## COMPSCI 100, Fall 2006 Owen Astrachan

http://www.cs.duke.edu/courses/cps100/fall06 http://www.cs.duke.edu/~ola

CPS 100

## **Programming != Computer Science**

- What is the nature of intelligence? How can one predict the performance of a complex system? What is the nature of human cognition? Does the natural world 'compute'?
- It is the interplay between such fundamental challenges and the human condition that makes computer science so interesting. The results from even the most esoteric computer science research programs often have widespread practical impact. Computer security depends upon the innovations in mathematics. Your Google search for a friend depends on state-of-the-art distributed computing systems, algorithms, and artificial intelligence.

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1.3

http://www.post-gazette.com/pg/pp/04186/341012.stm

1.1

## What is Computer Science?

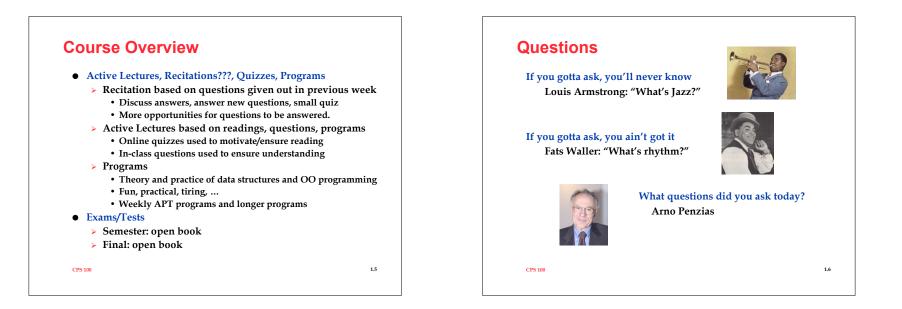
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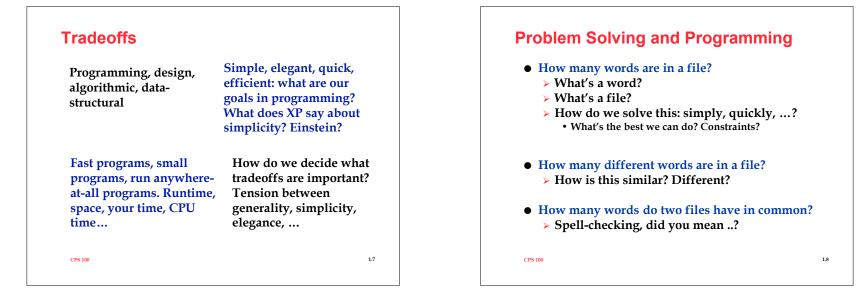
What is it that distinguishes it from the separate subjects with which it is related? What is the linking thread which gathers these disparate branches into a single discipline? My answer to these questions is simple --- *it is the art of programming a computer*. It is the art of designing efficient and elegant methods of getting a computer to solve problems, theoretical or practical, small or large, simple or complex.

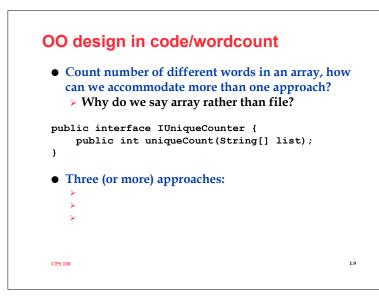
C.A.R. (Tony)Hoare

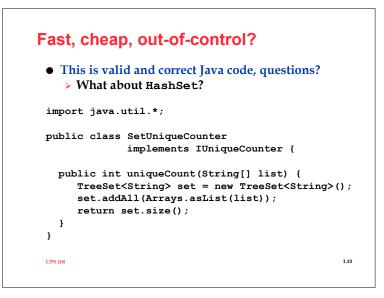
1.2

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Efficient <i>design, programs, code</i>	
Using the language: Java (or C++, or Python, or), its idioms, its idiosyncracies	Object-oriented design and patterns. Software design principles transcend language, but
Know data structures and algorithms. Trees, hashing, binary search, sorting, priority queues, greedy methods, graphs 	Engineer, scientist: what toolkits do you bring to programming? Mathematics, design patterns, libraries standard and others
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Edsger Dijkstra

1.12

