CS 204 – Advanced Programming – Spring 2021

3 credits

Prerequisite   CS201

Description and objectives

This course aims to provide programming experience and to give advanced programming techniques. In this way, students would be more prepared to data structures and several other junior and senior level CS courses. CS204 is a prerequisite course for several CS courses including data structures. Thus, it is a must course for CS students and students who will take advanced CS courses.

The programming language that will be used in this course is C++; we will use Visual C++ 2012 as the development environment. CS204 heavily depends on CS201. Thus a good CS201 background is needed. We will **NOT** make a review of CS201 topics.

Topics planned to be covered

- Introduction (overview of basic concepts, Visual C++ environment, preprocessor directives, compiler, compiler options, linker, libraries, debugging)
- Pointers and dynamic memory allocation
- Linked lists
- Stacks and queues
- Templates, templated classes and functions
- Advanced issues on classes and object oriented programming
- Data representation, bitwise operations
- Inheritance, polymorphism and advanced object oriented design
- Exception handling
- Programming with threads
- Visual programming and graphical user interfaces (probably will be skipped due to reduced weeks of this semester)

Instructor

Albert Levi, FENS 1091, ext. 9563, levi@sabanciuniv.edu
Course WhatsApp list in which I participate: https://chat.whatsapp.com/KSg7zKKAfMkG4TSmDpgeA7
Office Hours: whenever I am in my office (generally I am in my office, even during online teaching period :)). Of course this semester we will not be able to meet face to face, but whenever you have a question you can write me an email or DM via WhatsApp (see the list above); we can always meet online.

Assistants: Detailed assistant information (office hours, etc.) will be available at SUCourse+. All office hours are being held online. See the details at SUCourse+.

Textbook(s)

Main texts are   "Ivor Horton's Beginning Visual C++ 2012", by Ivor Horton, ISBN: 978-1-118-36808-4.
                          "A Computer Science Tapestry" (CS201 book)
Reference books are   "Starting out with C++ Early Objects", 7th edition, by T. Gaddis, J. Walters and G. Muganda
                          "Objects, Abstraction, Data Structures and Design using C++" by Koffman and Wolfgang.

We may not stick to the textbooks; you are responsible material covered in class too. Thus it is very important to attend to lectures.

Schedule

Lectures: Monday 8:40-10:30, Tuesday 10:40-11:30. You have to login to zoom with account that use your sabanci email address.
Lecture Zoom link: https://sabanciuniv.zoom.us/j/91540323350?pwd=RkVvSXpNM2tVS0xZVm9EcWVxT3IxUT09
Labs: Sections A1, A2, A3: Thursday 10:40 – 12:30, B1, B2, B3: Thursday 14:40 – 16:30, C1, C2, C3: Friday 10:40 – 12:30, D1, D2: Friday 14:40 – 16:30, D3 will close after add drop; those who are registered to D3 must attend D2 starting first week. All labs will be held online. The links and TA information will be made available at SUCourse+.

Homework

There will be 7 or 8 programming homework assignments. Late penalty is 10% of full grade (only one late day is allowed). You must submit your own work! No group works! Collaboration will not be considered as an excuse for plagiarism!

Grading

Midterm (30%): There is going to be one Midterm Exam. Midterm date is determined centrally by administration; whenever it is set, I will let you know.

Final (35%) – will be scheduled by student resources

Homework assignments (20%) – The homework assignments are <u>not</u> of equal weight and individual weights will be determined at the end of the semester. Homework grading will mostly be based on correctness of the execution; not based on how big is the mistake or how hard you work for it. Thus please test your code very carefully. No debugging will be done during grading. No code/file changes are allowed after the submission. If you submit wrong file, we cannot grade your work. If you have mistyped even a single character that causes a compilation error, we cannot do anything.

Top Hat and Attendance (15%): There will be a couple of Top Hat quizzes every week (will start in week 3), some of the grade will come from attendance and some from correctness. Overall TH grade will be multiplied by 1.25 and normalized to 100. Maximum TH grade that a student can get will not exceed 100. This 25% extra is to cover missing THs due to Internet connection or another reason; we will not provide any make-ups for THs.

The exams (both Midterm and Final) will be online. More details about the exams will be provided as the details become clear.

