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Programming Fundamentals 2
COP3503C
Class Periods: MWF Period 10, 5:10-6 pm
Location: Carleton 100
Academic Term: Spring 2022

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Instructors:
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Course Description

This course is a reinforcement of concepts covered in COP3502, as well as a look at some more advanced programming topics. In addition, we will look at creating programs which may be a bit more complex than those you have worked on in the past, and strategies for dealing with applications as they increase in complexity and/or size.

Course Pre-Requisites / Co-Requisites

COP 3502 with a minimum grade of C or an AP exam in computer science with a minimum grade of 4; and MAC 2311 with a minimum grade of C

Course Objectives

1. Build and execute C++ programs from command-line and from within an IDE
2. Fix problems in an application by utilizing debugging tools and processes
3. Utilize testing in the development of software applications
4. Read and write data from binary and text files
5. Implement classes which adhere to the concepts of object-oriented programming, including abstract and derived classes
6. Examine the uses of dynamic memory allocation
7. Utilize pointers in the creation of memory-efficient data structures such as linked lists, stacks and queues
8. Demonstrate the use of templates to create generic classes
9. Demonstrate an ability to solve large programming problems by breaking them into smaller pieces

Required Textbooks and Software

> *PROGRAMMING IN C++*
> VAHID, LYSECKY
> ISBN: 9798203913227
> Code: UFLCOP3503Spring2022

Recommended Materials

Think Like a Programmer, An Introduction to Creative Problem Solving
Anton Spraul, ISBN: 978-1593274245

Course Schedule

Week 1	Introduction to the course and C++
Week 2	Classes
Week 3	Pointers and References
Week 4	Dynamic Memory in Classes and Templates
Week 5	Operator Overloading and Testing
Week 6	Command-Line Compiling
Week 7	File I/O
Week 8	Binary File I/O (Midterm exam)
Week 9	Inheritance and Polymorphism
Week 10	Libraries and Maps
Week 11	Building larger applications
Week 12	Iterators and Sorting
Week 13	Function Pointers and lambda expressions
Week 14	Design patterns
Week 15	Where to go after this course, final exam review
Week 16	Finals Week

Class Expectations, and Make-Up Policy

Quizzes and exams may be made up only with a university approved excuse.

Unless otherwise noted, quizzes and exams are closed book, with no additional resources or materials allowed.

If a mistake was made on one of your grades, or if you feel a question on an exam was in error, you have one (1) week to bring it to my attention. This is to avoid a wave of request for changes to be made at the end of a semester, long after that part of the class has passed.

You may turn in one (1) assignment up to 24 hours after the deadline, with a grade penalty of 50% of the final score for the assignment (so a 100 would be become a 50, a score of 42 would become a 21, etc). This is only applicable to the most recent assignment, and only within the 24-hour period following the deadline. You may use this opportunity only once throughout the entire semester, and you must contact your TA or peer mentor to inform them this one-time exception is being invoked. Once you use it, you've used it.

This policy is intended reduce the impact of some "catastrosphic mistake" on your part. Realize the the day after a deadline that you submitted the wrong file? Forgot to include one of your code files in the submission? Fell asleep and napped right through the deadline? Use this, and make an effort to avoid repeating that same mistake (either in this course, or in a future course).

In this course, students are expected to write their own code for all assignments. You are the one who is being tasked with coming up with a solution to the various programming problems in this course—not your friend, not your roommate, not a stranger on the Internet. The reasoning behind this is that later in your educational career (or if you end up in industry) it will be expected that you are capable of solving problems on your own, if and when the need arises. Even in a team-based environment, each member of that team must be capable of carrying their own weight.

Unless otherwise noted, there are no group or collaborative assignments in this course. When working on assignments, discussion of those assignments with your classmates is not only inevitable, but it is strongly encouraged! (We often learn very effectively in social environments.) That said, you should discuss the problem in high level terms, not telling someone else (or being told) how to write the code. Here are some examples of what could be considered acceptable and unacceptable:

Acceptable:

- Talking about the problem
- Using a whiteboard (or paper, or something similar) to draw out the problem
- Looking at someone else's code to help them identify or fix a bug, AFTER you have already completed that portion for yourself

Unacceptable:

- Splitting an assignment's work into multiple parts with other students
- Asking someone to send you their code
- Copying someone else's code into your own submission
- Giving another student your code for ANY reason—once you send your code to someone else, you have no control over where it ends up
- Giving another student step-by-step instructions on how to structure a solution to a problem—it's their job to write their code, not yours
- Looking up solutions to problems and using those solutions yourself verbatim
- Viewing solutions to the problems and mimicking those solutions—ask me, or one of the assistants in this course, for help

Consequences for Honor Code Violations:

If you are not capable of completing an assignment on your own, that's okay. Lots of things in life can take time to really "click" for us, and we all learn at different rates. Under no circumstances should you ever consider cheating—that is, submitting someone else's work as your own—as an option. The consequences for doing so will be far worse than if you simply did not do the assignment.

Students will complete this course with honor and integrity, or not at all. Submissions which are believed to be not entirely a student's own work will be reported to administration for disciplinary action. Students who

commit any of the unacceptable acts listed above will also be reported. In ALL cases, I will recommend the following sanctions be imposed on that student or students:

1. A failing grade (an 'E') for the course
2. That you not be allowed to drop the course for any reason

Regret Clause:

If you submit an assignment, in which you engaged in some of the unacceptable practices listed above (or something similar), you may bring it to my attention within 72 hours of the submission. If you do so, I will assign a failing grade of 0 for the assignment, and you will not be reported to the administration.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Assignments	300	30%
Projects	300	30%
Quizzes	200	20%
Midterm Exam	100	10%
Final Exam	100	10%
Total	1000	100%

Grading Policy
The following is given as an example only.

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations
Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is

important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

In-Class Recording
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Conduct Code (https://sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
• Your academic advisor or Graduate Program Coordinator
• Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
• Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
• Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: https://counseling.ufl.edu, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

COVID-19
• You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
• If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate

care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.

- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the UF Health Screen, Test & Protect website for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling; https://career.ufl.edu.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall*, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/;https://care.dso.ufl.edu.

On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.