Lesson 14: FRQ Practice

45 minutes

Overview

How will I use what I know about 1D arrays to answer a Free Response Question?

Students practice developing solutions to AP CSA FRQs on a mock Arrays FRQ. Students apply decomposition and annotation strategies to identify the key components of the problem and validate their solutions using Scoring Guidelines.

Agenda

Warm Up (5 minutes)
- **What Do We Know?**

Activity (30 minutes)
- **FRQ Social**
- **FRQ Writing**
- **FRQ Scoring**

Wrap Up (10 minutes)
- **Closing the Loop**
- **Assessment (Optional)**

Objectives

Students will be able to:

- Implement methods based on a given set of specifications
- Trace and validate the code of peers
- Traverse elements in a one-dimensional (1D) array

Preparation

- Print copies of the TicketTracker FRQ Graphic Organizer (one for each student)
- Print copies of the TicketTracker FRQ handout (one for each student)
- Print copies of the TicketTracker FRQ Scoring Guidelines (one for each student)
- (Optional) Gather blue, orange, and pink colored pencils or markers for each student
- Check the **Teacher's Lounge** for verified teachers on the CSA Forum to find additional strategies or resources shared by fellow teachers

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the students

- **TicketTracker FRQ** - Handout
- **TicketTracker FRQ Graphic Organizer** - Handout

- **TicketTracker FRQ Scoring Guidelines** - Handout

Teaching Guide

Warm Up (5 minutes)

What Do We Know?

Discuss: Click through the animated slide to display the prompts. Use the Retrieve-Pair-Share strategy to discuss the prompts.

- *What strategies did you use while working with the FRQs in Units 1 and 2?*
- *What were some keywords you looked for to assist you in answering the question?*

Discussion Goal: Students recall using annotation strategies to identify keywords and using manipulatives to plan their solutions before writing code.

Activity (30 minutes)

FRQ Social (10 minutes)

Remarks

> During previous FRQ days, we worked with our peers through the FRQ process. Today, you will still have an opportunity to collaborate with your peers, but you will work through most of the FRQ process on your own.

Distribute: Give each student a copy of TicketTracker FRQ and several markers or colored pencils.

Do This: Direct students to annotate the FRQ using the annotation guide.

Discuss: *What questions do you have about approaching this FRQ?*

Discussion Goal: Students share any misunderstandings or points of confusion they have about the FRQ. Some questions students may ask include:

- How do I start the problem?
- What methods do I need to write?
- Is there an example I can review?
- How will this FRQ be graded?

Do This: Explain the steps for the activity.

- Input, Process, Output
- Writing
- Scoring

Group: Place students in groups of 3-4.

Distribute: Give each student a copy of the TicketTracker FRQ Graphic Organizer.

Do This: Have students complete the TicketTracker FRQ Graphic Organizer:

1. Students identify all input variables used or needed for the FRQ.

2. Students determine what will be returned or the state of variables throughout the FRQ.
3. Students write pseudocode to get from the input to the output. Students should identify specific helper methods they need to accomplish the task.

FRQ Writing (10 minutes)

Do This: Have students return to their seats and complete the TicketTracker FRQ handout.

Teaching Tip

As students work, you may use a timer to help students pace themselves. If students finish early, you can suggest that they:

- Trace their code to ensure it's correct.
- Check their graphic organizer to ensure they used all notes to write their solution.

Differentiation Suggestions:

- Students who need more time should complete the constructor and choose one of the methods to write.
- Students who are unsure of where to start should begin writing pseudocode for their solution.

FRQ Scoring (10 minutes)

Group: Place students in pairs.

Distribute: Give each student a copy of the TicketTracker FRQ Scoring Guidelines handout.

Do This: Have students assess their solution using the TicketTracker FRQ Scoring Guidelines with their partners and complete the reflection on the last page.

Do This: Click through the animated slides to discuss a potential solution.

- Implementation of the `getFree()` method
- Implementation of the `averagePrice()` method

Teaching Tip

Have students share their implementations for each component before showing the possible solution.

Wrap Up (10 minutes)

Closing the Loop

Discuss: Click through the animated slide to display the prompts.

- *What is your impression of this FRQ?*
- *What knowledge and skills did you use that you learned in this unit?*
- *What were you confident about? What would you like to practice?*

Discussion Goal: Students share their impressions of this FRQ and connect the concepts they learned in the unit to those assessed. Students share what they were confident about and any areas they need additional practice.

Assessment (Optional)

TicketTracker FRQ: The TicketTracker FRQ handout can be used as an optional formative assessment.

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