CS 312: Object Oriented Software Design  
Fall 2020

Instructor:  
Dave Binkley  
Office: DS 127E  
Phone: x2881  
email: binkley.at.cs.loyola.edu  
Web: www.cs.loyola.edu/~binkley/312  
Office Hours: 2:00 - 3:00 MWF (though i’ve got nowhere to go, so email me or better yet post a question on discord)

Learning Outcomes  
1. I can solve problems using object-oriented analysis (OOA) and design (OOD) techniques.  
2. I can independently use classes from the Java Collections Framework.  
3. I can code with Java abstract classes, inheritance, and interfaces.  
4. I can code with Java generics.  
5. I understand advanced sorting algorithms (e.g., heap sort, quick sort, and merge sort).

Text  
(Required) Koffman and Wolfgang, Data Structures: Abstraction and Design Using Java, Wiley  
(Required) zyBooks, Data Structures Essentials  
Sign up at learn.zybooks.com using code LOYOLACS312BinkleyFall2020

Grading:  
Nine Programming Assignments 300 (6 × 25 + 3 × 50 · · · six easy ’n three hard)  
zyBooks 50  
Midterm 100  
Final 100  
Slush ? (Slush includes “Daily” homework, class contribution, etc.)  
Total 55?

Late work:  
Assignments are due on their due date at (or before) the start of class; assignments handed in after that time lose 10% a day (a day is defined as 24 hours).

Cheating:  
Don’t. Individual work is expected on your programs and exams (note that asking for help finding a “bug” is not considered cheating). You may work together on the homework. Read the honor code.

Tentative Schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Book Readings &amp; Notes</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction, Linux, IDEs, and a few UML diagrams</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Generics in the JCF (Lists, Stacks, and Queues)</td>
<td>2, 4</td>
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<tr>
<td>3</td>
<td>OOA ’n OOD Think I, Use cases</td>
<td></td>
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<tr>
<td>4</td>
<td>Testing I (JUnit and TDD); Recursion, Iteration, and OO</td>
<td>3, 5</td>
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<tr>
<td>5</td>
<td>Testing II, Debugging, Recursion Kata</td>
<td>3, 5 [ICSME]</td>
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<tr>
<td>6</td>
<td>OOP (inheritance, abstract classes, and interfaces)</td>
<td>1.4</td>
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<tr>
<td>7</td>
<td>buffer and midterm</td>
<td></td>
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<tr>
<td>8</td>
<td>Trees I</td>
<td>6 (skim 6.4, read 6.6 twice)</td>
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<tr>
<td>9</td>
<td>Trees II: heaps and heap sort</td>
<td>6.6 - 6.7, 8.8</td>
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<tr>
<td>10</td>
<td>OOA Think II</td>
<td></td>
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<tr>
<td>11</td>
<td>Sorting out sorting</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>JCF 2: Sets and Maps</td>
<td>7</td>
</tr>
<tr>
<td>13</td>
<td>Self-Balancing Trees (2-3, AVL, red-black) and Skip Lists</td>
<td>9.1, 9.4, 9.6</td>
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<tr>
<td>14</td>
<td>(If time) Hashtable Fun, Review, Buffer</td>
<td>7</td>
</tr>
<tr>
<td>15</td>
<td>FINAL (16 Dec 9:00 / 18 Dec 1:00)</td>
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</table>
I understand and will uphold the ideals of academic honesty as stated in the Honor Code.

1. Dampenic

Advice

The data shows that you learn better from books than screens. Consider printing key handouts and examples that you are provided as PDFs; definitely acquire a hard copy of the textbook. [https://www.weforum.org/agenda/2017/10/students-learn-better-from-books-than-screens-according-to-a-new-study](https://www.weforum.org/agenda/2017/10/students-learn-better-from-books-than-screens-according-to-a-new-study)

Course Policies

Video

Please turn your video on so that I can gain some impression of how the class is going. If this this is not tenable for some reason, such as poor internet connectivity, please contact me to chat about alternatives.

Zoom Name

Please log into Zoom with your Loyola account and set your name to your preferred name.

Discord Name

Please set your discord name in the 312 channel to something recognizable as you. You nickname is fine. (It can be challenging to answer questions when I don’t know who I’m talking with :)

Attendance

You learn best by being part of the community, so do join us!

Communication Channels

The best place to ask question is discord. Even if I’m not about, someone else from the class may know an answer. (Typically there are also several other people with the same question who didn’t want to ask. They privately praise you for asking!) Email is second best. Within reason I may answer emailed question on discord if I think the question warrants such.

Labs

Labs are graded based participation not solution quality unless I get the impression that you are not trying :)

Resources

Disability Support Services (DSS)

DSS aims to provide appropriate and reasonable supports and modifications so that students may fully participate in life at the university. If you have a disability that is documented with Disability Support Services and wish to discuss academic accommodations, please contact me as soon as possible. If you have a learning disability that has not been documented, you may contact Disability Support Services dss@loyola.edu or (410) 617-2750 for assistance or to request accommodations. Further support information may be found at the DSS web page [https://www.loyola.edu/department/dss](https://www.loyola.edu/department/dss).

