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Summer 2007

CS 480/680: Comparative Languages

Krishnaprasad Thirunarayan

Wright State University - Main Campus, t.k.prasad@wright.edu

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CS 480/680 Comparative Languages

- **Instructor** : T. K. Prasad
 - **Phone No.** : (937)-775-5109
 - **Email** : t.k.prasad@wright.edu
 - **Home page**: <http://www.cs.wright.edu/~tkprasad/>

 - **Quarter** : Summer, 2007
 - **Class Hrs** : MW, 6:05 - 7:20pm, 150 RC
 - **Office Hrs** : MW, 5:30 - 6pm, 395 JC (or by appt.)
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Course Description

This course will introduce fundamental concepts and paradigms underlying the design of modern programming languages. For concreteness, we study the details of an object-oriented language (e.g. Java), and a functional language (e.g., Scheme). The overall goal is to enable comparison and evaluation of existing languages. The programming assignments will be coded in Java 5 and in Scheme.

Prerequisites

- Data Structures and Algorithms. (Equivalently, CS400/600.)
- Experience with programming in imperative languages such as C/C++, Pascal, or Ada.

Course Text and Material

1. On-line Lecture Notes.
2. K. Arnold, J. Gosling, and D. Holmes: The Java Programming Language. Addison-Wesley Publishing Co., 4th Edition, 2005. ISBN 0-321-34980-6

References

1. Michael L. Scott, Programming Language Pragmatics. Morgan Kaufmann Publishers, 2nd Edition, 2006. ISBN 0126339511
2. [The Java Tutorial](#)
3. Ravi Sethi, Programming Languages: Concepts and Constructs. Addison-Wesley Publishing Co., 2nd Edition, 1996. ISBN 0-201-59065-4
4. R. Kent Dybvig, [The Scheme Programming Language](#), 3rd Edition. Prentice Hall, 2003.
5. [Scheme : Language Reference Manual](#)
6. [Chez Scheme Download Site \(http://www.scheme.com\)](http://www.scheme.com)
7. [DrScheme Download Site \(http://www.drScheme.org/\)](http://www.drScheme.org/)

8. [Jython Home Page](#)
 9. [Dive into Python](#)
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Relevant Websites

- [Sun's Java Page](#)
 - [Java 5.0 Core APIs](#)
- [The Teaching About Programming Languages Project](#)

Download Sites

1. JDK 1.5 (<http://java.sun.com/j2se/1.5.0/download.jsp>)
2. JBuilder 2005 Enterprise 30-Trial and Foundation is the same download (http://www.borland.com/products/downloads/download_jbuilder.html)
3. NetBeans 4.0 (<http://www.netbeans.org/community/releases/40/index.html>)
4. Eclipse 3.0 (<http://www.eclipse.org/downloads/index.php>)
5. TextPad Editor (www.textpad.com)
6. WinZip (www.winzip.com)
7. Apache Tomcat (www.apache.org)

Java IDE Tutorials by Y. Daniel Liang

1. [Compiling and Running Java from the Command Window](#)
 2. [Compiling and Running Java from TexPad](#)
 3. [JBuilder Tutorial](#)
 4. [NetBeans Tutorial](#)
 5. [Eclipse Tutorial](#)
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Course Load

The course load includes a mix of homeworks and programming assignments worth 30 points, a midterm worth 30 points and a final worth 40 points. Normally, CS680 students are assigned additional homework problems and are expected to solve additional/different problems in the tests.

Grading

The letter grades will be assigned using the following scale: A[90-100], B[80-90), C[70-80), D[60-70), and F[0-60). However, I reserve the right to adjust the scale somewhat to utilize the gaps in the distribution. Academic dishonesty will be "rewarded" with a grade of "F". "Sharing/reuse" of solutions to assignment problems is strictly prohibited.

Attendance Policy

All registered students are expected to attend all lectures. In case a student is absent from a lecture due to unavoidable circumstances, the student is still responsible for the material covered in the class, as it is typically available from the course web-page well in advance. Furthermore, the student is expected to find out about in-class announcements from their colleagues/instructor.

Class Schedule and Syllabus

Topic

- Class 1 Evolution of Programming Languages
- Class 2 Syntax Specification : Grammars
- Class 3 Object-Oriented Programming
- Class 4 Java Design Goals
- Class 5 Types, Values, Variables
- Class 6 Arrays; Classes
- Class 7 Inheritance; Polymorphism
- Class 8 Interfaces; Packages; Strings
- Class 9 **Midterm (July 11)**
- Class 10 Exceptions
- Class 11 Threads
- Class 12 (continue) (Scripting vs Systems PL)
- Class 13 Symbolic Data; List Processing
- Class 14 Styles : Functional vs Procedural
- Class 15 Recursive Definitions (Scheme-Startup)(Examples)
- Class 16 Abstraction : Higher Order Functions
- Class 17 Scoping; Closures
- Class 18 Scheme Interpreter
- Class 19 (continue)
- Class 20 (continue)
- Class * Parameter Passing Mechanisms
- Class * Implementing Subprograms
- Final (August 15)**

Assignments (Summer 2007)

- Assignment 1
- Assignment 2