Lesson 11: Data for Social Good Project – Day 1

45 minutes

Overview

What questions do I want to answer using data?

For this project, students use the skills they have developed throughout this unit to store and analyze data from a text file for a topic that they are interested in or meaningful to them. Students choose a user scenario and data they want to analyze to identify a solution to address a user's needs. After brainstorming and planning, students develop their programs.

Agenda

Project Setup

Warm Up (10 minutes)
- **Users and Data**

Activity (30 minutes)
- **Brainstorming and Planning**
- **Development**

Wrap Up (5 minutes)
- **Project Reflection**
- **Assessment (Optional)**

Objectives

Students will be able to:

- Identify the preconditions and postconditions of methods
- Store data from a text file in a one-dimensional (1D) array
- Use decomposition strategies to identify the classes and methods needed for a project

Preparation

- Print copies of the Data for Social Good Project Planning Guide (one 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

- **Data for Social Good Project Planning Guide** - Handout

Teaching Guide

Project Setup

The unit assessment project assesses proficiency in the knowledge and skills developed in this unit. It is

completed in three class periods to plan and create the program, including reading and analyzing data. Students participate in planning and feedback activities to solve problems, reinforce software development practices and self-image as software engineers, and improve their programs. Lessons 11, 12, and 13 collectively include instructions for the three-day project.

If there is not enough time for the three-day project, a one-day option achieves the targeted learning objectives and goals. If using this option, refer to the **Data for Social Good Project 1 Day Lesson Plan**, which includes a one-day version of the **Data for Social Good Project Planning Guide**. Direct students to develop their program on Lesson 13 to submit their project. While the one-day option covers the learning objectives and goals, it shortens planning and reflection time. Consider this tradeoff when deciding which version to use.

Warm Up (10 minutes)

Users and Data

Remarks

> Many industries rely on data to identify solutions to problems and make decisions. Each user has different needs based on the information they need and the questions they need to answer.

Do This: Show the examples of different types of users and their data needs.

Discuss: *What does this make you wonder about how you could create a data analysis program for a user?*

Discussion Goal: Students talk about obtaining data related to a user's needs and reading the data into a program. Students present ideas of questions the user might have and algorithms that can find the answers to these questions and how users would interact with the program to choose the information they need.

Activity (30 minutes)

Brainstorming and Planning (15 minutes)

Remarks

> Over the next few days, you will be developing a program to store and analyze data from a text file similar to the programs we have worked with throughout the unit. You will need to store data from a text file in a 1D array and apply algorithms to process and analyze the data.

Distribute: Give each student a copy of the Data for Social Good Project Planning Guide.

Do This: As a class, read through the Project Description on the first page of the Data for Social Good Project Planning Guide and review the rubric on the last page.

Discuss: Click through the animated slide to display the prompts. Use the Hold That Thought strategy to discuss the prompts.

- *What do you notice about the project requirements and rubric?*
- *What does success look like for this project?*
- *What barriers do you anticipate to achieving success on this project?*

Discussion Goal: Students share what they notice about the project requirements and rubric and identify the components to implement in their program. Students share any questions they have about the project.

Remarks

> Before you begin writing your program, you first need to choose your topic, plan how you will organize your program and data, and identify the questions you want to answer about your data.

Do This: Introduce the user scenarios for the project:

- Streaming music customer, avian veterinary student, technology non-profit manager
- Community activist, advertising specialist, choose your own

Teaching Tip

Students can also create their own rather than using one of the provided scenarios.

Do This: Direct students to identify their topic of interest, create UML diagrams for their classes, and identify the questions they want to answer on the Data for Social Good Project Planning Guide.

Teaching Tip

The classes for each user scenario are created on the corresponding choice level. Have students look at the data sets and files for their selected user stories as they plan their program.

Development (15 minutes)

Do This: Direct students to Level 1 on Code Studio to develop their Data for Social Good Project.

1 **Data for Social Good Project**

Do This: Play the music clip to cue committing their code and saving their classes to the Backpack.

Wrap Up (5 minutes)

Project Reflection

Remarks

> You made a lot of progress on your project today! Let's take a moment to reflect on what you have accomplished so far and what you need to focus on next.

Do This: Direct students to respond to the Day 1 Reflection prompt on the Data for Social Good Project Planning Guide.

Assessment (Optional)

Data for Social Good Project Planning Guide: You can use the Day 1 Reflection as an optional completion assessment.

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