  - Then follow up and implement the specs
- We receive requirements directly from partners
  - If you are partnered with Google working on Android, they’ll communicate what they want
  - Need to pass conformance test suites (which specifically tests a spec)
- Blending edge: The customer may not know what they want

Techniques to understand and solve problems

- “Problem solving” is difficult to teach. And difficult to learn on your own. Learn from your mentor and teammates.
- Over time you will grow your “tool belt” of problems you can recognize and solve.
- There are classes of problems. Eventually you quickly recognize the problem class and know your approach to solving the problem.
  - Race conditions
  - Memory corruption
  - Multi-threaded issues
  - Performance issues
  - Tool chain or infrastructure issue
  - Security or permission violation
  - Cascading errors
  - Fence post error

What teamwork skills do you expect?

- Become an Nvidian
- Help teammates in need (look at their code, help debug, brainstorm)
- Come through in crunch time
- Most engineers are naturally good teammates
- Senior engineers are not necessarily technically better - they are leaders
- If you are going to be a lone-wolf, you better be exceptionally good

Collaborative tools

Learning tools is very important

- Source control: internal git, perforce
- Code review: gerrit
- Bug tracking: internal system (think bugzilla)
- Project management: Jira
- Build farm: internal system
- Automated test farm: internal system

All of these systems are tied together. And there are many more.
All of these systems are way more complicated than new-hires are used to.
You must master the collaboration tools to become an effective engineer

Collaborative tools

Using git in college is not like using git at Nvidia

- A single source code tree:
  - 650 individual git repositories
  - Each repository at the correct location, each at the correct branch
  - 50G (before you compile)

On a scale of 1 to 10, you use git at a ‘4’. We go to 11.
Communication skills at NVidia

Top 5
- Email
- Email
- Email
- Email
- Email

Communication skills

OK... There is more to communication than just email

- Concise emails are invaluable.
- Maintaining wiki pages. Detailed accurate instructions.
- Running a meeting, with an agenda and good meeting notes.
- Concise PowerPoint presentations
  - Project overview
  - Technical presentation
  - Schedules and roadmaps

Good communication skills dramatically increase your impact as an engineer.
Good communication skills are required to move into management.