6.009
Fundamentals of Programming

Lecture -1:
Working with Binary Data, Wrap-Up

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6.009: Goals

Our goals involve helping you develop as a programmer, in multiple aspects:

- **Programming:** Analyzing problems, developing plans
- **Coding:** Translating plans into Python
- **Debugging:** Developing test cases, verifying correctness, finding and fixing errors

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- Ways to manage complexity
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- A mental model of Python's operation
- Testing and debugging strategies

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...but discussion only goes so far!

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Just like with music/sports, practice is key!
To improve as a programmer, you have to program.
And 6.009 asks you to program...a lot!

- Labs give opportunities to practice new techniques/skills to solve interesting problems.
- Lectures/tutorials equip you with tools useful for attacking those problems.

Lots of Neat Problems!

Labs

- Image Processing / Convolutional Filters
- Bacon Numbers / Path Finding
- N-Dimensional Minesweeper
- SAT Solver / Scheduling Problem
- Tries / Autocomplete
- Symbolic Algebra Engine
- LISP Interpreter
- Multi-part File Downloader

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Lecture/Tutorial

- Flood-Fill in Images
- Language Analysis (Text Similarity)
- Music Similarity (Internet Radio)
- Sudoku Solver
- Tent Packing
- Set Cover
- Terminal Game
- Card Game
- Event-Driven Factory Simulation
- Web Server / Web Framework

Looking Back