Physicists Can Code

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Outline

• About me
• What is Software Development?
• Why are Physicists good software developers?
• What do I like?
• How to get a job?
• Q & A
About Me

• Worked on Daya Bay Reactor Neutrino Experiment
  – Initial experiment design, Fortran 77
  – Detector construction
  – Simulation and Data Analysis, C++ and Python

• Developed a lot of interests in programming

• Joined Bloomberg R&D in 2012
  – Enterprise Content Delivery
  – Fixed Income Default Risk
What is Software Development?

- Business needs
- Requirements gathering
- Software design
- Implementation
- Testing
A Real Example

• **Business needs**
  – Produce default probabilities for North America private companies

• **Requirements gathering**
  – What kind of private companies? What mathematical models? What are the deliverables? When is the deadline?

• **Software design**
  – What are the components? How do they interact? Scalability issue?

• **Implementation**
  – Write code!

• **Testing**
  – alpha, beta, production environment
Why are Physicists Good Software Developers?

• Ability to understand complex systems
  – Software frameworks generally have many components
• Ability to learn
  – Physics is hard…
• Ability to communicate with other people
  – Collaborators in both experimental and theoretical Physics
• Ability to design
  – Not very different from designing an experiment
• Ability to test
  – We always make sure what we do is correct
What Do I Like

- Intellectually challenging
- Collaborative
- Short project lifetime
- Freedom to create
- Job stability
- Flexible working hours (relative)
- Financially rewarding
- Live in NYC

2. **Software Engineer** - Glassdoor Job Score: 4.6
   - Number of Job Openings: 104,828
   - Average Base Salary: $98,074
   - Career Opportunities Rating: 3.3

http://www.glassdoor.com/blog/jobs-america/
Career Path

Software Developer → Senior Software Developer → Team Lead → Manager → ???
How to Get a Job?

• Get some basic understanding of Computer Science
  – Data Structures and Algorithms
  – CS 225

• Master one mainstream language
  – C++, Java, Python etc.

• Soft skills
  – Communication
  – Team player
  – ...

• Networking

• Career fairs
Bloomberg-related Events

• ECE Corp Day
  – ECE building (main hall) 10:30 am – 2:30 pm on 2/26

• ECE tech talk
  – Peter Sperl “Pursuit of Robust Software Design”
  – 1013 ECEB 5:30 pm on 2/26

• HackIllinois
  – https://www.hackillinois.org
Thank you!
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