Preparing for CS II (CS 143)

Reviewing CS I (CS 141) material

Computer Science is a subject where you typically learn by doing. This means that you also tend to forget by ***not doing***. If it has been a quarter or few since you took CS I, it is recommended that you review CS I material prior to CS II. One way that you can do this is by working through several problems in each chapter of Building Java Programs, 4th edition – Chapters 1 through 10 on practiceit.cs.washington.edu (https://practiceit.cs.washington.edu) .

It is expected that coming into CS 143 you are ***already comfortable with*** the following concepts:

- using pseudocode to plan code
- identifying, creating, and using variables, data types, methods, conditionals, definite and indefinite loops, arrays, parameters, Objects
- breaking down problems into logical pieces using methods
- testing code
- debugging code
- reading and working with unfamiliar code

Why Preview CS 143 Material?

Previewing material allows you to to gain exposure to a concept before tackling the computational thinking behind the concept. When you see material at a high level beforehand, you are able to become familiar with vocabulary and reflect on how this new concept relates to the concepts you already know.

The purpose of previewing material is NOT to understand the material at 100%.

The purpose of previewing material is to gain a high level understanding of the concept.

CS 143 Preview Guiding Questions

Below is a collection of guiding questions that you should try to answer as you preview material.

- What is a Collection?
    - List one example of a Java Collection.
- What is Recursion?
    - What is a base case?

- Name two searching algorithms.
- Name two sorting algorithms.
- What is Big-O (Efficiency)?
    - Why is it important?
- What is a stack?
    - Name two characteristics of a stack.
- What is a queue?
    - Name two characteristics of a queue.
- What is a linked list?
    - How is a linked list stored differently in memory than a (native) array.
    - What two things are contained inside a List Node?
- What is a tree?
    - What three things are contained inside a Binary Tree Node?

CS 143 Preview Resources

Below you will find links to various resources related to the concepts that you will see in CS143.

- Chapter 11: Java Collections
    - Introduction to Collections (https://docs.oracle.com/javase/tutorial/collections/intro/index.html)
- Chapter 12: Recursion
    - HackerRank - Recursion (https://www.youtube.com/watch?v=KEEKn7Me-ms)
- Chapter 13: Searching and Sorting / Big O
    - base.cs podcast - A friendly intro to Big O Notation (http://podbay.fm/show/1304168963/e/1511913661?autostart=1)
- Chapter 14: Stacks and Queues
    - base.cs blog - Stacks and Overflows (https://medium.com/basecs/stacks-and-overflows-dbcf7854dc67)
        - base.cs podcast - How do you make a stack overflow? (http://podbay.fm/show/1304168963/e/1512518461?autostart=1)
    - base.cs blog - To Queue Or Not To Queue (https://medium.com/basecs/to-queue-or-not-to-queue-2653bcde5b04)
- Chapter 15: Implementing a Collection Class
- Chapter 16: Linked Lists
    - base.cs podcast - Linked Lists in Your Apartment (http://podbay.fm/show/1304168963/e/1511308861?autostart=1)
- Chapter 17: Binary Trees
    - HackerRank - Binary Trees (https://www.youtube.com/watch?v=oSWTXtMglKE)