**AP CSP CodeX**

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| **LESSON: From Flowcharts to Code** | | **Time: 45 minutes** |
| **Project Goal:** Students will create Python code from flowcharts  **Learning Targets**   * I can map a flowchart symbol to Python code. * I can write Python code from a flowchart. | **Key Concepts**   * Each line or lines of Python code can be visualized as a flowchart symbol. * Sometimes it is convenient to group similar lines of Python code into a single flowchart symbol. | |
| **Assessment Opportunities**   * From Flowcharts to Code Activity Guide * Flowcharts and Code Review * [Flowchart Shapes Kahoot! Review](https://create.kahoot.it/share/firia-labs-ap-csp-flowchart-shapes/883d78ee-287d-46b9-bfdb-935a958f6320) | **Success Criteria**   * Name the four basic flowchart symbols and what they are used for * Create Python code from a flowchart | |
| **AP CSP Framework**  **AAP-2.A** Express an algorithm that uses sequencing without using a programming language.  **AAP-2.G** Express an algorithm that uses selection without using a programming language.  **Computational Thinking Practice 2.A** Represent algorithmic processes without using a programming language. | **Materials**   * From Flowcharts to Code slides * From Flowcharts to Code Activity Guide / Answers * Flowcharts and Code Review / Answers * Unit 2 Review and Test Questions * [Flowchart Shapes Kahoot! Review](https://create.kahoot.it/share/firia-labs-ap-csp-flowchart-shapes/883d78ee-287d-46b9-bfdb-935a958f6320) | |
| **Teacher Notes**   * This Activity Guide can be digital (completed on the computer) or not used. Students create working Python code from flowcharts. The activity guide gives space to paste their code. If you have a different way to view the code, you will not need the activity guide. * This is an excellent lesson to have students work in pairs or groups of 3. * You can choose to display the flowcharts on a large screen, print copies for each group, or have students use their own computers to view the flowcharts while writing Python code. * All the solution codes are just samples. The programs students create can be different, but should be similar. * I strongly recommend you look over the six flowcharts. You may not want to use all of them. Select a few that are suitable for your students, or give them choices (like mild, medium and spicy) and ask them to complete three. * This lesson may take longer than one class period. If so, you have a couple choices. You can cut the lesson short. Not every flowchart needs to be changed to code. Whatever code students get done is fine. Or you can extend the lesson an additional day and use the review. You can decide how much you want to emphasize flowcharts. Students should be able to explain their code without using Python. This is one way to give them practice, but it isn’t the only way. * The review is a good way to check for mastery. You can print the review for students and have them write their answers. If you print the document, give more room in the first part for drawing shapes. You can also assign a digital copy of the review. Students can insert the shapes, or describe the shape and text. * If you don’t have time for the review at the end of the lesson, it can always be given a different day to keep the information fresh. A half day, or assembly day, etc. is a good time for a quick review. * You can also end with the Kahoot Review. | | |