CS 46B - Introduction to Data Structures, Section 02

San José State University
Fall 2019

About the Section

Day/Time : Tuesday/Thursday at 7:30-8:45am
Duration : 08/21/19 12/09/19
Building/Room : SCI/311
Lab Info : Friday - 11am-1:45pm (time slot for CS 46B Lab Section 20)
Class Lecturer : Dominic Abucejo
Office Location : DH 282 (by appointment)
Email : dominic.abucejo@sjsu.edu (in the subject field, prepend "[CS46B-02]")
Telephone : Please use email for all communications

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.

Course Learning Outcomes (CLO)

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

1. Use and work with basic structures such as linked lists, stacks, queues, binary search trees, and iterators.
2. Implement Java classes that embody data structures.
3. Use pre-existing implementations such as the Java Collections framework.
4. Make relative estimates of the running times of alternative algorithms using big-O analysis.
5. Formulate and test for pre-and post-conditions.
6. Distinguish between different types of program defects and understand how testing and debugging are used to correct them.
7. Implement simple sorting algorithms such as Insertion Sort and Selection Sort.
8. Implement the Sequential Search and Binary Search algorithms.
9. Implement simple recursive algorithms such as binary tree traversal.
10. Work competently with commonly used tools for software development.
11. Create custom data structures when appropriate pre-existing classes are not available

Pre-requisites

1. Knowledge of Java equivalent to that obtained by completing CS 046A or CS 049J with grade of C- or better.
2. Eligibility for Math 030 or Math 030P, or instructor consent.
3. Math remediation completed or a post baccalaureate.

Book Reference

Big Java Early Objects--EText by Cay S. Horstmann. This book is displayed in VitalSource

- At the bookstore: ISBN 9781119499459 (E-Text only), ISBN 9781119499534 (E-Text + loose leaf book)
- eBook alone is cheaper on Wiley than in the bookstore
- eBook plus a loose leaf version, can only get that from the bookstore.
- See the online Campus Bookstore for more information

Course Requirements and Assignments

Exams

Two in-class exams (30%; 15% per exam) and a final exam (20%). Exams cannot be made up, except for reasons of illness, as certified by a doctor, or documentable extreme emergency.

Weekly Assignments

One assignment per week (40%). Assignments will be posted on Canvas every Sunday night at 12:00 am. The problems are mostly related to the topic that will be covered on that week's lecture. You have time to look at the problems and try to get ready to solve them by attending the class and ask questions. All assignments are due at 6:30 am on the next Tuesday (a week after).

Labs

You must enroll for a lab section and attend all labs. You will fail the course if you don't pass the lab section. You will fail the lab and the class if you miss more than 2 labs. Provided you get a passing grade in the labs, it counts as 10% of your total grade. Please do not use up your 2 allowed misses in the first few weeks of class on non-emergencies.

Grading Information

- Weekly Assignments (40%)
- Lab reports (10%)
- Two Midterm Exams (30%; 15% per exam)
- Final Examination (20%)

Incomplete work

Points will be deducted for incomplete question responses and solutions that are partially functional. Consult individual assignment for details of point allocation for each problem.

Late assignments

You have two bonus days for late submission within the duration of the semester. After you exhaust the two bonus days, any late submission would cause a deduction of daily 20% of total points for the assignment. Please note, in the case of the bonus, even if you submit 1 hour late it would be counted as a one day.

Makeup Exams

You must submit only your own work on exams. Makeup exams will only be given in cases of illness (documented by a doctor) or in cases of documentable, extreme emergency.

Individual Work

1. All homework and exams must be your own individual work.
2. It is okay to have general discussions about homework assignments or reading external material for your own learning consumption.
3. You may never copy anything from anyone without attribution. This means if you find code on i.e. "StackOverflow" or another web site, you need to give the URL where you found the code in a comment at the top of your class so that I can look at it if necessary.
4. You may copy from the textbook, the labs, or anything we do in class without attribution.
5. For homework and exams, you may not copy anything from any other student at all, and you may not collaboratively produce results in pairs or teams.
6. Your work must be entirely your own.
7. It is never okay to give your completed code to another student before the due date.
8. A first incident of cheating will result in a 0 on that assignment or exam. A second incident will result in a failure for the class.
9. Any cheating will be reported

Grading Bracket

Point Range	Letter Grade
v100% to 94%	A
< 94% to 90%	A-
< 90% to 87%	B+
< 87% to 84%	B
< 84% to 80%	B-
< 80% to 77%	C+
< 77% to 74%	C
< 74% to 70%	C-
< 70% to 67%	D+
< 67% to 64%	D
< 64% to 61%	D-
< 61 to 0%	F

Classroom Protocol/Etiquette

1. Always bring a laptop. We may need them to do some in-class coding.
2. Be on-time. Class will start promptly.
3. In case of being late, please take a seat quietly.
4. No talking
5. No phone calling or texting
6. No Facebook, Instagram, etc.

7. Closed drink containers are okay
8. Clean up your own mess
9. 3 to 5 minutes break every 30 minutes

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/

Important Schedules

Final Exam

Regular Class Start Time	Final Examination Day	Final Examination Time
0730 or 0800	Thursday, December 12	0715-0930

*This schedule is based on the GROUP II CLASSES section
*The final will be in this classroom (SCI 311)

Make-Ups

Any make-up examinations	Wednesday, December 18, 2019	All day

Administrative

Monday, September 2	Labor day - Campus Closed
Tuesday, September 3	Last day to Drop a Class without a "W" grade.
Tuesday, September 10	Last day to Add via MySJSU online and without a Petition & Late fee
Monday, November 11	Veterans Day - Campus Closed
Friday, November 15	Last Day to Withdraw - Withdrawal from the Semester Request on AARS website
Thursday, November 28 - Friday, November 29	Thanksgiving Holidays - Campus Closed
Monday, December 9	Last day of Instruction

For more scheduling details, go to: http://www.sjsu.edu/registrar/calendar/2194/index.html

Course Schedule

Week	Date	Topics
1	08/22/2019	Introduction to the Course
2	08/27/2019	Introduction to data structures, inheritance
2	08/29/2019	Polymorphism
3	09/03/2019	Inner Classes, Interfaces
3	09/05/2019	Equality & Comparison
4	09/10/2019	Sets
4	09/12/2019	Exceptions & Assertions
5	09/17/2019	I/O
5	09/19/2019	I/O
6	09/24/2019	Recursion
6	09/26/2019	Review
7	10/01/2019	**Midterm 1**
7	10/03/2019	Recursion & Backtracking
8	10/08/2019	Sorting & Searching
8	10/10/2019	Sorting & Searching
9	10/15/2019	Algorithm Complexity, Big O
9	10/17/2019	The Collection Framework
10	10/22/2019	The Collection Framework
10	10/24/2019	The Collection Framework
11	10/29/2019	Review
11	10/31/2019	**Midterm 2**
12	11/05/2019	Hash Tables
12	11/07/2019	Trees
13	11/12/2019	Custom Collections
13	11/14/2019	Custom Collections
14	11/19/2019	Custom Collections
14	11/21/2019	Binary Search Trees
15	11/26/2019	Binary Search Trees
15	11/28/2019	Holiday: Thanksgiving 11/28-11/29
16	12/03/2019	General Graphs
16	12/05/2019	Review
17	12/12/2019	**Final Exam**