

Illinois State University

ITK 327, Fall 2007

Concepts of Programming Languages

TTh 12:35 ~ 1:50 PM, STV-104

Instructor: Chung-Chih Li, Ph.D.

Office: Old Union 105

Office Hours: MTWT, 11:00 AM ~ 12:00 PM or by appointment

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WebPage of the course: <http://www.itk.ilstu.edu/faculty/chungli/ITK327>

Students should regularly check the Webpage of the class for important information about assignments, data, due dates, sample programs, or announcements.

Note: Announcements made in the class should be considered as official ones, since I may not be able to update every announcement.

Prerequisites:

ITK 179 with a C or better grade. Students should already have fair experience and skills to develop nontrivial programs in some general purpose programming language.

Textbooks:

Modern Programming Languages: A Practical Introduction, by Adam Brooks Webber, Publisher: Franklin, Beedle & Associates, 2003.

Course Description and Purposes:

Programming languages is a science that studies how to design a formal language to instruct machines to solve our problems. It is understandable that the structure of the machines and the natural of our problems will strongly affect the design of such a language. In this course, we will study the most important parts and concerns in the modern programming languages. We will learn how to describe the syntax of a programming language? Why should we be specific on declare *types*? Can we not? Why should we care about the scopes? How do we handle the parameters? These are typical problems for any modern programming languages to deal with. We will be investigating these problems in this course. We study what are those concepts and why we need them from the aspect of both the user and the implementer.

Although most of the programming languages are designed to be general, they can be further characterized into four major categories: imperative language, functional languages, logical language, and object-oriented languages. We will compare the nature of each category and study two cases: ML (a functional language) and Prolog (a logical language).

Examinations: (500 points) Two midterms and one final exam; 130 points for each midterm and 240 points for the final.

- Unless announced otherwise, all tests are accumulative, closed book, and indispensable. No makeup test will be given unless a documented absence is authorized by the university.
- Every student is allowed to bring a *self-prepared hand-writing* crib sheet to the test. You can **write** down anything on both sides of **one** letter-sized paper. No circulation during the test.

6 th week's	Midterm I	130 points	Sep. 25, Tuesday
11 th week's	Midterm II	130 points	Oct. 29, Tuesday
17 th week's	Final Exam	240 points	Dec. 10, Monday, 3:10 ~ 5:10 PM

Assignments: (500 points) About 11 to 12 assignments will be given, and three of them will be programming assignments. The weight of each assignment depends on the difficulty of the assignment; usually between 20 and 30 points for non-programming assignments and between 60 and 100 for programming assignments.

Read the following requirements carefully; they are applied to all assignments!

- For non-programming assignment, you should prepare your works according to the following guideline for submission.

1. A cover page with your name and student ID on it.
2. Your solutions; handwriting is acceptable *only if* your writing is clear and with appropriate spacing and organization.
3. Staple all pages together and put them in a letter-sized Manila folder with your name on it. If your paper is torn from a spiral notebook, fine, but trim the edge.

- For programming assignment, you should prepare your works according to the following guideline for submission.

1. Put a few comment lines at the beginning of your program file, in which you should clearly indicate your name and ID and claim your copyright. **Student who fails to do so will receive 0 point on the assignment.**
2. Submit your assignment with items in the following order:
 - (a) A cover page with your name and student ID on it.
 - (b) A brief summary about the assignment and your approach to the problem. You may include the difficulties you had faced, if any, or why you think your program doesn't work. It is very common and not a shame to admit that your program doesn't work under time constraints, but a reasonable self-diagnosis deserves reasonable partial credit.
 - (c) A hard-copy of the source codes.
 - (d) A hard-copy of the directly output of your program, if any.
 - (e) A diskette, R/W CD, or USB memory stick containing all source and byte codes *under the root directory*. Don't use DVD.
 - (f) All item above should be put in a letter-sized Manila folder with your name on it.

