Finite State Machine

Lesson Plan

UNIT: Introduction to Coding

Learning Objectives

Students will be able

- explain what is finite versus infinite
- understand how to design finite state machine diagram
- collect, analyze, and represent data using appropriate tools.

Approximate Time

- Lesson length: 1 week
- Comprehension Questions: 20 mins

Standards

Programming I

- L1.DA.CVT.01 - Create interactive data representations using software tools to help others better understand real-world phenomena (e.g., paper surveys and online data sets).
- L1.DA.IM.01 - Step 1 - Create a model to represent the data. Step 2 - Use the model to predict or draw conclusions.

Materials needed:

- School Issued Computer
- Internet service (wifi)
- Operating Google Account

LiveLesson Schedule

- Google Meets Information:
- Into to Coding - Weekly LiveLesson @ 10:00 am
  - Mondays · 10:00 – 10:30 am
  - Time zone: America/Denver
  - Google Meet joining info Video call link: https://meet.google.com/vwa-guae-iwe

LESSON PLAN

	Resources	Questions	Est. Time
1	DISCUSSION PROMPTS during LiveLesson session	**Discussion Prompts** Discuss these questions with during LiveLesson session:: 1. Have you heard of a Finite State Machine (FSM)? 2. What is it meant by “Finite” for a state machine? 3. Why is it important to understand the state machine process? When is a FSM diagram created? 4. Can a FSM diagram be used during debugging and tracing?	20 mins
2	Article • https://medium.com/@mlbors/what-is-a-finite-state-machine-6d8dec727e2c	1. Students will read during individual study time to prepare notes on questions related to the content covered in this lesson. 2. Students will be given time after review of the article and relevant content during the LiveLesson for Q&A.	No Limit
3	REFERENCE • Pearson Connexus Introduction to Coding- Python	1. How can a state machine be used to design a game?	No Limit

	VIDEO (1:48) • https://youtu.be/NYFeFUxU6DI		
4	ACTIVITY • Creating a FMS table and diagram: Instructions/Tips:: This activity will have 3 documents to submit into the Pearson Dropbox. You are using Google Applications for this activity: Docs, Sheets, and Draw. Make sure to proofread and review all your works before submitting for a grade. Email, call, or send text immediately if you have any questions or need instructional support to complete this activity.	• Research and document using a Google Document this question: What is a finite state machine? Explain using 3 - 4 sentences in your own words, cite your resource using MLA, and submit your response using a Google Document into Pearson Dropbox for this activity once completed. • Choose a device or single process that you are familiar with in your home, it can be an electronic or item that would use power and time when in operational mode. • Using a diagram software or drawing by hand, create a table that represents all the variables that are involved in the operation of the item or device you have chosen for this activity. Make sure to save your table once you have it completed. You will submit the completed diagram in the dropbox for this activity; if you draw your table, take a picture of the drawing and email it to yourself to save in your Google Drive folder for this course. • Using your table to create the FMS diagram, use a computer diagram software or draw by hand. Make sure to save your diagram once you have it completed. You will submit the completed diagram in the dropbox for this activity; if you draw your table, take a picture of the drawing and email it to yourself to save in your Google Drive folder for this course.	1 week
5	EXIT TICKET during LiveLesson session ❖ **Teacher Tip:** To access this Exit Ticket during LiveLesson, click on the Poll question to respond to each question during the last 10 minutes of the session. Answer as many as you can.	**Exit Ticket** Informal poll questions using Google Meets: 1. What did you like about the FSM lesson? 2. How do you think you will use FSM in the future? 3. What was the least interesting aspect of FSM you found during this lesson? 4. What suggestions would have helped you better understand the content covered in this lesson?	10 min

***Teacher Tip:**. For student success, it is important for students to advocate for themselves and set up a one-on-one Google Meets session for additional instructional support; communication is the center of being successful as a virtual student.