PLTW COMPUTER SCIENCE

Problem 1.3.1

App Development: Creating Value for Others

goals

- Decompose a project into smaller parts
- Apply coding fundamentals and iterative processes
- Develop an app as part of a Scrum team

description of app

Create an app for creative expression or that solves a problem that will have value to others.

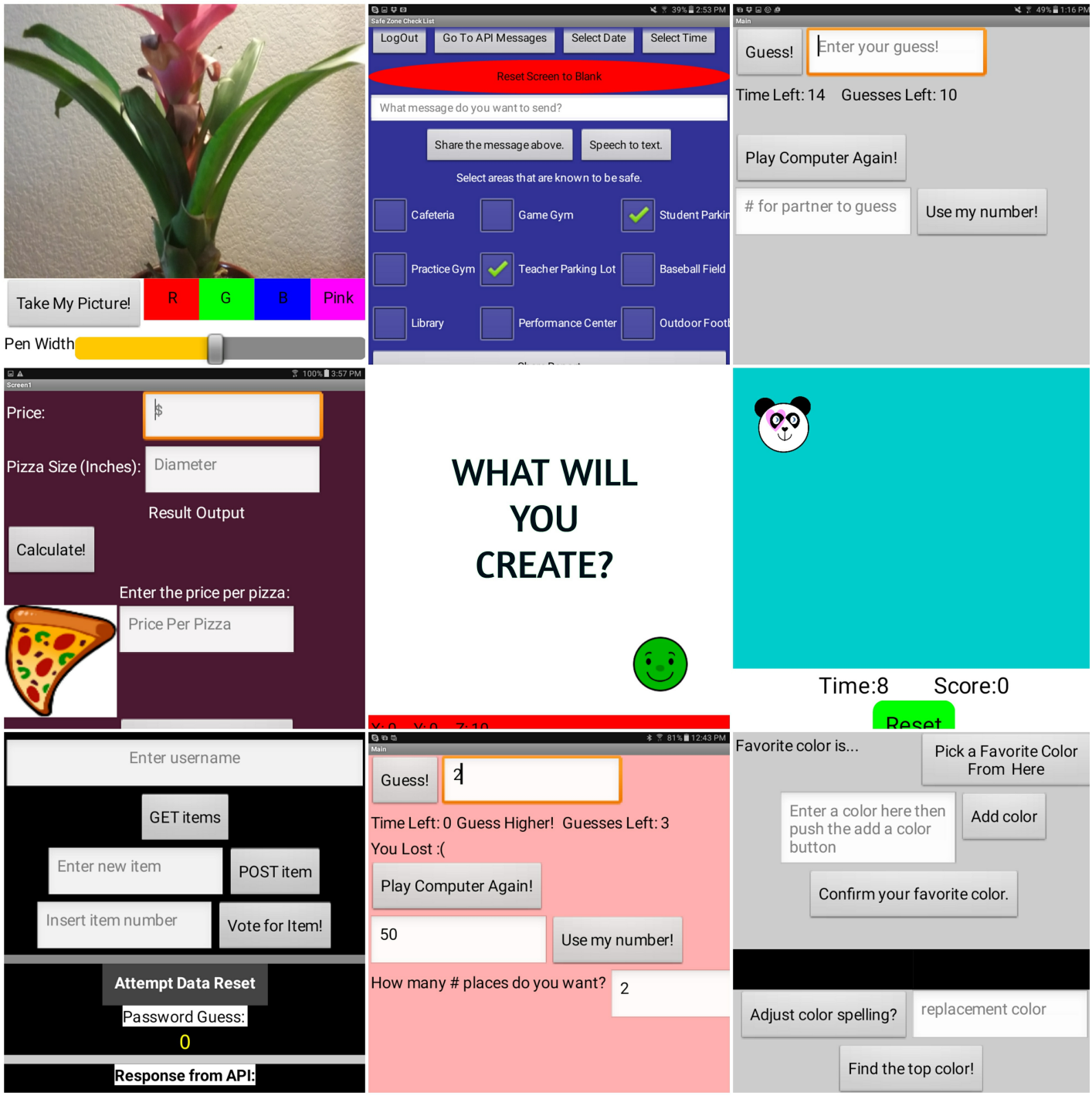
Essential Questions

1. What is your role on the Scrum development team?
2. What is the purpose of your program?
3. Where does the program integrate mathematical and/or logical concepts?
4. What does one of the algorithms do in the program?
5. How does an abstraction you created manage complexity in the program?
6. What part of the code did you develop?

