**AP CSP CodeX**

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| **LESSON: Design Process and Flowcharts** | | **Time: 45 minutes** |
| **Project Goal:** Students will learn the software design process and the basics of flowcharts.  **Learning Targets**   * I can name the five steps to the design process. * I can label the four basic symbols used in flowcharts. * I can make a flowchart that visualizes a process. | **Key Concepts**   * The design process is very similar to the steps used in creating a remix project. * There are four basic flowchart symbols. | |
| **Assessment Opportunities**   * Design Process and Flowcharts Activity Guide * [Flowcharts Kahoot! Review](https://create.kahoot.it/share/firia-labs-ap-csp-flowchart-shapes/883d78ee-287d-46b9-bfdb-935a958f6320) | **Success Criteria**   * Summarize the five steps in the design process * Name the four basic flowchart symbols and what they are used for * Create a flowchart that visualizes a process | |
| **AP CSP Framework**  **CRD-2.E** Develop a program using a development process.  **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 1.B** Determine and design an appropriate method or approach to achieve the purpose.  **Computational Thinking Practice 2.A** Represent algorithmic processes without using a programming language. | **Materials**   * Design Process and Flowcharts slides * Design Process and Flowcharts Activity Guide / Answers * Unit 2 Review and Test Questions * [Flowcharts Kahoot! Review](https://create.kahoot.it/share/firia-labs-ap-csp-flowchart-shapes/883d78ee-287d-46b9-bfdb-935a958f6320) | |
| **Teacher Notes**   * This lesson is better on paper than digitally. Students need space to write and draw symbols. I suggest printing the assignment for each student, or have students work in pairs or groups of 3 and print one per group. * This lesson has two parts. The first part goes over the design process. Students take notes on the assignment. * The second part is all about flowcharts. The four basic symbols are introduced. A short video from the Big Bang Theory shows an application of flowcharts. * For Activity 3, students are asked to rearrange the flowchart symbols so that the process is in the correct order. In example 1, all the flowchart symbols are correct with the task. They just need to be rearranged. For example 2, the symbols are not correct, and the tasks are not in the correct order. Students need to correct the symbols and the order. * Activity 4 is to create a flowchart of their program for Mission 5 (Music1). This should be a fairly straightforward flowchart, even with extensions. * Activity 5 is a fun activity for students to think of an everyday task and create a flowchart for it. Everyday activities could be getting ready for school, going to school, eating lunch, their typical Saturday, etc. * If you have time at the end of class, you can use the Kahoot review on flowchart symbols. There are 15 questions. Each one gives a line of code and asks which flowchart symbol would be used to represent the code. | | |