Sections 1 & 2; Lecture: TTh 9:00 – 10:20 AM;
1253 Patrick F Taylor Hall
Class webpage: Moodle

Lab Section 1: Th 1:30 – 4:20 PM
2324 Patrick F Taylor Hall
Lab Teaching Assistants:
Dipak Singh
dsingh8@lsu.edu
Mohamad Firoz-Ul-Amin
mfiroz1@lsu.edu

Lab Section 2: Th 5 – 7:50 PM
2324 Patrick F Taylor Hall
Lab Teaching Assistants:
Dipak Singh
dsingh8@lsu.edu
Roman Jones
rjon141@lsu.edu

Instructor: Patti Iles Aymond
Office: 3270A Patrick F Taylor Hall
paymond@lsu.edu (**by far the best way to reach me**)
Phone: (225) 578-4359

Office Hours:
Monday & Wednesday 10:45 AM – 12:15 PM
and By Appointment

Grading Teaching Assistant:
Wyatt Clements
wcleme3@lsu.edu

Course Description

Develops solutions to problems using an object-oriented approach and emphasizes the concepts of recursion; dynamic memory; data structures (lists, stacks, queues, trees); exception handling.

Prerequisites:

1. CSC 1350; credit or registration in MATH 1550.
2. Credit will not be given for both this course and CSC 1254.

Course Objectives

- Distinguish problem types solvable using the abstract data types (ADTs): list, stack, queue, binary search tree
- Design and implement solutions using object oriented programming (OOP) concepts for the ADTs - list, stack, queue and binary tree
- Apply array-based and linked list OOP language mechanisms for representing an ADT
- Explain and demonstrate recursive sort algorithms: merge sort; quick sort
- Create a recursive solution
- Apply knowledge of exception handling
- Apply language constructs for inheritance, polymorphism and generic data types
- Explain algorithm efficiency
- Apply consistent documentation and good program style

Course Layout

- **Course Lectures:** Course lectures will be 80 minutes long, two times per week. All assigned readings are expected to be completed before class.
- **Laboratory Assignments:** Short laboratory assignments will be made available in Moodle at the beginning of lab. These are to be completed in Moodle or uploaded to Moodle, as instructed. The purpose of the laboratory assignments is to give you practice and to provide an idea of the type of questions you can expect to see on an exam; laboratory assignments will NOT provide an exhaustive set of exam study questions.

- **Programming Projects:** Students will complete 6 programming assignments. The programming project assignments will be made available in Moodle at least one week before the project is due. Completed projects are to be uploaded to Moodle, as instructed.
- **Exams:** There will be two, 80 minute exams and a two hour final exam. Arrangements for a make-up test must be made prior to the test. The instructor will be following LSU policy PS-22 with regards to valid reasons for missing an exam. Exam reviews will be held on the lecture day immediately preceding the exam, during regular class time. Come prepared with questions regarding the format of the exam and the exam topics. **STUDENTS MUST PRESENT THEIR LSU ID WHEN TURNING IN A CLASS EXAM.**

Evaluation

Grading will be based on class and laboratory attendance, laboratory assignments, programming projects, and three exams:

20%	Exam 1	10%	Laboratory Assignments and In-class Quizzes Lowest 2 grades dropped
20%	Exam 2		
20%	Final Exam	30%	Programming projects Lowest grade dropped

While the exams are not cumulative, per se, concepts covered are expected to be correct in later exams.

Final grade will be determined by overall average as follows:

Score	Grade	Score	Grade	Score	Grade
90-92.99	A-	93-96.99	A	97-100	A+
80-82.99	B-	83-86.9	B	87-89.99	B+
70-72.99	C-	73-76.99	C	77-79.99	C+
60-62.99	D-	63-66.99	D	67-69.99	D+
0-59.99	F				

Required Textbook

Big Java Late Objects Includes Java 8 Coverage 2/e, Cay Horstmann (Paberback – ISBN: 978-1-119-22563-8 or Enhanced E-text – ISBN: 9781-119-32107-1)

Course Topics

- General versus restricted data lists; operations on the data list (search, insert/delete, push/pop, enqueue/dequeue, traverse)
- OOP mechanisms for representing ADT (Array-based; linked list); advantages and disadvantages.
- Recursion terms: base/degenerate case; tree-recursive; recursive depth; stack overflow; infinite recursion; tail versus non-tail recursion; recursive algorithms: merge sort; quick sort; binary search tree (BST) ADT
- Tree terms: path; height; level; degree; parent; child; root; leaf; etc.
- BST pre-order; in-order; post-order
- Generic data types
- Introduction to database concepts: key; data records; target value; duplicates
- Polymorphism: function overloading, overriding
- Fundamental inheritance concepts: is-a relationship; multi-level; multiple base cases
- Built-in language constructs for exceptional handling
- Introduction to algorithm efficiency: asymptotic efficiency; order of magnitude; BigOh notation
- Verification of input data
- Circular linked list; doubly linked list

