

CSE143 Lecture Questions for Monday, 1/3/22

Question	Answer
What would you like to be addressed as? (Mr. Reges, professor Reges, etc)	I tend to prefer being called Stuart, but I've got enough gray hairs now that if you're more comfortable calling me Professor or Professor Reges, that's also fine.
Are you teaching CSE 143 next quarter as well?	No, the plan is to have Kevin Lin teach 143 in spring.
Are lectures that are in person going to be posted on pinopto as well?	Yes. We have two in-person lectures and I generally record the second one (the 2:30 lecture) and then make that recording available on the class web page.
How are exams going to be taken? Is it the same way as CSE 142?	No, we will have traditional in-person exams.
In the lecture you mentioned how we use an array to implement an arraylist or int list is this similar to the queue data structure where its first in first out because we are always adding to the back of the array and cycling each time	That's an interesting question. You're right that a queue structure is similar to a list. It can be implemented many ways. It turns out that an array isn't the best way to implement it. It is typically implemented using a linked list, which we'll be studying.
Is there a place to view the due dates of each assignment?	Assignments will mostly be on Thursdays. There is a "homework" tab that will have information for each assignment, including due dates.
Do we always need to resize for an arraylist because we are using a lommy array	I'm not sure what you mean by resize...the ArrayList<E> structure and our ArrayIntList use an array of fixed size. If you need more capacity, you have to make a new array (we'll see that eventually).
It wont give me access to the lectures? Is it because it's not lecture time yet?	Try again...I reset something.
There was some sort of system-wide problem with UW SSO this morning. Canvas, Zoom, MyPlan, etcc was all broken. (to the person above)	Yes, but I also had not set the permissions correctly, so it could be worth reloading any web pages to see if it works now.
Will we submit the homework on ed, and have infinite times to submit the homework before the dead line?	Yes, you will submit your homework through Ed and you will be able to make multiple submissions before the deadline.
Under any circumstance, would there be a chance for exams to be take home?	No.

Will exams be paper? Or will we use computer in class	Yes, exams will be on paper. No access to computers during the exam.
Are there any chances to resubmit the past homework? Why not?	No, I don't use the resubmission process.
Will we have to write code by hand for the exams then? or will it be more conceptual	Yes, you will write code for the exams. Some questions will be more "mechanical" as in filling in a blank.
What is the difference between private and protected fields	We don't talk about protected fields in this class, but I can give a quick explanation. This is an object-oriented design issue. A protected field is accessible by subclasses, so it only comes into play when you use inheritance. As I said, we don't do anything that complicated with inheritance in 143.
Where will be the link to the Ed site?	There is already a link to the Ed message board under "message board."
When is our first assignment due?	The first assignment will be due Thursday of next week (1/13).
Will we have a message board this quarter? ...you might need to change the permissions of that too please	Yes, there is a link to it on the class web page. The message board should work if you're registered for the course. Reload the course web page and try again (there was a glitch).
Is there just one assignment a week?	Yes.
Are assignments graded similarly to 142 where it follows the 4 dimensions? Thanks!	No, we use a simple scoring approach where most assignments are graded from 0 to 20 points. But the four dimensions used in 142 are generally all included in the 143 grading.
What is external vs internal? (in your lecture)	External is outside of a class (a user of a class). Internal is inside a class (the detailed implementation that makes it work).
Do you prefer we write this.elementData or we don't need to include the this keyword	It's a matter of personal choice as to whether to include the "this.". Most programmers don't, although some prefer that approach. Use whichever style appeals to you most, but it would be good to be consistent.

