

San Jose State University - Department of Computer Science

CS 46B - Introduction to Data Structures

Fall 2015

Meeting times and location, contact information, office hours, the exam schedule, and class assignments, are published in the [course web site \(http://horstmann.com/sjsu/fall2015/cs46b/index.html\)](http://horstmann.com/sjsu/fall2015/cs46b/index.html) .

Description

Stacks and queues, recursion, lists, dynamic arrays, binary search trees. Iteration over collections. Hashing. Searching, elementary sorting. Big-O notation. Standard collection classes. Weekly hands-on activity.

For the official catalog description, please visit the [catalog page \(http://info.sjsu.edu/web-dbgen/catalog/departments/CS-courses.html\)](http://info.sjsu.edu/web-dbgen/catalog/departments/CS-courses.html) .

Prerequisites

Knowledge of Java equivalent to that obtained by completing CS 046A or CS 049J (with grade of "C-" or better). Eligibility for MATH 030 or MATH 030P, or instructor consent. Pre/Corequisite: MATH 42.

Textbook

Cay S. Horstmann, [Java Concepts \(http://horstmann.com/bigjava5.html\)](http://horstmann.com/bigjava5.html) 7th Edition. ISBN 978-1-118-43112-2 (paper) or 978-1-118-54939-1 (ebook). You can get a lower cost version of the book at the SJSU bookstore with ISBN 978-1-118-60771-8.

Student Learning Outcomes

Upon successful completion of this course, students should be able to:

- use and work with basic structures such as linked lists, stacks, queues, binary search trees and iterators
- implement from specifications Java classes that embody data structures
- use and work with pre-existing implementations such as the Java collections framework
- make relative estimates between alternative algorithms of the running time of algorithms using big-O estimates
- formulate and test for pre- and post-conditions

- distinguish between different types of program defects and understand how testing and debugging are used to correct them
 - implement simple sorting algorithms such as insertion sort and selection sort
 - implement the sequential search and binary search algorithms
 - implement simple recursive algorithms such as binary tree traversals
 - work competently with commonly used tools for software development
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Course Requirements

Exams

Two in-class exams (15% per exam) and a final exam (25%). Exams cannot be made up, except for reasons of illness, as certified by a doctor, or documentable extreme emergency. Makeup exams may be oral.

Programming Assignments (35%)

Two assignments per week . Schedule your time well to protect yourself against unexpected problems. I suggest you ignore the official deadlines and complete the assignments 48 hours earlier. Late work is not accepted, and there is no extra credit or makeup work.

Class Attendance, Preparation and Participation (10%)

Each student is expected to be present, punctual, and prepared at every scheduled class and lab session. You will be graded on participation in lab work, class and online discussions, and your performance on quizzes that check the assigned pre-class reading.

Laptops

You will be required to bring a wireless laptop to all (!) classes and exams.

Time spent

As per [Policy Recommendation S12-3 \(www.sjsu.edu/senate/S12-3.pdf\)](http://www.sjsu.edu/senate/S12-3.pdf) , success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course for instruction or preparation/studying or course related activities.

This is a 4-unit/15-week class, so you should spend 180 hours per semester or 12 hours per week on this class. That's two hours a day if you work every day except Sunday, or 6 hours per day if you only work on the weekends.

Grading Policy

You will receive a letter grade for each of the exams, the finals, the total homework performance, and the total participation in labs/discussions/quizzes. Letter grades are obtained by adding and curving the numeric scores. When determining a curve, the cutoffs are guided by the [university definitions \(http://www.sjsu.edu/registrar/students/grades-grades_changes/grade_symbols_and_values/\)](http://www.sjsu.edu/registrar/students/grades-grades_changes/grade_symbols_and_values/) for letter grades:

- A+, A, A- excellent
- B+, B, B- above average
- C+, C, C- average
- D+, D, D- below average
- F failure

Letter grades are converted into number grades, as specified by the registrar (http://www.sjsu.edu/registrar/tutorials/grade_values.html), except that an A+ is counted as 4.3, and weighted with the percentages given in the Course Requirements section. The weighted average is rounded towards the nearest letter grade, which is your class grade.

Miscellaneous Policies

Add Policy: To add the course, take the prerequisite quiz (<http://horstmann.com/sjsu/fall2015/cs46b/prequiz.html>). You must use your add code within 24 hours, or the add code will be reassigned to someone else.

Individual Work: All homework and exams must be *your own individual work*. It is ok to have general discussions about homework assignments, or read other material for inspiration. You may *never* copy anything from anyone without attribution, with one exception—you may copy from the textbook. For homeworks and exams, you may not copy anything from any other student at all, and you may not collaboratively produce results in pairs or teams.

Publicly Viewable Work: Your class work (including homework, exam, and project work) may be viewable by other students of this course. Your grades will not be viewable by others.

Copyright of Materials: Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.

University Policies

Attendance: University policy F69-24 (<http://www.sjsu.edu/senate/docs/F69-24.pdf>) states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

General Expectations, Rights and Responsibilities of the Student: As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU’s policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. See [University Policy S90–5](http://www.sjsu.edu/senate/docs/S90-5.pdf) (<http://www.sjsu.edu/senate/docs/S90-5.pdf>). More detailed information on a variety of related topics is available in the SJSU catalog, at <http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html>. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

Dropping and Adding: Students are responsible for understanding the policies and

procedures about add/drop, grade forgiveness, etc. Refer to the [Catalog Policies section \(http://info.sjsu.edu/static/catalog/policies.html\)](http://info.sjsu.edu/static/catalog/policies.html) . Add/drop deadlines can be found on the [current academic year calendars document \(http://www.sjsu.edu/provost/services/academic_calendars/\)](http://www.sjsu.edu/provost/services/academic_calendars/) on the Academic Calendars webpage. Students should be aware of the [Late Drop Policy \(http://www.sjsu.edu/aars/policies/latedrops/policy/\)](http://www.sjsu.edu/aars/policies/latedrops/policy/) , current deadlines, and penalties for dropping classes. Information about the latest changes and news is available at the [Advising Hub \(http://www.sjsu.edu/advising/\)](http://www.sjsu.edu/advising/) .

Consent for Recording of Class: Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.

Campus Policy in Compliance with the American Disabilities Act: If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. [Presidential Directive 97-03 \(http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf\)](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) requires that students with disabilities requesting accommodations must register with the [//www.sjsu.edu/aec](http://www.sjsu.edu/aec) Accessible Education Center (AEC) to establish a record of their disability.