# Smartphone Apps

Computer scientists create many different kinds of apps for smartphones. Some examples include the Youtube app, Facebook app, and Instagram app. However, there are many different kinds of apps.


**Did you know that there are apps that help people perform tasks? Like these:**

- Transportation apps: These apps have databases of different types of transportation in and around a city. The app has information about buses, subways, and trains. People can enter a destination address and see the fastest route from their current location.
- Plane ticket booking apps: These apps have information about plane rides from one location to another. Once the user locates a plane ride, they can input their credit card information and book the ticket right from their phone!

**There are also apps that help solve problems in the world!**

- Processing apps: These apps take advantage of your smartphone's idle time (the time when you aren't on your phone) to help in the fight against cancer. These apps download small chunks of cancer research problems and simulations and uses your phone's computer to help solve these complex mathematical problems. Then, the results are sent back to the research team!
- Ecological apps: GreenBaby, an interactive app created by high school girls in Brazil, educates users about ecological problems like deforestation and low animal populations. Users can even adopt a tree that will be planted in the Amazon rainforest!


**There are also apps that help teach people about certain subjects:**

- Language apps: DuoLingo is an app that helps people learn a new language! The app rewards you with experience for successfully completed lessons and skills. The experience allows you to level up your language knowledge, from level 1 to 25. You can even earn bonuses and streaks for practicing every day!
- Trivia apps: Quiz Up is a competitive trivia and quiz app that allows you to test your knowledge of any one of over 700 topics. Topics range from the entertaining, like sports and video games, to the serious, like nursing and marketing.

# Changing Shadows

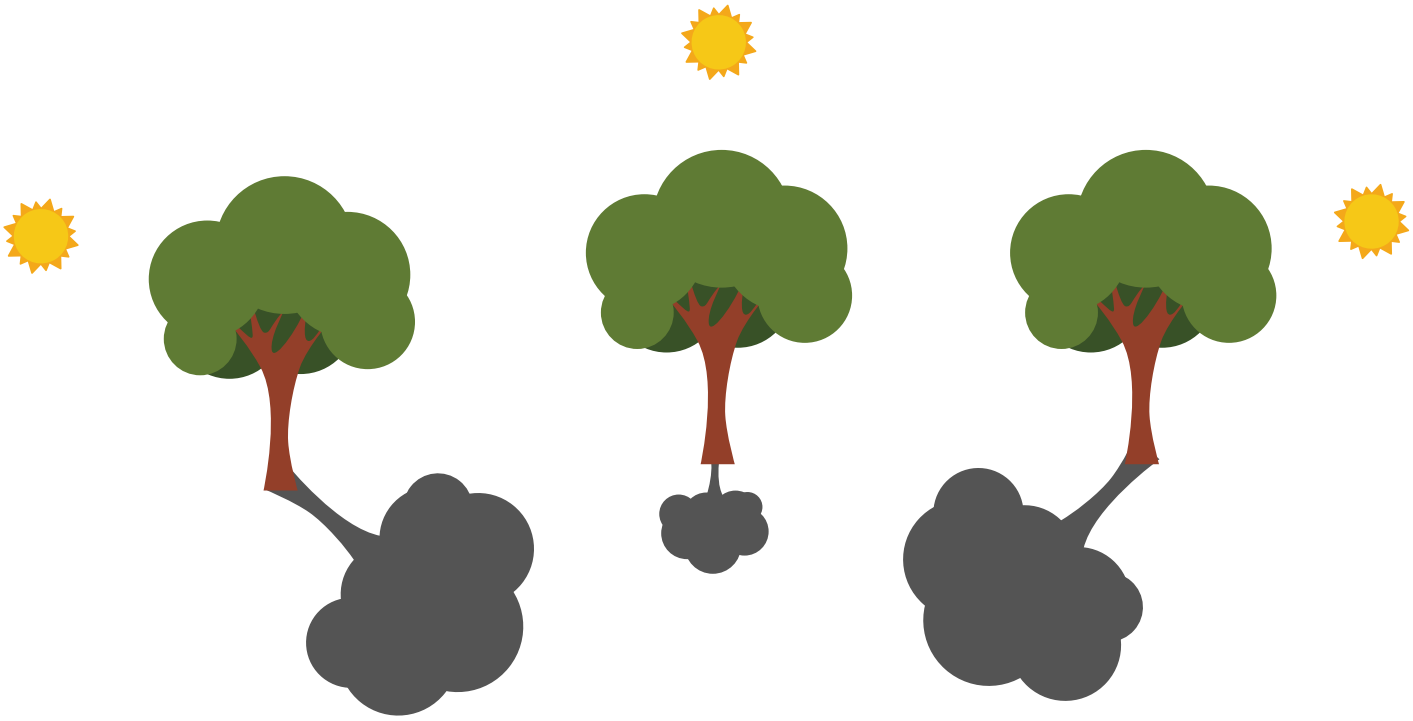
Because the Earth spins, it looks like the Sun moves across the sky each day. It looks like the Sun rises each morning, goes close to straight up and then sets each night. We see this pattern every day.