Is there a place that we will be able to see how you grade the homework assignments?	Yes, we will provide several resources. I'll discuss some of those in Wednesday's lecture. We will also provide feedback on each graded homework.
Wouldn't be better if we had a isEmpty() method rather than always saying size == 0 and call that instead or this also a personal choice. In the toString() implementation	I'm not sure where you see any reference to size == 0, but it is a good idea to have an isEmpty method. The ArrayList<E> class has such a method. Ah...I forgot that it was there. I used the comparison to size so that it would work with a minimal implementation. I have posted a version that has that toString method but no isEmpty method.
Do we use the same textbook at 142?	yes.
Do we have to get the textbook?	Some students manage to do well in the course without the textbook, but the book was specifically written for the course, so it can be a helpful resource. For example, I mentioned several times in today's lecture that it would be helpful to read over chapter 8 to review classes.
What is the weightage of the weekly homework assignments toward our final grade?	This is included in the syllabus. Homework is 40% of your grade.
Will we be able to see past midterms or finals to know the format/practice?	Yes, we will provide you with several old exams and lots of old exam questions to practice.
What happens if the "motel" exceeds capacity (there are more than 10 people). Does another array get created?	In Wednesday's lecture I'll show you an option where you would consider that an error. In a future lecture, I'll show you how you can create a new larger array and transfer data to that (that's what the built-in ArrayList<E> does).
Do you know the average overall grade for students in this class?	It depends on how you average the grades. When I last taught 143 this way, the median grade was 3.1.
What is the only exceptions to private fields or will every single class we write always have private fields	Most classes you write will have private fields, but we'll see an exception when we get to linked lists.
What did the course percentage grade to GPA curve look like for Fall quarter? Do you anticipate anything different this quarter?	As I mentioned in a previous answer, the last time I taught the course this way the median grade was 3.1.

What does modCount signify?	That field keeps track of how many modifications have been made to the structure. It is useful when implementing something known as an iterator.
When will the first assignment be posted?	I will release the first assignment on Wednesday.
What is the labor theory of property?	It comes from John Locke's second treatise on government. The short version is that you come to possess land by mixing your labor with the land (like growing crops there).
Just out of curiosity, when you say "last time I taught the course this way" what do you mean by that? Do you change the way it's taught every quarter?	We changed many things during the COVID period. The biggest change was not having in-person exams.
Should we be worried about efficiency for any assignments for example if we have to copy every element over wouldn't the worst case be $O(n)$ or can we always assume for example an array getting at an index will always be $O(1)$ i'm using array as an example	In general it's not a good idea to worry a lot about efficiency. But in our grading we do take off potentially a point if you have some incredibly inefficient approach.
What is $o(1)$	We'll discuss that in a later lecture.
Do you post your lecture code?	I post all of the lecture code and detailed notes. If you go to the calendar tab for today, you'll see that I already have the code written today along with detailed lecture notes about how it was developed.
You mentioned that modCount is slightly outdated; out of curiosity, why is that?	Did you see my answer above? It's not outdated, it's more that it's somewhat obscure. When we get to talking about implementing iterators, you can ask about modCount.
Where do we see the TA link for tomorrow?	We haven't set that up yet because we won't be meeting until later today. Our head TA will post that information as soon as we have pulled it all together, which will probably be sometime tonight. It will definitely be before the start of section tomorrow.
Can we use an older version of the textbook if we already have it?	Yes, if you have an older version then I wouldn't buy a new version. You might have to pay attention to little changes here and there, but it should be okay.

<p>Is there a way you could have used the toString method without creating it in the class? I remember that we did something like that last quarter in the client code. I may be misremembering this however.</p>	<p>You might be remembering it correctly. You can often have the client code do what you want a toString method to do. But really the client shouldn't have to do that. You want to write classes that do a lot for a client, which is why it's useful to include a good toString method in the actual class.</p>
<p>If we are to create a toString method in the class, how would we call it? I am looking at the recording and I can't see where you called the toString</p>	<p>This is a great question. You can explicitly call the toString method, as in: System.out.println(list1.toString()); But it turns out that Java will do that for you in most cases, so you don't need to say that yourself. When you say: System.out.println(list1); Java will call toString for you. So that's an implicit call on toString.</p>
<p>Do allow us to throw exceptions in method headers like FileNotFoundException etc.. In 143.</p> <p>Can i throw UnsupportedOperationException() if a method is not done</p>	<p>In Wednesday's lecture we're going to talk about how to throw exceptions in a method. But I think you're talking about including something like "throws FileNotFoundException" in the header. Obviously we allow you to do that when necessary (typically when we work with files).</p> <p>Well, you can do that while you're developing code, but not in the final version. We'll be very clear about exactly what exceptions we want your code to throw.</p>
<p>When will our homework be released? This week at some point or Monday next week?</p>	<p>I will give out homework 1 on Wednesday. I will normally hand out homework on Fridays for the next Thursday.</p>

