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|  | **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 problem of your choosing.

## You will…

* Work with a partner
* Define a real world problem
* Brainstorm ways an app could be used to help solve that problem
* Identify the inputs / outputs / storage / processing used by your app
* Create a poster of your app to share with the class

## You will submit...

* This completed Project Guide
* A poster of your app

**Project Steps**

## Step 1: Find Your Partner

This project will be completed in pairs. List your partner’s name here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Step 2: Brainstorm Problems

Brainstorm interesting and personally relevant problems. Nothing is off limits, and don’t worry yet about how computer science can help solve the problem. You might think about

* Things you’d like to improve in your school, neighborhood, or community
* A task in your everyday life that you wish could be completed more easily
* A cause that you feel strongly about
* Something that is currently inconvenient or annoying to do

**Record your brainstorm of problems in the space below.**

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## Step 3: Choose Your Problem

Work with your partner to decide on which problem you would like to work on. As you discuss, make sure you consider the following criteria.

* **Interesting:** Both group members are interested in the problem
* **Well-Defined:** You can specify who specifically the problem affects, what needs to change, and how you’ll be able to tell that the problem had been solved
* **CS is Relevant:** Some aspect of the problem could be addressed by computer science

## Step 4: Define Your Problem

Large, complex, and poorly-defined problems are much harder to solve. Make sure you have defined your problem clearly by recording responses to the questions below.

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!

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1. **Who does the problem affect?** Be as specific as possible. Think about the age, location, life conditions, interests, background, etc. of your audience.

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1. **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?

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## Step 5: 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?

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## Step 6: 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.

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| **App Sketch:** Sketch what a screen of your app will look like based on your description above. |  |
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**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**  *Example: School Location or User Age* | **Source**  *User Input /Sensor / Internet* | **Storage**  *Yes or No and why?* |
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**Output:** What is the output of your app? **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Process:** When computers process information they may do it differently from a human, but everything a computer can do, a human could do as well (just usually much slower!) If you were provided the inputs you’ve listed, how would YOU need to process it in order to create the outputs of your app.

Choose: Matching, Sorting or Counting and why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Step 7: Poster** When this ENTIRE project guide is completed, see Mrs. Matteo for a poster to create your app. It must be neat and COLORED. You will need the following on your poster:

* What the screen of your app looks like
* Who this app is for? (i.e. your users)
* What problem does this app solve?
* Explain the input, output, storage and processing of your app.

\*\*\*\*\****Extra Credit if you include on your poster why your user should download your app!***