This is a resource handout for my standard High School STEM talk first given on July 29, 2013, and delivered several times after that. The blue text elements are hyperlinks — this PDF file is meant to be viewed from an Internet connected computer, not printed out . . .

A Career in CS

ACM Careers and Degrees in Computer Science
Computer Scientist Salary Range
Software Engineer Salary Range
Junior Software Engineer Salary Range
Mines Placement Report
Don’t look for a perfect school, there aren’t any. It’s all a trade off — instead of optimizing the outcome, consider minimizing the risk.

Believe it or not, there are excellent, small schools out there where the likes of you and I are not the minority.

A CS Education

<table>
<thead>
<tr>
<th>Year</th>
<th>Department</th>
<th>Core</th>
<th>Electives</th>
<th>Programming</th>
<th>Math</th>
<th>Networking</th>
<th>Introduction to Algorithms</th>
<th>Operating Systems</th>
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As you progress through the curriculum, your grades depend more on larger software projects than on exam results (but exams don’t disappear...)

The school you choose largely decides what electives you will be able to take:
- applied computer science vs. theoretical topics
- if graduate courses are available
- what minors you can pursue in addition to a degree in CS

BSc in Computer Science (Wikipedia)
CSM EECS Website
CSM BSc Curriculum
CS Prep

Some “idle time” activities that will help put you ahead of the curve for a degree in CS. You may be doing some already, you probably don’t want to do all of them (focus on what is appealing to you), but DO something!

Now is the time to make your college work easier...

... a short list of things you can do now, that will probably help you in college, and they certainly won’t hurt your prospects.

Keith Hellman, CSM

The fundamental idea behind OOP is proof by induction; SQL data integrity can be assessed through formal logical (Boolean) analysis of table constraints and triggers; machine learning, online learning, and many evolutionary algorithms rely on the laws of probability and statistics; modern simulation techniques often use differential equations to model Internet and traffic flow.

Keith Hellman, CSM

• Blown to Bits
• Code and other Laws of Cyberspace
• The Unwanted Gaze

• SlashDot is a news site geared toward computers, technology, engineering, and mathematics. Go there often :)

• Hack-A-Day is a DIY news site with downright cool and many times thought provoking projects from around the web. It is amazing how technology (and software) is re-purposed.
- The Logician and the Engineer
- Code: The Hidden Language of Computer Hardware and Software
- Dealers of Lighting
- In the Beginning . . . was the Command Line
- Rebel Code
- 9 Algorithms that Changed the Future
- The Art of Unix Programming

- Start here: http://distrowatch.com/; read up on the various distros, choose the ones that are appealing, and try them out.

- When you’ve gotten a couple distros under your belt, try Debian or CentOS with LVM over RAID.

- Getting tired of all these hand-holding installers? Build your system one piece at a time: Linux from Scratch, . . .

- . . .how small can you install?

1. MINIX and GNU Hurd are μ-kernel operating systems.

2. FreeVMS is a (Open)VMS clone.

3. ReactOS is a Windows XP clone.

4. Haiku is a BeOS clone.

5. The KolibriOS is written in assembly and boots in 3–4 s (wow).

6. Inferno is a distributed operating system originally written at Bell Labs.
- **Replicant** is a replacement for Android™ that works on several different mobile phone platforms.

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Learn a Language (or two!)

- Low latency web development: · JavaScript · Node.js
- Server side web development: · Ruby on Rails · Python + Django
- Desktop Application development: · Java · Python · .NET · Delphi · C++
- desktop · C & Embedded development: · C & C++

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Try the Job Out

- Volunteer to provide computer or IT assistance to a non-profit.

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Find your Itch, No Matter how Wacko

One benchmark of experience is how many "itches" you have. Specific applications, features, or scripts you'd like to see written that would make your hobby, job, and pursuit of happiness™ easier.

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Hack4Colorado

Once you've got some development or testing experience under your belt, consider attending Hack4Colorado next year.

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College Bound Thoughts

Better late than never. There are excellent, small colleges out there where the cost of living and the focus is the semester.