CS 1332 Recitation Worksheet – Week 0

Scavenger Hunt, Debugger Intro, Data Structures + Big O Review

This worksheet covers material from this week's recitation. It is meant to be additional exercise for your benefit and will not be graded. Feel free to collaborate with other students and ask TAs for help.

Scavenger Hunt 🧭

Navigate through your CS 1332 Canvas page and answer the following questions. If you do not see the course on your Canvas page, you may team up with a buddy next to you!

1. Where are CS 1332 office hours located, and when do they start?

2. How many exams will you have in this course (excluding the final)?

3. When is the first homework assignment due?

    a. Which data structure does the first homework assignment cover?

4. What percentage of your total grade is each exam (excluding the final)?

5. Where can you find videos about all topics covered in the course?

6. Where can you find worksheets, practice exams, and live coding files from recitation?

7. On which platform can you ask TAs questions asynchronously (i.e. outside of office hours)?

a. **True or False:** When asking public questions about the homework on this platform, I am allowed to add Java code to my post.

b. Name 3 TA-recommended ways to be successful in CS 1332.

c. What are some reasons why you may get points taken off on your homework?

8. What is the official visualization tool for the course?

9. **True or False:** Completing the Syllabus Quiz is a way of earning extra credit in the course.

10. Which IDE do TAs recommend using for CS 1332?

11. Which JDK version will you be using to write Java programs?

Activity: JUnits and the IntelliJ Debugger

Sometimes, your code may contain errors that are not immediately visible. This is where JUnits and the IntelliJ debugger become really useful!

Once you've downloaded IntelliJ, create a project using the provided recitation files: ArrayWrapper.java and ArrayWrapperTests.java.

1. Complete the `replaceFront()` test in ArrayWrapperTests.java. You can use the provided code for `testReplaceMiddle()` as an example!
2. Complete the `testReplaceLargeIndex()` test in ArrayWrapperTests.java. *Hint: use a try-catch block to make sure the exception from* `replace()` *is being thrown properly!*
3. Oh no! Our `testMax()` and `testRange()` JUnits are not passing! Use the IntelliJ debugger to investigate where our code is wrong and fix the error(s).

4. There is a **hidden inefficiency** with one of the methods in ArrayWrapper.java. What is it, and how do we fix it?

Data Structures + Big O Review

1. What is the difference between a data structure and an ADT?

2. What do the terms “time complexity” and “space complexity” mean?

3. What is the time complexity of the following code snippet?

```
for (int i = 0; i < n; i++) {
    for (int j = 0; j < n; j++) {
        System.out.println(i + " " + j);
    }
}
```

4. What is the time complexity of the following code snippet?

```
for (int i = 0; i < n; i++) {
    for (int j = 0; j < 1000; j++) {
        System.out.println(i + " " + j);
    }
}
```

5. Discuss the difference between the two code snippets above. Why do they have different time complexities?

6. Explain the concept of amortized time.