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# Programming Language Pragmatics

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# Prerequisites

- It is assumed that students entering this class have the following background:
    - Experience with an OOP language (such as Java or C++)
    - Experience with a procedural language (such as C)
    - Familiarity with an assembly language
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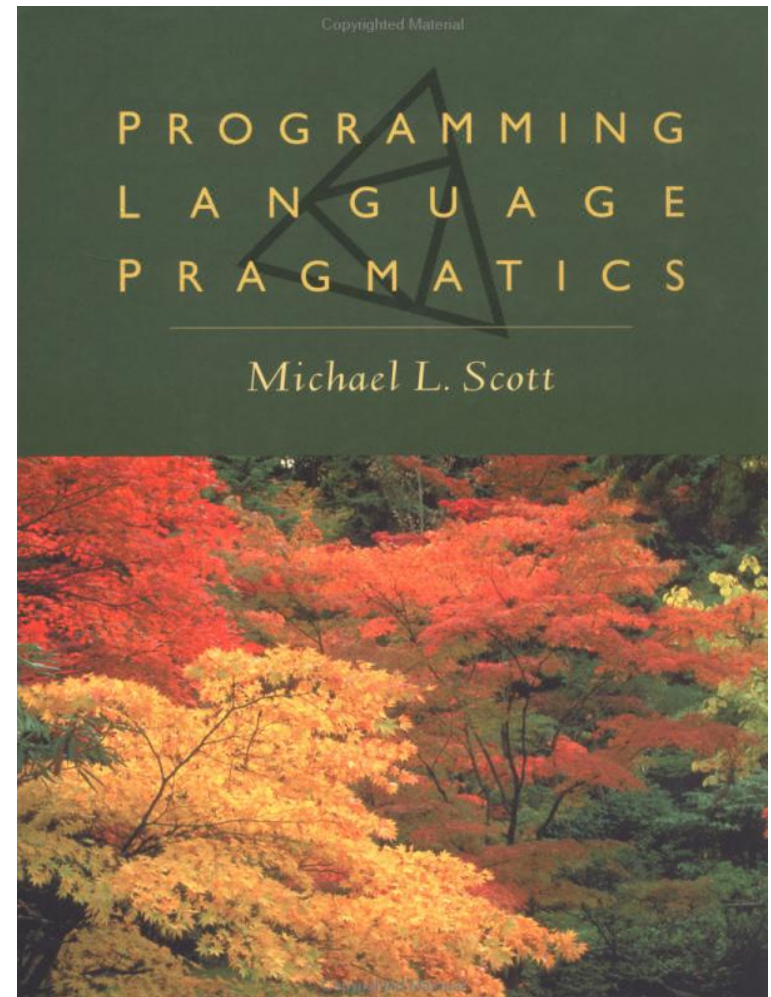
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# Course objectives

- Students who complete the course will:
    1. Develop a greater understanding of the issues involved in programming language design and implementation
    2. Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms
    3. Implement several programs in languages other than the one emphasized in the core curriculum (Java/C++)
    4. Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing
    5. Develop an understanding of the compilation process
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# Textbook

- Textbook: Scott, Michael. Programming Language Pragmatics. Morgan Kaufmann: 2000
- Textbook errata at <http://www.cs.rochester.edu/u/scott/pragmatics/errata.html>



# Expected Assignments

- Write programs in several different languages
  - Current plan is the five listed a few slides back
- Course project: to learn another language of your choice
  - Includes a program, paper, and presentation
- Midterm exam (on Thursday, 10 November, during class)
- Final exam (on Thursday, 12 Jan from 9:00 - 12:00)
  - Of course, both exams are closed book

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# Grades

- 35%: Programming homeworks
  - 15%: Individual project and presentation
  - 20%: Midterm exam
  - 25%: Final exam
  - 5%: Class participation
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- Class participation will be graded partly based on attendance
    - In particular, you need to be conscious during class!
    - Just having a pulse and being present is not sufficient
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# Late policy

- Each person will be allowed ONE late day (24 hours) this term
  - The late policy is 30% off for first 24 hours late, 50% off for the next 24 hours
  - Assignments are not accepted after 48 hours from original due date
  - The exact time of due date is affirmably PM 6:00
  - Note that using your late day extends this calendar by 24 hours, so that you could turn the assignment in up to 72 hours after the original due date
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# Theory vs. Implementation

- This class focuses on both:
    - Theory is covered by the textbook readings, lectures, and on the tests
    - Implementation is covered by the homework assignments and the project
  - You will need to do both to do well in the course
    - You can't slack off on the theory part!
    - Thus, if you don't keep up with the readings, you will end up with a poor grade in the course
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# Class Topics

- History
- Major paradigms
  - Historical (Fortran)
  - Functional (Scheme or OCaml)
  - Logic (Prolog)
  - Object-oriented (Smalltalk)
  - Aspect-oriented (AspectJ)
- How different languages deal with:
  - Naming and scopes
  - Control flow
  - Types
  - Subroutines
- Language design and implementation tradeoffs
- Compilers, debuggers, programming environments

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# Programming languages vs. compilers

- This is not a compilers course
  - But we will be studying compilers in great detail
- The two fields are very closely linked
  - You cannot understand one without understanding the other



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# Honor Policy

- Yada, yada, yada
  - You know the drill – you've heard it all before by now
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# Fairness

- I intend this course to be hard but fair
  - If it is not being fair, please let me know and I will do my best to correct it
  - If it is not being hard (or being too hard), also let me know
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# Motivational posters...



**C O U R A G E**

*Courage comes from a nerve of mind more powerful than outside circumstances.*

# Demotivational posters...



**TROUBLE**

LUCK CAN'T LAST A LIFETIME UNLESS YOU DIE YOUNG.

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Wish we have a great term in this class

**Any question?**

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