<p>So does elementData have a size of 100, but the actual list does not have that size? I'm confused why both parameters are needed.</p> <p>What happens if I dont change the size?</p>	<p>That's right. The array called elementData that we created has what we call a CAPACITY of 100. So it can store up to 100 values. But it doesn't always store that many items. We refer to that other number as the SIZE. So capacity is how many you can potentially include and size is the current number.</p> <p>If you don't change the size, then it won't know how many array items are currently being used. For example, if you look at the toString code that I included at the end, it has a loop that goes up to size. How would you know how many things to include if you weren't keeping track of the size?</p>
<p>When we overwrite methods already recognized (.add), is there a way to choose which one we want to execute? Would we just need to use a more specific name (.myAdd)?</p> <p>What if our methods took the same number of parameters but did slightly different things with them?</p>	<p>I think the concept you are looking for is overloading. In Java, you can have more than one method with the same name as long as they have different signatures. The signature of a method is its name along with the number and types of its parameters. So the appending add takes one int as a parameter. That's its signature. The "add at an index" version takes two parameters (the index and the value). So you can always tell them apart, as in:</p> <pre>list1.add(18);</pre> <p>Versus:</p> <pre>list1.add(3, 18);</pre>
<p>Just out of curiosity we say we are client vs implementor so aren't we implementers of our code at the same time doesn't this mean we are also a client of our code. Why does it need to differ or is this a good habit to build because eventually clients will use our code don't I know what fields I have etc..</p>	<p>Of course all code involves implementation of one kind or another. But sometimes you are the programmer who is making a particular kind of object work, in which case you are the implementor. In other cases, you'll just be using it. For example, we use the Java class called String all of the time, but we never worry about how it is implemented. Someone else wrote that code for us.</p>

<p>What's the point of an ArrayList if it's just using an array on the inside to store data anyways? Is it just like a helper class you can use so you don't have to write your own indexOf(), etc. methods?</p>	<p>I think you've got it mostly right. An ArrayList doesn't particularly give you more power than you have with an array, but it's a lot more convenient. Think about adding in the middle or removing in the middle. You can do that with an array, but it requires writing code that shifts values in the array. The ArrayList does that for us, so it's a more convenient structure to use.</p>
<p>Is there anything we should do in advance for class on Wednesday?</p>	<p>Be on the lookout for the message with zoom links for tomorrow's section and attend that section. Otherwise there isn't anything you need to do just yet...you could review chapters 7 and 8 from the textbook.</p>
<p>Isn't toString() a built in Java method?</p>	<p>Yes, Java has a standard toString method that every class inherits, but it gives that screwy output that we saw with the name of the class and then an at-sign and then a base 16 number. You almost always want to redefine the toString to give something meaningful for the class you're writing.</p>
<p>So how do we do ArrayList<E>. Is this type generics we need to implement as a placeholder because ArrayList<String> all use one wrapper generic class right and the client specifies what goes in the ArrayList<E></p>	<p>You're right that ArrayList<E> is what we call a generic structure. You can think of the "E" as being "element type." You fill it in with the specific type of data you want to work with. In my example, we filled in "String." We'll discuss this more in Friday's lecture.</p>
<p>And also do you prefer the diamond operator <>(); If we specified the type. On the left or is this also a style thing we would lose points for if we also don't define the type on the right hand side</p>	<p>I like the diamond operator, but it's not required. You wouldn't lose style points, but it's very convenient.</p>
<p>When will the final be?</p>	<p>We are finalizing that now...I should be able to give you a definite answer probably on Wednesday.</p>
<p>Where are the due dates for homework assignments?</p>	<p>Most will be due on Thursdays</p>
<p>which textbook do the readings refer to in the calendar? On my UW it says there's "building java programs" and "loose leaf..."</p>	<p>There shouldn't be a difference with page numbers for the loose leaf as far as I know.</p>
<p>Is there a live zoom right now? Or are we supposed to watch the recording in the website</p>	<p>Watch the video linked on the main class page...no zoom.</p>