All materials will be returned after graded, and you are encouraged to reuse them, if appropriate. However, you should prepare at least two sets, because I will not be able return your work before your next assignment begins.

Do backup your works as often as possible. Remember: bad things do happen, and “my dog ate my works” is not a good excuse.

Students are encouraged to discuss assignments and help each other. However, this does not mean that you can either entirely or partially copy or modify other's works.

Try very hard to avoid the following troubles:

1. Any form and any degree of plagiarism will receive 0 point.

2. If your program contains syntax error, i.e., I can't compile the program, you will receive 0 point. Note well that the difference between "my program can't be compiled" and "my program doesn't work" is huge. The former one deserves nothing.
3. If the hard-copy of the direct output of your program is inconsistent to your program's design, you will receive 0 point. This is a kind of cheating.
4. Late works will be graded with penalty: -10 points per day after the due date. A weekend is counted as 2 days.

Attendance: Attendances will be taken impulsively. Each unauthorized absence will cost you 50 points from your score tally.

Pop quizzes:

Some pop quizzes may be given without notice in advance. Each quiz carries 10 points towards students' final scores. There are considered as the bonus points. The coverage of every quiz is also accumulative, including the materials that are three-month-old and those covered in the class right before the quiz. A typical quiz takes about 10 minutes. No makeup quiz will be given if missed. If you miss a quiz due to a university authorized absence, we will use the average of your rest quizzes as the score; otherwise, you get a 0 for the missing quiz.

Academic Honesty:

Cheating, plagiarism, collusion, abuse of resource materials, and their consequences are defined and described in ISU 2006-2007 Undergraduate Catalog, Section: Academic Policies and Practices, Article: Academic Integrity (Page 63) and Code of Student Conducts under X.C. Disciplinary Bodies And Procedures – Academic Honesty Cases .

Students giving away academic works for assignment offered for credit to other students working on the same assignment will be considered as guilty as academic dishonesty, and will receive the same penalty.

More information can be found at:

http://www.deanofstudents.ilstu.edu/crr/downloads/Code_of_Student_Conduct.pdf

Grading Policy:

You may have more than 1000 points to gain; but we always consider 1000 points as the perfect score. your grade is based on the scheme shown in the following table.

Points	Grade	
85%	A	Excellent
75%	B	Good
65%	C	Satisfactory
50%	D	Passing
- - -	F	Failure

I do not curve!!

I'm not afraid to give all A's, neither am I to give all F's. In other words, you don't have to knock down your friends to get a good grade, so do help them if they need you, and you can't hide behind someone else, because you two could be both shot down.

Tentative Topics and Schedule:

Keep the table of tentative topics and schedule in the following handy, and try to keep up with the schedule. Read the assigned materials before the class.

Week	Topics	Reading
1: Aug. 20	Characterization of Programming Languages	Chapter 1
2: Aug. 27	Grammar and Syntax of Programming Languages	Chapters 2
3: Sep. 3	Parsing, Syntax v.s. Semantics	Chapter 3
4: Sep. 10	More on Parsing	Supplement
5: Sep. 17	Language System – how they work?	Chapter 4
6: Sep. 24	(Midterm 1) ML: A functional language	Chapter 5
7: Oct. 1	ML and Types	Chapter 6
8: Oct. 8	ML and Polymorphism	Chapter 7,8
9: Oct. 15	ML, Polymorphism	Chapters 8, 9
10: Oct. 22	ML, Scopes	Chapter 10
11: Oct. 29	(Midterm 2) , ML	Chapter 11
12: Nov. 5	Memory Location for Variables	Chapters 12
13: Nov. 12	Memory Management	Chapter 14
14: Nov. 19	Thanksgiving break	review/catch up
15: Nov. 26	Parameters, Prolog: A logical programming language	Chapter 18, 19
16: Dec. 3	Prolog	Chapters 20
17: Dec. 11	Final Examination, Dec. 10, Monday, 3:10 ~ 5:10 PM	all

Play Ball!!