Other Rules and Remarks

- Weighted average is not the only criterion in letter grading; exam average may also be taken into consideration. Discrepancies between homework and exam averages will also be considered in letter grading and unexplainable discrepencies may reduce the homework contribution to overall grade.
- Students are expected to attend all classes, recitations and labs. In CS204 you will continue to learn a programming language and it is much easier to learn a programming language when a person explains it. You have to spend more time to compensate a missed class. So absenteeism does not buy time.
- Students are responsible for the material covered in class even if it is not part of the lecture notes published on the website (Sometimes we explain some stuff on the board). That is why attendance is important.
- I will be sharing lecture videos in case you miss a point during lectures.
- Students are responsible to check their emails (Sabanci University accounts), SUCourse and course website daily for any announcements related to this course.

- We have a strict make-up policy. If you plan to take a makeup exam, please first read the makeup policy at the website in order to understand the rules and to see whether you are eligible or not.

See SUCourse+ for other, but important, details

Homework Submission and Grading Policy of CS 204

- All homework submissions must be done until the specified deadline. If you submit on the exact deadline time, then you are late. That means if the deadline is 21:00, then the latest second that you can submit is 20:59:59.
- Late homework submission is allowed, but only for one day (24 hours). Late submission penalty is 10 points.
- Homework submission must be done only to SUCourse+. Email or other type of submissions are not allowed.
- You will be able to resubmit your homework until the deadline.
- If you resubmit your homework after the deadline, but during the late submission period, your homework will be treated as late.
- **No modification is allowed after SUCourse+ closes.** Thus, please make sure that you've submitted the correct homework. If you submit wrong file or if a crucial file is missing, we cannot grade your homework and you get zero (0). We do not allow code changes after SUCourse+ closes either. We grade whatever you submit to SUCourse+. Sometimes, the students argue the local computer's system time as a proof of timely completion of a wrongly submitted homework; we cannot accept such local proofs and we cannot accept any file other the ones submitted to SUCourse+. No exceptions to this rule.
- Homework grading may be done via a demo and you may be questioned about your homework during the demo.
- **Homework grading is mostly based on correct execution.** We generate some test data for grading and this test data is never given out before the deadline. Moreover, the test data will always be different than the sample runs given in the homework document. If your homework executes wrongfully against this test data, your grade will be lowered accordingly no matter how big is your programming bug and no matter how hard you work for it. Sometimes the bug is too simple, but it may cause your program to work totally

wrong and you may get very low grades. Sometimes, you mistype a character that causes some compilation errors. This are too unfortunate but we have nothing to do. In order to avoid such cases, please test your program thoroughly before the submission and make sure that the submitted version is the most up to date one. And please do not write us to complain about this policy and its outcomes within the semester; you know it at the beginning of the semester and you take this course by knowing this policy.

- **We do not debug your code during grading to understand where the problem is.** As mentioned in the previous bullet, we just test your code and grading is not based on how big your bug is.
- **Testing is your responsibility.** We do not use grade checker or any other online tool in order to give you a feedback about the correctness of your program before the deadline. However, depending on the suitability of homework, we will provide some sample runs together with the project specification. However, we do not guarantee that sample runs cover all of the edge cases. Nevertheless, it is your responsibility to test your program against all possibilities in order not to lose points due to some bugs.
- Other grading criteria include modularity of the code, coding style, commenting, efficiency, etc.

Rules to submit a medical report to take a make-up exam in CS 204

- All medical reports must be submitted BEFORE the exam. If this is not possible due to last minute problems or you cannot go to a medical institution due to COVID-19, the instructor must be called before the exam. Any excuses that will be taken into instructor's account after the exam will not be considered.
- Please keep in mind that it is totally up to the instructor to accept a medical report/excuse according to the by-laws. That means, a medical report does not guarantee taking a make-up exam. The instructor must make sure about the necessity of taking the make-up exam depending on your illness.
- Moreover, please keep in mind that for fairness reasons, the advantage of having a late exam will be compensated by having relatively more difficult questions in the makeup exam. Make-up exams can be totally or partially verbal (sözlü in Turkish).

Summary Policy on Plagiarism and Homework Trading (see the full version at SUCourse+)

A plagiarized homework may or may not be a verbatim copy of another homework. Verbatim copies are of course plagiarized ones. However, if a homework is derived from another one by partially changing some parts, this action is also plagiarism. Cooperation and working together is not an excuse. A common fallacy is that the graders cannot catch a program that is developed by partially changing another program. Believe it or not, such programs are caught very easily. There are software products available to catch such cases, and we use them. When a plagiarism case is detected, sanctions are applied to all parties regardless of the actual source of the homework. These sanctions are as follows.

- For the first time, all plagiarized homework owners receive –100 (minus hundred).
- Second time, the student fails the course automatically.

Plagiarism, Homework Trading, Illegal Local and Remote Help and Cheating will not be tolerated. See the related policy at SUCourse+