Do you allow the use of package declarations and annotations in CSE 143 for java	no
<p>Is java static or dynamically typed.</p> <p>Does this mean we cant use the var keyword like other languages?</p> <p>Got it because usually you can do var list = new ArrayList<>() if i remember correctly and the compiler defines the type</p>	<p>Static typing</p> <p>We don't use the var keyword in cse143 but it doesn't change the fact that Java is statically typed (var keyword allows what is known as type inference)</p> <p>Yes, the diamond operator <> is an example of the compiler doing type inference (it would be more accurate to say that the compiler figures out the appropriate type rather than defining the type)</p>
First time with Java, should I be worried?	It's a challenge, but the first two weeks are a kind of review of major Java topics from 142, so there is time to catch up. I recommend looking through the 142 review slides that are included under the calendar tab for today.
<p>What is the difference between implements type overall vs extends this was skimmed over in 142.</p> <p>I meant implements just changed it</p>	<p>We'll discuss interfaces in detail...hard to explain quickly.</p> <p>There are two things we will discuss this quarter. You use the "extends" keyword to set up what we call an inheritance relationship. You use the "implements" keyword to indicate that you implement an interface. There's a lot to discuss here and we'll spend a lot of time discussing both.</p>
Will the final be optional?	no
So what does it mean to use the interface type vs implementation like saying int[] = new int[30] is the int[] left hand side the interface and is the int right hand side is the implementation?	<p>In this line of code:</p> <pre>int[] data = new int[30];</pre> <p>We are constructing an array of length 30 that will store int values. The "int[]" on the left is the type of the variable. The call on new on the right side is doing the actual construction of the array object.</p>
Random question after taking this course would I be ready for software engineering internships because we talk about data structures which help solve algorithms?	There is still a lot to learn even after this course, but many companies offer internships for students with this kind of background.

<p>Also another random question I see everytime in interviews they wouldn't tell you which data structure to use and you have to find out which data structure to use. How to know when to use what at what time? Does this mean data structures we learn in this course have good uses, bad and good at times. What does it mean to pick a good data structure?</p>	<p>There are certainly important differences across different data structures and we'll discuss a lot of them this quarter. Some structures are more convenient for storing particular kinds of data. In some cases there are efficiency considerations. We'll discuss a lot of this during the quarter.</p>
<p>How will the course speed compare to CSE 142?</p>	<p>The 143 class is somewhat faster than 143, but it is for different reasons. The 142 class involved learning a lot of details. The 143 class is more conceptual. So some of the concepts are in a sense "simple," but that doesn't mean that they are easy to master. Everything takes practice to learn well.</p>
<p>So for example an array is good at accessing elements with fast access but bad at when you don't know the size of something and you have to define it in advance. Is this how we should think when we want to use data structures we would learn and figure out the efficiency?</p>	<p>Yes, that is an example of the kind of reasoning you would use. Arrays allow for quick random access, as you have indicated. But it's not easy to add something at the front of an array. We'll see something called a linked list where you don't have fast random access, but it's very quick to add something at the front.</p>
<p>Random question: If hypothetically I watch every lecture, go to sections, do a lot of practice it problems but struggle with homework and even go to office hours what do you suggest?</p>	<p>It sounds like you're doing the right things...I also think reading the textbook can be helpful.</p>
<p>At the very end, how does the program print the string version of the ArrayList when toString() is never called?</p> <p>Edit: Thank you!</p>	<p>One of the things to know about the built-in toString method is that even though can call it explicitly, as in:</p> <pre>System.out.println(list1.toString());</pre> <p>In Java, you generally don't need to do that. When you say:</p> <pre>System.out.println(list1);</pre> <p>We understand this to be an implicit call on toString. The println method will make the call for you.</p>

Are there any assignments or work we should look out for due soon? Thank you

Also what is the arrayintlist: middle of the list video linked in the calendar? Awesome thanks again!

No. The first homework will be distributed on Wednesday and is due on Thursday of next week. In the meantime, just participate in section this week and watch the lectures.

My coauthor and I made a series of short videos to go along with the textbook. They are little mini-lessons on specific topics. So think of them as an extra resource that you can use if you want some extra help on a particular topic.