

## Lecture 1: Overview

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Kim Bruce  
TAs: Ragib Morshed & Adrian Sampson

## Do Languages Matter?

- Why choose C vs C++ vs Java vs Python ...
- What criteria to decide?
- Web programming
- PL curriculum workshop at Harvard, 5/2008

## Provide Abstractions

- Data Abstractions:
  - Basic data types: ints, reals, bools, chars, pointers
  - Structured: arrays, structs (records), objects
  - Units: Support for ADT's, modules, packages
- Control Abstractions:
  - Basic: assignment, goto, sequencing
  - Structured: if...then...else, loops, functions
  - Parallel: concurrent tasks, threads

## PL's & Software Development

- Development process:
  - requirements
  - specification
  - implementation
  - certification or validation
  - maintenance
- Evaluate languages based on goals

## Goals of Some PL's

- Languages & their goals:
  - BASIC - quick development of interactive programs
  - Pascal - instruction
  - C - low-level systems programming
  - FORTRAN - number-crunching scientific
- What about large-scale programs?
  - Ada, Modula-2, object-oriented languages

## PL Choice

- Languages designed to support specific software methodologies.
- Language affect way people think about programming process.
- Hard for people to change languages if requires different way of thinking about process.

