ICOM 4036
Programming Languages

First Lecture: Overview

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Some slides are adapted from the Sebesta’s textbook

Organization

• Faculty & staff
  – Amirhossein Chinaei

• Classes
  – TTh 12:30-1:45 S-205
  – TTh 5:00-6:15 S-204

Check the course website for more important information

Resources

• Textbooks:
  – Concepts of Programming Languages
    • By Robert W. Sebesta
    • Publisher: Pearson Addison Wesley
    • ISBN: 0321193628

• Additional books:
  – Programming Language Pragmatics
    • By Michael L. Scott
    • Publisher: Morgan Kaufmann
    • ISBN: 0126339511

• Lecture notes
  – As well as other resources will be available on course website.
  – It’s your responsibility to improve upon the notes during the lectures.

Assessment

• Lectures (no influence on grade)
• Partial exams: 60%
• Final exam: 40%
• Assignments: +10%

Fine print: the usual university policies on academic honesty, fair use of computing facilities, etc., apply by default.

• Assignment marks are considered as bonus points.

• Check website for more important information
Chapter 1 Topics

- Why Study Programming Languages?
- Programming Domains
- Language Evaluation Criteria
- Influences on Language Design
- Language Categories
- Language Design Trade-Offs
- Implementation Methods
- Programming Environments

Reasons for Studying PL’s

An Analogy

<table>
<thead>
<tr>
<th>Vehicle Users</th>
<th>PL Users</th>
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</thead>
<tbody>
<tr>
<td>Drivers/Passengers</td>
<td>Programmers/Developers</td>
</tr>
<tr>
<td>Mechanics</td>
<td>Testers/Debuggers/Project Managers</td>
</tr>
<tr>
<td>Designers</td>
<td>PL Designers/Implementers</td>
</tr>
</tbody>
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Reasons for Studying PL’s

- Increased ability to express ideas
- Improved background for choosing appropriate languages
- Increased ability to learn new languages
- Better use of languages that are already known
- Better understanding of significance of implementation
- Overall advancement of computing

Programming Domains

- **Scientific applications**
  - Large numbers of floating point computations; use of arrays
  - Fortran
- **Business applications**
  - Produce reports, use decimal numbers and characters
  - COBOL
- **Artificial intelligence**
  - Symbols rather than numbers manipulated; use of linked lists
  - LISP
- **Systems programming**
  - Need efficiency because of continuous use
  - C
- **Web Software**
  - Eclectic collection of languages: markup (e.g., XHTML), scripting (e.g., PHP), general-purpose (e.g., Java)