Resources

Interpreted Performance Guide

Problem Introduction



At this point, you have already made quite a few types of apps. Some apps were fun and allowed you to be creative. Some apps have a business application or represent the types of apps someone might even pay for. And some apps solved problems. In each case, you were given the purpose of the app and told what features to include in the final app. Now for the first time, you get to define what you will create and determine what features need to be in your app.

Even though this will be your own unique app unlike any other in your class, you still need to ensure that the people who will use your app and the user criteria shape your development. You will have to do a little bit of internet research and talk to (interview) users to find out whether what you are

planning to create is something they would actually use.

In past activities, you created an app that helped to interview people and capture needs of real clients. In fact, the interview app might even come in handy as you talk with others and capture their input about your idea for a new app. User stories will help you identify and prioritize the backlog.

Well-defined and Ill-defined Projects or Problems

All the projects you have been working on throughout Unit 1 are considered “well defined.” In a well-defined project, someone comes to your team and tells you almost exactly what they need. In an **ill-defined problem**, no one can really tell you what is needed. An ill-defined problem is a situation that has many contributing factors and cannot be easily solved because of all the different perspectives involved. You will have to figure it out for yourself. Ill-defined problems are also sometimes called open-ended problems.

This culminating Unit 1 problem is ill-defined. You will have the chance to work on several ill-defined problems throughout the remainder of this course. One of the toughest things about working with an ill-defined problem is knowing how to find an idea worth pursuing.

The Process

Whether creating for fun, entrepreneurial intent, or to solve a problem, the process you will use can generally be described in the following steps:

- Find an Idea to Pursue
- Document Your Development Milestones
- Prepare, Investigate, and Plan
- Design, Create, and Test
- Evaluate and Reflect
- Present

In this development process, you will create an app. In each of the upcoming units, the solutions you create and the programming ideas you pursue may be many different things (a website, a physical computing device, whatever you imagine), but the process by which you create will be the same.

Decomposition of a problem or project into smaller testable parts to be shared with users is important. These testable parts may be used as a way to check your progress and make sure the product has the most value to the user. Using user-centered research and feedback makes what you create stronger because it:

- Verifies that what has been done meets the needs defined and that the user would actually use what you are developing.
- Provides focus on what needs to be done next.
- Informs any changes that need to be made to the goals and timeline.

Initially, your teacher will help you get started and can provide guidance as to whether the idea you want to pursue can be done in the time given. Your team should target completion of this project in eight days.

Problem Timeline

Day 1	Brainstorm: Find an Idea to Pursue Document Your Development Milestones
Day 2	Prepare, Investigate, and Plan
Days 3–6	Design, Create, and Test
Day 7	Evaluate and Reflect
Day 8	Present

Essential Development Questions

- Can you describe the stated purpose of the program?
- Can you describe difficulties and/or opportunities you encountered and how you dealt with them?
- Can you describe two algorithms working independently and in combination in your program?
- Can you describe an abstraction that helps manage complexity in your program?

PLTW DEVELOPER'S JOURNAL Document all problem work in your PLTW Developer's Journal.

The Development Process

Part A: Find an Idea to Pursue

Part B: Document Your Development Milestones

Part C: Prepare, Investigate, and Plan

Part D: Design, Create, and Test

Part E: Evaluate and Reflect

Part F: Present

Conclusion

1. How did you interpret and respond to the **essential questions**? Capture your thoughts for future conversations.