

Project Guide - Apps and Problem Solving



Overview

Computer science is an extremely powerful tool for solving real world problems. For this project you will combine what you've learned about the problem solving process and the way computers work in order to propose an app that could help solve a real world COVID related problem of your choosing.

You will...

- Define a real world COVID related problem
- Brainstorm ways an app could be used to help solve that problem
- Identify the inputs / outputs / storage / processing used by your app
- Share your idea with the class

You will submit...

- This completed Project Guide
- Presentation slides (Presented to class)



Project Steps

Step 1: Brainstorm Problems

Brainstorm apps that could help with the current COVID pandemic that could run on a Smartphone. Don't worry yet about how computer science can help solve the problem. You might think about:

- Things you'd like to improve health in your school, neighborhood, or community
- A task in your everyday life that you wish could be completed more easily in the pandemic
- Something that is currently inconvenient or annoying to do in the pandemic

Record your brainstorm of problems in the space below. Insert photos of sketches and/or write about your ideas.

Step 2: Choose Your Problem

Decide on which problem you would like to work on. Make sure you consider the following criteria.

- **Interesting:** You are interested in the problem
- **Well-Defined:** You can explain who specifically the problem affects, what needs to change, and how you'll be able to tell that the problem had been solved
- **Computing is Relevant:** The problem is an "information problem" that can be solved with "thinking work."

Step 3: Define Your Problem

1. **What is the problem?** Be as specific as possible. What needs to change or improve? Why does the problem exist? You may need to narrow your problem's focus. Making big changes begins with small steps!
2. **Who does the problem affect?** Be as specific as possible. Think about the age, location, life conditions, interests, background, etc. of your audience.
3. **How will you be able to tell that a solution to this problem has worked?** Be as specific as possible. What would you need to measure or observe to know the problem was solved?

Step 4: Your App

From a high level think about how an app could be used to solve a part of the problem you identified. What features would it need to have? How would someone use it? If you need to update your problem definition above then do so.

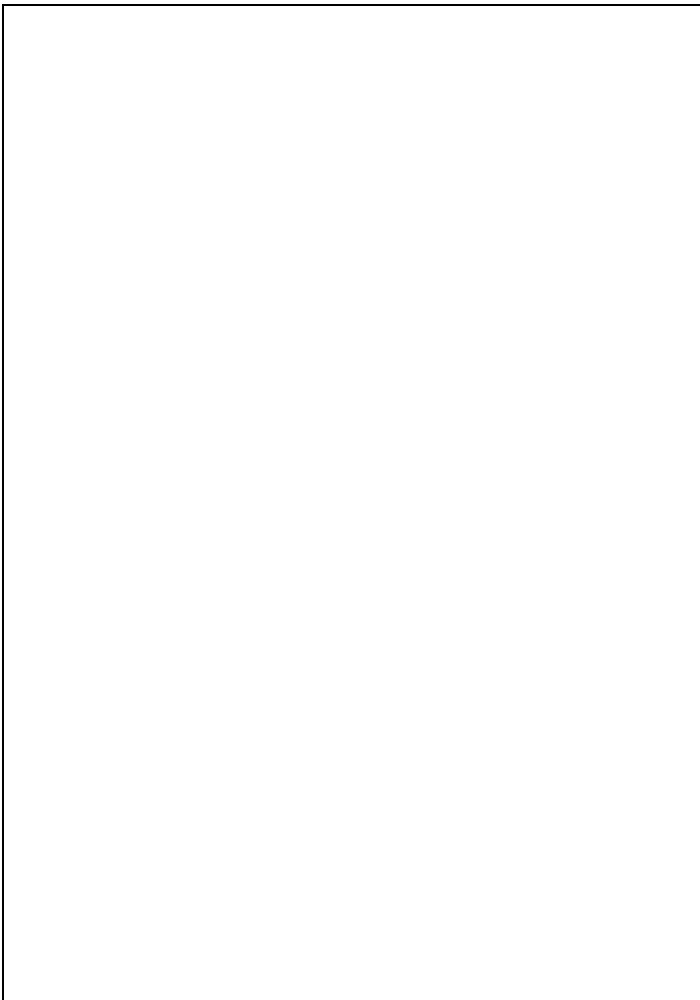
Name Your App:

What does your app do? Write a short description of your app as though you were describing it to someone you'd want to use it. What does it do? Why would someone want to use it? How does it help solve the problem?

Step 5: Input, Output, Store, Process

You will sketch a version of your app and indicate what all the different outputs are. A classmate should be able to tell how the app works based on the sketch and labels.

App Sketch: Sketch what a screen of your app will look like based on your description above.



Output Information: Label the different outputs generated by your app by writing what they are and drawing an arrow to where they are located on the screen. (E.g. "List of nearby parks" or "Days until friends' birthdays")

Inputs: What kind of information does your app need as input to work? Will this input come from the user, phone sensors, or an external source (e.g. a database online)? List every piece of information your app will need to work. Your app may have more or less than 6 inputs. Feel free to add extra sheets of paper if you need them.

Type of Information <i>Example: User age</i>	Source <i>User / Sensor / External</i>	Example <i>Example: 13 years old</i>

Process: What sort of processing will your app use? Comparing, matching/looking up, counting, IF/THEN, for example?

Store: What information will your app store permanently?

Step 6: Peer Review

Your teacher will provide you with a Peer Review sheet. Trade projects with another person and complete the peer review. As part of this process you should develop new ideas for how you can improve your app.

Step 7: Finalize App and Make Slide Show

Based on the results of your peer feedback, make any additions or changes you need to make to how you defined your problem or how you describe your app. Then make a google slideshow that presents the final version of your app. Your slide show needs to include the following information.

- The name of your app
- The target audience
- The problem the app is designed to solve
- The input information the app uses
- A drawing of the output the app produces
- A description of how the app processes and stores information

To create your slideshow, you can and should use your work from this project guide.

Step 8: Present Your App

The last step of this process is to present your app to your classmates. This will be done as a class presentation.