Class Policies

- Moodle: The course Moodle will be the official avenue for communication between the instructor and teaching assistants and students. Moodle will be used for providing general course information, making announcements, making assignments, turning in assignments, and posting grades. Check it often for new or updated information. If you don't see something in Moodle that you think should be there, report it to the instructor as soon as possible.
- Communication: All electronic communication between students and the instructor and teaching assistants should maintain a professional decorum (e.g., address the recipient properly, use whole words, complete sentences, and proper grammar). Be sure to include enough detail of the problem so that you form a well-thought out question. The more detail you can give as to your problem, the more likely the instructor or teaching assistant will be able to help you.
- Distractions: Please silence your phones and put them away at the beginning of every class. If you receive an urgent call or text during class, please take the device into the hall to complete your call/text. If you must enter class late or leave early, please do so as quietly as possible. Please avoid activities that will distract your classmates (.e.g., talking, rustling papers, moving around), etc. The instructor reserves the right to expel a student from the lecture room for distracting, disruptive, or disrespectful behavior.
- Grading Change requests: All grades are uploaded to the course Moodle. Concerns about grades must be addressed within one week after the graded work is made available. Thereafter, all grade book entries are final. Grade change requests must be submitted to the instructor, in writing, and must include the following:
    - Name of student
    - Date of the assignment/project/exam
    - Date of submission
    - Course number
    - List of the items that need to be corrected along with a concise reason as to why the grade change is needed.
    - Original assignment/test/quiz (not a copy).

  Grade change request decisions are at the discretion of the instructor and will be returned as the instructor has time to complete the regrade. Final exam and final grade change requests can be submitted up to two weeks after the final exam. After that time, grade change requests will be denied.
- Due Dates: All work intended for grading at full credit must be submitted on time. Any work not submitted before the cut-off period is not graded. Programming projects and laboratory assignments will be submitted via assignments on the course Moodle. Moodle is unforgiving, so do not wait until the last minute to upload your assignment.
- Missed Assignment/Exams: A grade of 0 is awarded for missed assignment/exam in the absence of a valid excuse, as determined by the instructor. In the unusual circumstance that you must miss an assignment or exam due to medical reasons or other unforeseen emergency, you need to notify the instructor as soon as possible and provide sufficient documentation to verify the claim. The instructor will be following LSU policy PS-22 with regards to valid reasons for missing an exam. If the instructor deems that the excuse is valid and sufficiently documented, the instructor will determine how the missed work will be made up, depending on the circumstance.
- Special Accommodation: Students who have a disability that require accommodation(s) should make an appointment with the Office of Disability Services (Phone (225) 578-5919 or TDD: (225) 579-2600) to discuss their specific needs and present a letter from the ODS informing the instructor of their needs. All such matters, by University regulations, are strictly confidential.
- Collaborative Work: All class exams, programming projects, and lab assignments must be the independent work of the student. Students are encouraged to work together on lab assignments and programming projects, but the work you turn in must be your own. All work on exams must be your own.
- Exam Dates:
    - Exam 1: Tuesday, February 12
    - Exam 2: Tuesday, March 19
    - Final Exam: Thursday, May 2, 12:30PM – 2:30PM

- Important Dates:
  - Thursday, January 17 – Final day to drop without a W (4:30 PM deadline)
  - Friday, March 22 – Final day for dropping classes (4:30 PM deadline)
  - Friday, March 22 – Final day to request rescheduling a final examination when three examinations are scheduled in 24 hours

ALWAYS BRING YOUR TEXTBOOK AND A FLASH DRIVE WITH YOU TO LAB

Academic Integrity

- Students are required to abide by the LSU Code of Student Conduct Handbook. "LSU is an interactive community in which Students, faculty, and staff together strive to pursue truth, advance learning, and uphold the highest standards of performance in an academic, social, and social media environments" [from LSU Code of Student Conduct]. It is assumed that all students enrolled in this course have read the Code of Student Conduct – specifically section 10.1 (Academic Misconduct). The Code of conduct is available at https://www.lsu.edu/saa/students/codeofconduct.php.
- All assignments will be monitored against academic dishonesty. Examples of academic dishonesty include, but are not limited to:
  - Accessing the solution manual to the text and copying the solution before attempting the problem on your own, while attempting the problem on your own, or after checking your work and finding your solution to be incorrect.
  - Copying a problem solution from a classmate (be it one problem or the entire problem set). The copy may be identical or a rearranged version of another student.
  - Giving your completed problem set to another student who has not yet completed their problem set.
  - Copying a solution from another student verbatim.
  - Peeking at a problem solution without the knowledge of the spied upon student.
- All students, regardless of level of guilt, will be reviewed by SAA (Student Advocacy and Accountability) in the event that an academic misconduct violation is detected.
  - This is particularly important for those of you who "share" your homework with others. Many times this is done with the best of intentions to help a classmate, but the classmate may copy your solution and present the work as their own. The "sharer", in the eyes of the university, is just as guilty as the copier.
  - **Keep your work safe**. Never leave your homework with other students or send your solution to other students.
- If there is evidence of academic misconduct on laboratory assignments, programming projects, or exams, all involved parties will be submitted to SAA for review.