Introduction to Problem Solving with Computers II
Summer 2012

Course Description

A continuation of COSC 1435 completing the syntax of the language used as the programming
tool in COSC 1435. An introduction to elementary data structures. The student will be
introduced to multiple computing platforms in this two course sequence. This course is the
intermediate study of the basic concepts of problem solving using C++ on both a PC and a UNIX
platform. Concepts include basic one- and two dimensional array handling, classes, recursion,
basic searching and sorting algorithms applied to static data structures, and an introduction to
dynamic data structures. Emphasis will be on developing high quality programs of intermediate
length (several hundred lines).

Learning Objectives

Upon successful completion of this course, a student will:
1. Be able to use the UNIX operating system to manage and manipulate files and folders
   and to create, compile, and execute computer programs of intermediate length.
2. Understand and effectively use single- and multi-dimensional arrays.
3. Understand and effectively use basic searching and sorting algorithms.
4. Have a basic understanding of algorithm efficiency and be able to determine the Big-O
efficiency of an algorithm.
5. Have a basic understanding of the concept of object-oriented programming through the
   use of abstract data types, including structs and classes.
6. Develop, implement, and effectively use classes to create dynamic (pointer-based) list,
   stack, and queue data structures.
7. Understand and effectively use dynamic memory allocation to create and manipulate
   variables within computer programs.
8. Be able to determine if a simple recursive function is semantically correct.

Assessment of Course Objectives
Assessment of course outcomes will be conducted through exams and programming
assignments.

Major Course Requirements
This is a computer programming course that demands all students attend all classes! Regular
completion of all reading and programming assignments is absolutely essential for success in this
course. We will follow the texts generally, but non-text material may also be included in the
lectures. All the programming assignments and exams will be given during the class hours. You are responsible for all the material presented during lectures.

Your course grade will be decided on your performance in the programming assignments, two midterm exams, and the final exam. The distribution of points is as follows:

1. Programming assignments: 35%.
2. Two mid-term exams: 40% (Exam 1: 20% & Exam 2: 20%).
3. Final exam worth 25%.

Grade Ranges:

A     90 - 100%
B     80 - 89%
C     70 - 79%
D     60 - 69%
F     Less than 60%

Assignments: Approximately ten programming assignments will be given. Depending on the situation, partial credit will be given for some incomplete programming assignments. All programming assignments will be based on the topics covered in the lectures. All assignments will be handed out in the class.

Exams: The dates of midterm exams will be announced in the class. The final exam will be comprehensive and will be given on the last day of the summer session for the course.

Required or Recommended Readings

4. Interactive UNIX Tutorial and Reference by Edutrends, Inc. (Recommended)

Website: sci.tamucc.edu/~dkar/sum2012/1436

List of Supplies: None

Course Policies

Attendance/Tardiness

You must attend all classes. You are responsible for any materials covered or handed out or announcements made for the tests and assignments in your absence. Records of your attendance will be maintained and reported to the university. Students found missing classes without the instructor's permission will be automatically withdrawn from the course. Students are responsible for all materials covered in class and assigned. Should a student be absent from class, it is his/her responsibility to get the notes, etc. for that missed class. More important, should there be assignments, it is the student’s responsibility to obtain such
assignments. No excuse will be accepted for assignments not turned in because the student was absent when it was due.

**Late Work and Make-up Exams**

All the assignments are due at the beginning of the class on the due date. If the student is absent on the assignment due date, it is the student's responsibility to make sure that the assignment is submitted on the designated date. An assignment that is turned in after the class on the due date is considered one day late. There is a penalty for late submissions. Late assignments will be counted 20% off for each day after the due time. No credit will be given if an assignment is submitted after 5 days. If you have not completed your assignment by the due date, you should submit the work you have done for partial credit. No work will be accepted once the graded work has been returned or the solution has been disclosed to the class, except for unusual circumstances.

Exams must be taken on the hour they are scheduled. In the event, if you cannot attend the class to take the exam due to some emergency or some unavoidable situation (such as serious illness, death in the family, participation in university sports, religious observations, and so on) you must notify me as soon as possible before the exam and also you must validate your absence by providing me a document (e.g., with a letter from your doctor).

**Extra Credit**

None

**Cell Phone/Electronic Device Usage**

Set your cell phone/electronic device in silent mode when you are in class.

**Academic Integrity/Plagiarism**

University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a score of 0 (zero) for the work or dismissal from the course and the Dean of Students office will be notified. No copying from another student's work, of any class, is allowed. It is the student's duty to allow no one to copy his or her work. Anyone found cheating in the exams will receive an automatic F for the course.

**Dropping a Class**

I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me
before you decide to drop to be sure it is the best thing to do. Should dropping the course be
the best course of action, you must initiate the process to drop the course by going to the
Student Services Center and filling out a course drop form. Just stopping attendance and
participation WILL NOT automatically result in your being dropped from the class.

**Preferred methods of scholarly citations**

All referenced material used in a paper or project report must be properly acknowledged and
cited. Use APA style for all scholarly citations.

**Grade Appeals**

As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes
that he or she has not been held to appropriate academic standards as outlined in the class
syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade
given in the course. The burden of proof is upon the student to demonstrate the
appropriateness of the appeal. A student with a complaint about a grade is encouraged to
first discuss the matter with the instructor. For complete details, including the
responsibilities of the parties involved in the process and the number of days allowed for
completing the steps in the process, see University Rule 13.02.99.C2, Student Grade
Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These
documents are accessible through the University Rules Web site at
http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance
in the grade appeal process, students may contact the Office of Student Affairs.

**Disabilities Accommodations**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that
provides comprehensive civil rights protection for persons with disabilities. Among other
things, this legislation requires that all students with disabilities be guaranteed a learning
environment that provides for reasonable accommodation of their disabilities. If you believe
you have a disability requiring an accommodation, please call or visit Disability Services at
(361) 825-5816 in Driftwood 101.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in
the classroom or on campus, please contact the Disability Services office for assistance at
(361) 825-5816.
## Tentative Lecture Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Review file I/O, Gaddis 12; Review strings, Gaddis 10; Pointers, Gaddis 9;</td>
</tr>
<tr>
<td>2</td>
<td>Review of arrays (2-D), Gaddis 7; Structures, Gaddis 11; Classes, Gaddis 13, Exam I</td>
</tr>
<tr>
<td>3</td>
<td>Classes, Gaddis 14, and 15; Algorithm Efficiency, Malik 1;</td>
</tr>
<tr>
<td>4</td>
<td>Searching and Sorting Arrays, Gaddis 8; Exceptions, Templates, Gaddis 16;</td>
</tr>
<tr>
<td>5</td>
<td>Linked lists, Gaddis 17; Exam II</td>
</tr>
<tr>
<td>6</td>
<td>Stack and Queues Gaddis 18 Recursion, Gaddis 19</td>
</tr>
<tr>
<td>7</td>
<td>Catch-up and Final Exam</td>
</tr>
</tbody>
</table>