In these pictures you can see that the trees block some of the sunlight from reaching the ground. This is where shadows form.

## Morning

## Noon

## Evening



- In the morning, when the sun is low in the sky, the trees have a long, spread out shadow on the side away from the Sun.
- At noon, when the sun is almost straight up, the shadow is the shortest but still away from the Sun.
- In the evening, when the sun is low in the sky, the trees have a long, spread out shadow on the side away from the Sun.

# Steps to Make a Video Learning App

## Step One: Create App Wireframe

You will now create an app wireframe! A wireframe is like an outline with pictures and words that describe what your app will look like.

**Name Your App:** _____

Draw a picture of the home screen. The home screen is the screen that users will see when they open the app.

# Solar Panels for Cities

SCIENCE CAREER ADVENTURES

## Pick App Features

List 3 app features that you will include to help people use your app. (Examples include camera function, messaging to communicate with the doctor, resources to learn how to take better care of your skin, etc.)

## Design Buttons for your Features.

Draw the button or icon for each feature that you listed. Make sure to include a title for each button or icon!

## Step 2: Create a Shadow Model

Now that your app is designed, you need to create some content for within your app. The first thing you are going to create is a video episode about how we see shadows caused by the Sun change during the day. The easiest way to explain this concept to your viewers is to create a model! FIrst, you will create your model. Then, you will use the model in your video to demonstrate how shadows change.

**Follow the steps to create your model:**

- Tape a piece of light colored paper to a piece of cardboard. This will represent the ground in your model.
- Use the art supplies provided to build an object on top of the piece of paper from the last step. The object you create should represent something outside that makes a shadow. For example, you could build a model of a tall tree like in the handout.
- Next, use your flashlight to represent the sun and observe the shadows that you make.
  - Hold the flashlight low and to the right to represent the sun in the morning.
  - Hold the flashlight almost straight up to represent the sun at noon.
  - Hold the flashlight low and to the left to represent the sun in the morning.
- Think about how you will make sure people notice the shadows during your video. For example, you could use a pencil to outline the shape of your shadow on the paper that represents the ground.

## Step 3: Write a Script

You will now write a script that you will use to explain your model during your episode! Plan your ideas below.

**Opening:**

- You should introduce yourself and explain that you are a computer scientist.
- You should also tell your viewers what your episode will be about.
- Write 3 or more sentences that you will say for your opening.

**Middle**

- You should introduce your model and explain how your model represents shadows outside.
- Write 6 or more sentences that you will say for the middle of your episode.

**Closing:**

- You should tell viewers that the episode is over. You should also tell viewers that there will be more episodes coming soon. You might want to give a "sneak peak" on what you will talk about in another episode! Think about how to make your closing interesting so people will want to watch other episodes.
- Write 3 or more sentences that you will say for your closing