Python with CodeX
AP CSP Curriculum

Unit 1 Overview
Time Required: 2 weeks
This unit covers Mission 1, Mission 2, Mission 3, Mission 4 and Mission 5. It includes supplementary lessons for "Defining Functions" and "RGB Colors." The lessons extend learning and prepare for the Create Performance Task and AP Exam.

Unit 1 Outline

Mission 1: Welcome & Mission 2: Introducing CodeX
> Mission 1 and Mission 2 are combined into one lesson. Mission 1 introduces students to CodeSpace. An assignment is provided that lets students take guided notes during the mission and concludes with a picture of CodeSpace and asks students to label its parts. Mission 2 introduces students to their CodeX. The first part of the mission helps them identify its parts. The second part starts a file and introduces Python code. Mission 2 also has an assignment that can be used for guided notes.

Mission 3: Light Show
> This mission introduces the CodeX pixel LEDs, variables and the sleep function. Students control the four pixel LEDs on the CodeX. They will use a variable the the amount of delay in the sleep function to create a light show.

Lesson: Defining Functions
> Mission 3 is really fun and great for beginners, but an emphasis of AP CSP is functions. To give students a lot more practice with functions, this supplemental lesson discusses functions in general, algorithms and procedural abstraction. Then students return to their program from Mission 3 and create functions for the program.

Lesson: RGB Colors
> This supplemental lesson is a programming exercise that continues Mission 3 and Defining Functions. Students learn about RGB colors and the tuples, or triplets, that represent their values. Students add more code and functions to their previous program to expand the light show with their own colors.

Mission 4: Display Games
> This mission has students program the buttons to accept input. The end result is a game that lights a pixel and then has the user press the correct button within the time given. The mission is extended beyond the last objective to include functions.

Mission 5: Micro Musician
> This mission is a short one, and it shows the code for playing pre-loaded MP3 files. It also introduces comments and whitespace for code readability.

Unit 1: Review and Remix
> A remix is an opportunity for students to create their own program from what they learned in the previous missions. A remix can be treated like a practice Create PT. They start from scratch and will not have CodeTrek to guide them. Students can use the planning guide to help them plan and organize their project. During the remix time, you can also review vocabulary and programming concepts from the unit.

Assessment
> Student mastery can be assessed formatively and/or summatively in many ways during Unit 1.
> - Each mission lesson comes with an assignment and program for students to complete.
> - Each supplemental lesson comes with an activity guide for students to complete.
> - The mission lessons also have Kahoot! Reviews available.
> - The Unit 1 Remix project can be used for assessment.

- AP CSP Create Performance Task written response prompts can be assigned as part of the remix assignment for additional practice and/or assessment.
- Unit 1 Kahoot! Reviews for vocabulary and coding questions are available.
- Microsoft Forms tests for Unit 1 vocabulary and coding questions are available.
- The reviews and tests cover the missions in CodeSpace only. Additional questions have been added to the Unit 1 Question Bank that cover topics from the supplemental lessons.

Materials / Preparation

- Set up a class in CodeSpace.
- For students, use the Getting in CodeSpace slides, or your own instructions. Be ready to help students log in and join your class.
- The assignments and most activity guides are best distributed and completed digitally. Prepare the assignments in the digital format that works best for your classroom.
- The slides for the lessons are downloadable as PowerPoint slides. Reformat into the digital format that works best for your classroom.
- Make sure you have CodeX, AAA batteries and cables for the students. Two students can share a CodeX and work in pairs, or you can have 1 to 1 CodeX devices.