CRN:98651
Pace University
CS121 Computer Programming I

Instructor       Dr. Lixin Tao, ltao@pace.edu, http://csis.pace.edu/~lixin
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Lectures        PLV Goldstein 315, Tuesdays and Thursdays, 6:00PM-7:50PM

Office Hours    Tuesdays and Thursdays, 7:50PM–10:30PM at PLV G320

Prerequisite    Familiarity with personal computer operations (managing files and folders, use of an editor, browsing the Internet)

Description     Introduction to programming and algorithm design using Java. Covers procedural programming constructs, use of language-provided objects and static methods, building classes, the management of reference variables in contrast to primitives. Programming problem-solving is emphasized throughout.

Textbook
- Dr. Lixin Tao’s class notes.

Learning Objectives and Expected Outcomes

Objective 1: Learn the principles of procedural programming, including the declaration of variables, the assignment statement, conditional execution with if-else, iteration with while loops and for loops, and the use of language-provided static methods that accept zero, one, and two arguments (e.g. Math.sqrt(), Math.pow(), Math.random(), JOptionPane.getInputDialog()).

Outcome: Students will be able to write programs involving a loop, a counter, and an accumulator; programs involving nested loops; and programs involving selective processing.

Objective 2: Learn the concept of a data type. This includes the typing of numeric literals (e.g. as int and double), overflow, underflow (why computed values of doubles should not be tested with ==), ASCII/Unicode, casting, and the use of Integer.parseInt() and Double.parseDouble().

Outcome: Students will be able to choose appropriate data types for variables; able to perform the transformation of values to the proper type for a computation; and able to avoid, or recognize and correct, problems resulting from a data type's characteristics or type mismatches.

Objective 3: Learn the construction of classes and the use of instantiations (i.e. objects). This will include constructors, public and private instance variables, public instance methods, static variables, static methods, and this as a reference for the invoking object. It will also include method overloading.
Outcome: Students will be able to specify classes with requirements for the full gamut of object-based constructs provided by Java (i.e. constructs apart from those associated with derivation).

Objective 4: Learn the principles for managing objects, including the nature of a reference variable (stores the address of an object); that assignment of one reference to another creates an alias, not a copy; that an object as an argument passed by value is mutable; and the difference between == and equals() as applied to Strings.

Outcome: Students will be able to explain, illustrate, and diagram the difference between a reference and a primitive, and they will be able to apply this understanding in the construction of programs (e.g. in argument transmission).

Objective 5: Learn the management of subscripted variables by way of arrays of primitives and arrays of Strings. This includes the access of individual elements and the use of loops for the repetitive application of a unit of processing.

Outcome: Students will be able to perform operations such as a linear search, a selection sort, and the movement of a block of values in contiguous elements from one place to another.

Objective 6: Acquire skills in procedural problem-solving (also known as the design of algorithms to accomplish computing goals).

Outcome: Students will be able to transform an understanding of a computational process into code (e.g. finding the area of a triangle from the three side lengths; Euclid’s method for finding greatest common divisors; Newton’s method for finding roots; a simulation of the Monte Hall problem; the sieve of Eratosthenes).

Quizzes
There will be three one-hour open-book quizzes on both fundamental concepts and writing complete programs. The quizzes will be on October 6, November 3, and December 1 respectively. No makeup quizzes except for students who have medical situations with proof.

Programming Assignments
There will be four programming assignments. The source code of answers to the assignments must be submitted on a floppy disk, clearly marked with student name and assignment number, by the due date. Each day of late submission will incur a 10% penalty on the grade for the assignment, and under no circumstances, except for medical situations with proof, an assignment submission will be accepted after five days past the deadline.

Class Attendance
If a student is absent from a class without a justifiable and provable reason, he/she will suffer a 5% deduction in the final weighted total of his/her grades. A student missing four classes without justifications will fail the course.

Grading Scheme

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>60% (15% each)</td>
</tr>
<tr>
<td>Quizzes</td>
<td>30% (10% each)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>10%</td>
</tr>
</tbody>
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CSIS School Policy Regarding Academic Integrity

1. Definition.

Students must accept the responsibility to be honest and to respect ethical standards in meeting their academic requirements. Integrity in the academic life requires that students demonstrate intellectual and academic achievement independent of all assistance except that authorized by the instructor. The following constitute academic dishonesty. The list is not inclusive.

a) Exams
   i) Copying from another student’s exam.
   ii) Deliberately allowing other students to see and copy from your exam.
   iii) Using notes or calculators without permission from the professor or proctor.
   iv) Passing notes or calculators to other students without permission.

b) Papers and projects
   i) Copying others’ writing without proper reference.
   ii) Copying code or work from other students outside a team environment. This could be either from printouts and notes or from electronic media. This includes copying the structure of a program while changing cosmetic details such as identifiers and comments.
   iii) Deliberately allowing other students to copy your code or work, again either from printouts, notes or from electronic media. (This does not preclude a student “helping” another on a project as long as it is limited to giving information/hints and not code/solutions.)
   iv) Submitting a paper, program, or project that was done by someone else.
   v) Collaboration with one or more other students without the prior permission of the instructor.

2. Consequences. The following consequences will be affected:

a) The first student offense may result, at the discretion of the instructor, in penalties including a zero on the offending course work or an F for the offending course.

b) The second student offense in any course may result in an F for the offending course.

c) The third student offense in any course may result in dismissal from the University.

c) The Dean’s office shall keep a student record of all student offenses occurring in courses offered by the School of CSIS including the first offense. This record should be destroyed when the student graduates from the University. The record shall be associated with the student and not with any particular course.

3. Procedures for determining an offense. The following procedure will be used:

a) If the student admits to the offense, the appropriate penalty shall be enforced.

b) If the student contests the charge, the Chair of the department in which the course was offered will make a decision as to the facts of the case. If the professor is also the Chair, this step could be skipped.

c) If the student disagrees with the Chair’s decision, he or she may request a hearing from the Undergraduate or Graduate Scholastic Standing Committee, depending upon the student’s status. The Committee shall make a recommendation to the Dean concerning the facts of the case.

d) Both the professor and the student may submit to the Committee relevant information in writing. The professor and/or the student may also appear before the committee, but usually not concurrently. No others may attend the Committee hearing, but the Committee may also consider the written statement of witnesses and other concerned persons.

e) The decision of the Dean shall be final.

f) A confirmed student offense shall be entered into the student’s record in the Dean’s office.