Counseling Center

The Counseling Center (www.loyola.edu/counselingcenter) supports the emotional well-being of the student body and is committed to a respectful understanding and honoring of the social, emotional, and cultural contexts represented by each individual student. The Counseling Center provides brief individual and group counseling, emergency and crisis intervention, and comprehensive referral services for those in need of longer-term therapy. To make an appointment, please call (410) 617-CARE (2273). For after-hours emergencies, please call the after-hours counselor at (410) 617-5530 or Campus Police at (410) 617-5911.

The Study

The Study serves as Loyola University Maryland’s academic support center. Their mission is to help Loyola students become successful, independent learners. They do this through a variety of free academic support services, such as peer and professional tutoring, academic success workshops, academic coaching, and time management and organization coaching. All fall 2020 services will be virtual. Students can register for
any of these free services at The Study’s website www.loyola.edu/thestudy.

Writing Center
The Loyola Writing Center will be open for synchronous online appointments during Fall 2020. Their staff will be conducting tutoring appointments via Zoom every day except Saturdays. For information about the mechanics of online appointments or other questions concerning the Writing Center, please visit the website https://www.loyola.edu/department/writing-center.

Food and Housing Support
If you have difficulty securing food or housing please contact Christina Spearman, the Dean of Students, at cjspelman1@loyola.edu or (410) 617-5171. Loyola may have resources available to help.
Institutional Policies

Academic Honesty and the Loyola University Maryland’s Student Honor Code

The work you submit should be of your own creation. You may adapt text and code from the examples provided in the course materials. You may not, however, include text or code copied from other sources, including classmates or tutors without permission from the instructor.

All students of the University are expected to understand the meaning of the Loyola Honor Code. Ignorance of the Code is not a valid reason for committing an act of academic dishonesty. The following constitute violations of the Code and are defined in the Honor Code: cheating, stealing, lying, forgery, plagiarism, duplicate submission, and the failure to report a violation.

Loyola University Honor Code Violation Policy

If the instructor believes that a violation of the Honor Code has taken place, the instructor is expected to take appropriate action with respect to academic sanctions and to report the violation to the Honor Council by using the form published on the Honor Council web site, or from the Office of the Dean of Undergraduate and Graduate Studies. Both the instructor and student must sign the form, which is then sent to the office of the Dean of Undergraduate and Graduate Studies. Once an honor code violation is suspected, it is expected that the infraction is reported in a timely manner. As a result, all violations will be submitted no later than thirty days from the time the student signs the violation report form. These procedures are outlined in the Honor Code Booklet, please refer to the http://www.loyola.edu/academics/honor-code.

Class recording

Class sessions conducted online may be visually and audio-recorded by the instructor for later reference by students and approved faculty and staff associated with the class. Students who participate with their video-feeds activated or use a personal image on their Zoom profile acknowledge and agree that their videos and/or profile images will be recorded. If you do not wish to have your video and/or profile image recorded, ensure that your camera is turned off and do not use a personal image on your Zoom profile. Likewise, any students who un-mute their audio during class and participate orally in class agree to have their voices recorded. If you do not wish to have your voice recorded in a class recording, ensure that you have muted your Zoom audio prior to the beginning of class. Class video and audio recordings are not to be shared with anyone not enrolled in the class.

Conduct

All course participants are expected to behave according to the university’s community standards. For more information, please refer to the university’s Office of Student Conduct https://www.loyola.edu/department/student-conduct. When attending Zoom meetings (including lectures, labs, office hours, and meetings for group work) participants are to use their Loyola account. Behaviors such as (but not limited to) disrupting class, displaying inappropriate images, and impersonating other participants constitute an honor code violation and will result in sanction. See also sections Title IX, and equity/inclusion.

Communication

Communication expectations for online discussions, email, and other forms of interaction are professional and respectful. General netiquette rules are as follows:

A. Always use respectful language
B. Avoid capitalizing words - it is often perceived as shouting
C. Use proper punctuation - review questions and exclamations

Title IX

Loyola University Maryland is committed to a learning and working environment free from sexual and gender-based misconduct, including sexual harassment, sexual verbal abuse, sexual assault, domestic violence, dating violence, stalking, and sexual exploitation. Reports of such offenses are taken seriously, and Loyola encourages students experiencing sexual misconduct to report the incident in accordance with the
I understand and will uphold the ideals of academic honesty as stated in the Honor Code. Loyola is also committed to an environment free of other forms of harassment and discrimination. For information about policies and reporting resources, please visit the university’s Title IX webpage https://www.loyola.edu/department/title-ix.

Equity and Inclusion
Loyola has a deep commitment to issues of equity, inclusion, and social justice. For information on the many resources available, including support groups and bias reporting, please visit the university’s Equity and Inclusion page https://www.loyola.edu/department/equity-inclusion.