Lesson 5.06 — Picture Lab

Overview

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 Picture Lab

Homework — *Students will...*

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

Materials & Prep

- **Projector and computer**
- **Picture Lab** Teacher's Guide
- **Classroom copies** of the Picture Lab Student Guide
- **Associated Picture Lab & Picture Lab Extension** Files
- **Digital camera** (**optional**)
- **CD** (**optional**)
- **Egg cartons and small candies** (Skittles or M&Ms) (**optional**)
- **Photo negative** (**optional**)
- **Rectangular mirror** (**optional**)

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!

NOTE: If your students enter the classroom with prior programming knowledge, or if your class is moving through the AP course quickly with ease, you may want to deliver the Text Excel lab (included in Unit 5 materials) instead.

Pacing Guide: Day 1

Section	Total Time
Student Activity 1 & 2	Full class
Homework:*Summarize your notes in your notebooks.Notebook checks in class tomorrow!*	TONIGHT

Pacing Guide: Day 2

Section	Total Time
Student Activity 3 & 4	Full class
Notebook Checks	During class
Homework:*Outline Chapter 8*	TONIGHT

Pacing Guide: Day 3

Section	Total Time
Student Activity 5	Full class

Section	Total Time
Notebook Checks	During class
Homework:_Read and highlight Chapter 2 of Barron's review book.Skip_ "The `this` Keyword".	TONIGHT

Pacing Guide: Day 4

Section	Total Time
Student Activity 5 & 6	Full class
Notebook Checks	During class
Homework:_Take the Chapter 2 exam in Barron's review book, skipping #20.Grade your answers._	TONIGHT

Pacing Guide: Day 5

Section	Total Time
Student Activity 6, continued	Full class
Check Barron's review books for highlighting note-taking,and practice test completion and correction	During class
Homework:_Read and highlight Chapter 5 of Barron's review book._	TONIGHT

Pacing Guide: Day 6

Section	Total Time
Student Activity 7	Full class
Homework:_Read BJP 8.5 and answer self-check questions 29–30_	TONIGHT

Pacing Guide: Day 7

Section	Total Time
Student Activity 8	Full class
Creating a collage	During class
Homework:_Finish up creating a collage_	TONIGHT

Pacing Guide: Day 8

Section	Total Time
Student Activity 9	Full class
Simple edge detection algorithm and implementation	During class
Homework:_Continue working on Simple edge detection._	TONIGHT

Pacing Guide: Day 9

Section	Total Time
Student Activity 9, continued	Full class

Section	Total Time
Finish Simple edge detection	During class
Homework:*Submit 5 review questions on the electronic survey.*	TONIGHT

About Barron's

- Barron's is an AP CS A review book that some school provide students. If your school doesn't provide Barron's there are many alternative homework assignments that can be found at http://codingbat.com/java (no classes).

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

Procedure

All guides, sample code, answer code, and example code may be found in the folder "Milestone 2 Picture 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.

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.

- Adaptations for group work can be found on page 19 of the Teacher's guide.

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

Forum discussion

Lesson 5.06 Picture Lab (TEALS Discourse account required)