TEALS Program

1 Lesson 7.03 — Elevens Lab

1.1 Overview

1.1.1 Objectives — *Students will be able to…*

- **Complete** a long-form lab, demonstrating effective use of object-oriented program design, program implementation and analysis, and standard data structures and algorithms.

1.1.2 Assessments — *Students will…*

- **Complete** the Elevens Lab

1.1.3 Homework — *Students will…*

- **A list of homework assignments is provided below.**

1.2 Materials & Prep

- ***Elevens* Lab Teacher's Guide**
- **Classroom copies** of the *Elevens* Lab Student Guide
- **Associated *Elevens* Lab Activity Starter Code**

Read through the Teacher, Student, and Extension guides ahead of time to familiarize yourself with the parts of this long-form lab. Using the guides, complete the lab on your own to spot possible challenges for your students. Since later starter code packages include answers to the earlier sections of the lab, we recommend that you ***do not*** upload all student files onto computer desktops for student access. If possible, email *ActivityN Starter Code* to students the day of the lab. Otherwise, upload files manually to each desktop before each class period.

1.3 Pacing Guide: Day 1

Section	Total Time
Student Activity 1	Full class

| **Homework:**
*- **Read** BJP 13.1 "Shuffling." (**Check Differentiation for advanced homework assignment and alternate classroom activities**)*
Complete self-check questions \#16–21, 23–24 | TONIGHT

1.4 Pacing Guide: Day 2

Section	Total Time
Student Activity 2	Full class
Homework: *Read section 13.3 skip "Recursive Binary Search"* *Complete self-check questions \#27-30*	TONIGHT

1.5 Pacing Guide: Day 3

Section	Total Time
Student Activity 2, continued	Full class
Homework: *Summarize notes and fill in missing days for notebook check tomorrow.*	TONIGHT

1.6 Pacing Guide: Day 4

Section	Total Time
Student Activity 3 *See notes for leading classroom discussion below*	Full class
Notebook Checks	During class
Homework: *Outline Chapter 13*	TONIGHT

1.7 Pacing Guide: Day 5

Section	Total Time
Student Activity 3, continued	Full class
Notebook Checks	During class
Homework: *Read and highlight Chapter 8 (8th or later: ch 9) of Barron's* (**OPTIONAL**)	TONIGHT

1.8 Pacing Guide: Day 6

Section	Total Time
Student Activity 4	Full class
Grade student outlines	During class
Homework: *Take the Chapter 8 (8th or later: ch 9) exam in Barron's review book. Grade your answers.* (**OPTIONAL**)	TONIGHT

1.9 Pacing Guide: Day 7

Section	Total Time
Student Activity 5 (OPTIONAL)	Full class
Check Barron's Review books for highlighting, note taking, and practice test completion and correction. (OPTIONAL)	During class

1.10 Pacing Guide: Day 8

Section	Total Time
Student Activity 5, continued (OPTIONAL)	Full class
Check Barron's Review books for highlighting, note taking, and practice test completion and correction. (OPTIONAL)	During class

1.11 Pacing Guide: Day 9

Section	Total Time
Student Activity 6	Full class
**Check Barron's Review books for highlighting, note taking, and practice test completion and correction. (OPTIONAL)	During class
Homework: *Correct all homework & classwork assignments for resubmission and grading*	TONIGHT

1.12 Pacing Guide: Day 10

Section	Total Time
Student Activity 7	Full class
Homework: *Correct all homework & classwork assignments for resubmission and grading*	TONIGHT

1.13 Pacing Guide: Day 11

Section	Total Time
Student Activity 8	Full class
Re-grade corrected assignments	During class

1.14 Pacing Guide: Day 12

Section	Total Time
Student Activity 9	Full class
Re-grade corrected assignments	During class

1.15 Pacing Guide: Day 13

Section	Total Time
Student Activity 9, continued	Full class
Re-grade corrected assignments	During class
Homework: *Submit 5 questions via electronic survey for test review*	TONIGHT

1.16 Pacing Guide: Day 14

Section	Total Time
Student Activity 10 (OPTIONAL)	Full class
Re-grade corrected assignments	During class

1.17 Pacing Guide: Day 15

Section	Total Time
Student Activity 11 (OPTIONAL)	Full class

1.18 Pacing Guide: Day 16

Section	Total Time
Student Activity 11 (OPTIONAL)	Full class

1.19 Procedure

All guides, sample code, answer code, and example code may be found in the folder "Milestone 3 Elevens Lab."

1. To help students start the lab smoothly, start Activity 1 as a whole group.
2. Encourage students to use their Tricky Code Cheat Sheets, 4 Commandments of Scope, notebooks, textbooks, classroom posters, and homework assignments.
3. Offer occasional time-checks to help keep students on pace.
4. Grade notebooks and review books in between helping students so students can keep notebooks for homework and studying in the evenings.

1.19.1 About Barron's

Barron's is an AP CS A review book that some schools provide students. If your school doesn't provide Barron's there are many alternative homework assignments that can be found at codingbat.com/java.

Alternatively, you can save time spent on the lab by checking activities as homework.

1.19.2 Notes for Introduction Lecture for Activity 3

1. The teacher's guide recommends leading the activity with a discussion on what makes a good shuffling algorithm.
    - The Collections class has a method called shuffle that accepts a list as its parameter, and rearranges its elements randomly:

      ```
      Collections.shuffle(list);    // Where list is the name of the array you want to shuffle.
      ```

    - Ask students what `System.out.println` method they could call to get the top card (or first element) of the array.

      ```
      System.out.println("Top card = " + list.get(0));
      ```

1.20 Accommodation and Differentiation

Each day that you begin the lab, start with a quick survey of student concerns and questions. As needed, allow students to pair up to help each other with reading comprehension (but remind students that they each must submit their own code).

- Adaptations for group work can be found on page 17 of the Teacher's guide.

In ELL classrooms, read all directions aloud before breaking into individual practice, and allow up to twice the amount of time for completion of the lab.

- To save time on the lab, skip lessons marked as optional.

Encourage advanced students to work through the optional lab activities. Otherwise, these students can serve as student TAs, helping others when they get stuck on code. Remind student TAs not to give answers directly, but to ask leading questions and modeling solutions to similar problems.

1.21 Forum discussion

Lesson 7.03 Elevens Lab (TEALS Discourse account required)