CSCI 1102 Computer Science 2

Spring 2021

Syllabus

Meets: On Line Tuesdays & Thursdays 1:30PM — 2:45PM and 3PM — 4:15PM.

This course is primarily concerned with the design and development of efficient data structures and algorithms. A second major theme is to further develop the student's software development skills.

Course Homepage: https://github.com/BC-CSCI1102/s21

Resources

Staff

Instructor: Robert Muller

Office Hours: Wednesdays 2PM — 4:30PM, Thursdays 4:30PM — 6PM, Zoom.

Teaching Assistants:

- **Callie Sardina, Head Teaching Assistant** Office Hours: Thursdays, 9AM - 11AM Zoom, `sardinac`
- **Kristen Bayreuther** Office Hours: Wednesdays 4:30PM - 5:30PM, Fridays 3:30PM - 4:30PM Zoom, `bayreutk`
- **Emma Huang** Office Hours: Sundays 7PM - 9PM Zoom, `huangwr`
- **Liam Murphy** Office Hours: Tuesdays 10:30AM - 11:30AM, Fridays 2PM - 3PM Zoom, `murpaue`

Texts

- Algorithms (4th Edition), by Robert Sedgewick & Kevin Wayne.
- Effective Java (2nd or 3rd Edition), by Joshua Bloch.

Required Work

1. Ten programming problem sets;
2. Three 30 minute quizzes;
3. Class & Piazza forum participation.

Tentative Schedule

1. Overview, Administration, Java Setup and Introduction.
2. The Stack ADT, Sequential VS Linked Representations, Postfix Expression Evaluation.
3. Variations on the Stack ADT, The Queue ADT Parametric Polymorphism/Generics and code reuse
4. Abstraction; Encapsulation; Composition
5. Analysis of Work, Asymptotic Complexity, Big-O notation Sorting, Mergesort, orders and comparability,
6. More on Orders and Comparability The Priority Queue ADT, Binary Heaps.
7. Binary Heaps, Heapsort, Priority Queues
8. Maps/Symbol Tables, Huffman Coding, Bitwise Operations
9. Simulating Sum Types in Java Mutable Maps
10. Immutable Maps
11. Binary Search Trees, Balanced Search Trees
12. Balanced Search Trees, Skip Lists
13. Hashing
14. Graphs; Djikstra's Shortest Path Algorithm
15. Review and Catchup

Grading

Like most CS courses, CSCI 1102 is very much a "learn by doing" course. Reflecting this, grades will emphasize the problem sets. Grades will be computed on a 200 point scale. The points are distributed as follows:

- 140 points over 10 problem sets; your lowest non-zero problem set score will be discarded and replaced by your average score for the 7 problem sets;
- 30 points over 3 quizzes;
- 30 points for class and piazza participation;

Grades will be recorded on the Canvas website.

Notes:

- Unless specified otherwise, problem sets must be submitted by pushing your repository to GitHub by midnight on the due date.
- Late problem sets will be penalized 20% each day.
- Students missing an exam without prior permission of the instructor will receive a zero for that exam unless they provide a note from their doctor.
- Any violation of the university's policy on academic integrity will result in a failing grade for the course.

Disabilities

If you are a student with a documented disability seeking reasonable accommodations in this course, please contact Kathy Duggan, (617) 552-8093,dugganka@bc.edu, at the Connors Family Learning Center regarding learning disabilities and ADHD, or Rory Stein, (617) 552-3470, steinr@bc.edu, in the Disability Services Office regarding all other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations.