

Lesson 5.06 — Data Lab

Overview

College Board 2019 Labs

In the summer of 2019, the college board released 4 new labs. Either the Picture Lab or Data Lab can be assigned after the completion of Unit 5.

Objectives — *Students will be able to...*

- **Complete** a long-form lab, using two dimensional arrays of objects, array traversing algorithms, program analysis, binary numbers, and inheritance.

Assessments — *Students will...*

- **Complete** the College Board's AP CS A Data Lab. Students will answer end of activity Check your understanding and open-ended activity.

Homework — *Students will...*

- A list of homework assignments is provided below.

Materials & Prep

- **Projector and computer**
- **Data Lab** Teacher's Guide
- **Classroom copies** of the Data Lab Student Guide
- **Associated Data Lab & Data Lab Extension** Files

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. Upload all student files onto each computer desktop for student access. Don't give the finalClasses folder to your students—it contains sample answers!

Pacing Guide: Day 1

Section	Total Time
Student Activity 1	Full class
Homework: <i>Summarize your notes in your notebooks. Notebook checks in class tomorrow!</i>	TONIGHT

Pacing Guide: Day 2

Section	Total Time
Student Activity 2	Full class
Notebook Checks	During class
Homework: <i>Outline Chapter 8</i>	TONIGHT

Pacing Guide: Day 3

Section	Total Time
Student Activity 3	Full class
Notebook Checks	During class

Section	Total Time
Homework: <i>Read and highlight Chapter 2 of Barron's review book. Skip "The this Keyword".</i>	TONIGHT

Pacing Guide: Day 4

Section	Total Time
Student Activity 3 (day 2)	Full class
Notebook Checks	During class
Homework: <i>Take the Chapter 2 exam in Barron's review book, skipping #20. Grade your answers.</i>	TONIGHT

Pacing Guide: Day 5

Section	Total Time
Student Activity 4	Full class
Check Barron's review books for highlighting note-taking, and practice test completion and correction	During class
Homework: <i>Read and highlight Chapter 5 of Barron's review book.</i>	TONIGHT

Pacing Guide: Day 6

Section	Total Time
Student Activity 4 (day 2)	Full class
Homework: <i>Read BJP 8.5 and answer self-check questions 29–30</i>	TONIGHT

Pacing Guide: Day 7

Section	Total Time
Student Activity 4 (day 3)	Full class
Creating a collage	During class
Homework: <i>Finish up creating a collage</i>	TONIGHT

Pacing Guide: Day 8

Section	Total Time
Student Activity 4 (day 4)	Full class
Simple edge detection algorithm and implementation	During class
Homework: <i>Continue working on Simple edge detection.</i>	TONIGHT

Procedure

All guides, sample code, answer code, and example code may be found by logging into the College Board AP Audit side and downloading the Steganography Lab materials.

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.

General Project Notes

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.

Accommodation and Differentiation

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 rest of the lab, don't spend too much time reviewing binary numbers, and restrict color exploration (Activity 2) to ~20 minutes.
- Use the tactile exercises as suggested on page 6 of the Teacher's guide (candy exercise and exploring the digital camera).

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). Each day that you begin the lab, start with a quick survey of student concerns and questions.

Assessment questions have been relocated to the practice exam, WS 5.7.

Forum discussion

Lesson 5.06a Data Lab (TEALS Discourse account required)