Avery Wang and Anna Zeng
CS 106L Winter 2020

Handout #0
January 6, 2020

CS 106L Course Information

Overview

What makes C++ one of the most popular, complex, and expressive programming languages in 2020? Over the course of 9 weeks, we will explore the language and library features of C++, with a particular focus on modern developments that have revitalized interest in C++. These include the STL, templates, automatic memory management, and object-oriented programming.

In CS 106B, you learned enough C++ to be able to understand important programming concepts like ADTs, recursion, memory management, and data structures. The Stanford libraries abstracted away the details of the C++ language not important to CS 106B. In CS 106L, you will learn exactly how the Stanford libraries are implemented, in the hopes that you will be able to implement similarly powerful libraries in projects outside of CS 106B.

Lecturers

Anna Zeng (aszeng@stanford.edu)
Avery Wang (averywang@stanford.edu)
Office Hours: 1:00 - 1:30 (by appointment), 2:20 - 2:50.
Other office hours may be posted on the Piazza when assignments are released.

Website

The course website is http://cs106l.stanford.edu and you should check on this regularly for updates. It will contain all sorts of useful material including lecture slides, handouts, starter code, and other interesting stuff.

Lecture

Lectures are Tuesday and Thursdays from 1:30 - 2:50 PM in 200-202. Lectures will usually end around 2:20, although some lectures may take longer. Any remaining time will be open to Q&A/lab exercises. This course is not SCPD recorded, and you are expected to attend all lectures.

Prerequisites

The corequisite is CS 106B or equivalent. We will not go into the basics of programming in C++, which are covered in CS 106B. Instead, we will directly build upon the material in CS 106B when relevant. The course schedule is aligned with CS 106B's schedule, so you are encouraged to take this class alongside CS 106B.

Grading

This is a one unit class, taken Satisfactory/No Credit (S/NC). Auditors are welcome, although we will not be able to grade your assignments. Grades are determined by satisfactorily completing the assignments.

Assignments

You will receive credit for completing A3, **and** either A1 or A2.

- A1: GraphViz (streams, types, vectors)
- A2: WikiRacer (everything STL)
- A3: TBD (object-oriented C++)

The assignments serve to provide a framework for you to practice the concepts from class and as such, are not meant to be conceptually strenuous. Our focus will be on writing elegant, functional programs that adhere to the design philosophy of C++. You will be assigned a section leader after the add/drop deadline, who will be grading your assignments and giving you feedback. Assignments are submitted via Paperless.

Late Policy

Each late day is a 24 hour extension. You can earn late days by completing surveys that are sent throughout the quarter. There will be 3 surveys. In addition, should any emergencies arise, please email us and we will do our best to accommodate you.

Honor Code

All of the Honor Code policies from CS 106B apply to CS 106L. In short, you are not allowed to look at code that is not your own, or to show your code to other students (such as on a public online repository). You must indicate all sources of assistance you received. When in doubt, please ask!

Readings

We will be using the CS 106L course reader. We will also post numerous handouts and links to other resources which we will reference throughout the quarter. The reader focuses on pre-C++11 language features, so we will post additional handouts for concepts in C++11 and beyond. There is only so much detail we can cover in lecture so these resources will provide an opportunity to more thoroughly reinforce the concepts learned in class

Piazza + Email

We will be using Piazza for this class. Please post any questions you have on Piazza, and we will respond. Just like in CS 106B, do not post assignment code on Piazza publicly. If you have private comments, questions, or concerns, need special accommodations, or just want to talk privately, you can make private Piazza posts instead, which only Avery and Anna will see. You are more likely to get a timely response with a Piazza post than an email.

Preliminary Schedule

Part 1: Intro to C++

Jan. 7: Introduction	*Intro Survey Released*
Jan. 9: Stream	
Jan. 14: Types and Advanced Streams	*Intro Survey Due*

Part 2: Standard Template Library (STL)

Jan. 16: Sequence Containers	*A1 Released*
Jan. 21: Associative Containers and Iterators	
Jan. 23: Advanced Containers and Iterators	*Feedback Survey #1 Released*
Jan. 28: Templates	
Jan. 30: Functions and Algorithms	*A1 Due, A2 Released, Feedback Survey #1 Due*
Feb. 4: STL Applications	

Part 3: Object Oriented Programming

Feb. 6: Advanced Templates	
Feb. 11: Class Design and Const Correctness	
Feb. 13: Operators	*A2 Due, A3 Released, Feedback Survey #2 Released*
Feb. 18: Template and Iterator Classes	
Feb. 20: Special Member Functions	*Feedback Survey #2 Due*

Part 4: Modern C++

Feb. 25: Move Semantics	
Feb. 27: RAII/Smart Pointers	
Mar. 3: Multithreading	
Mar. 5: Final Lecture	*A3 Due*