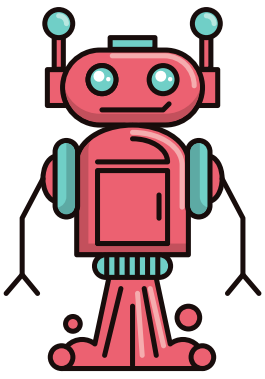# DESSERT ROBOT

Solving a Yummy Problem
with Computational Thinking
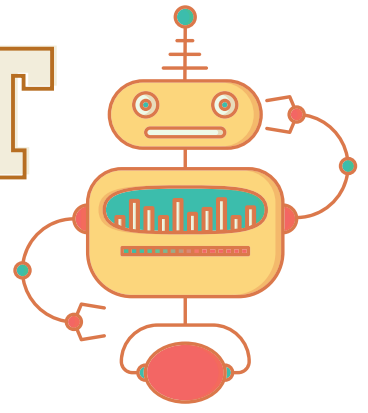
Holmeschooling!

Grades
4-6

DESSERT ROBOT

We're going to imagine a world where there is a robot that can be taught to make dessert. In this imaginary world, no one has to worry about food being bad for you. Everyone can enjoy a sweet treat!

You work for the company that invented this robot. They need you to teach it to make desserts. They want the robot to be able to make a lot of different kinds of new and unusual treats.

In this activity, you will use "computational thinking" to figure out how to teach the robot what a good dessert is and how to make it.

When you finish this activity, you should be able to use each step of the computational thinking process:
- Decomposition
- Pattern Recognition
- Abstraction
- Algorithms

Decomposition

The first part of computational thinking is called "decomposition." This word means taking things apart or when things fall apart.In today's lesson, we're using the first meaning: we will be taking a problem apart so that we can look at each piece.

Pattern Recognition

The second part of computational thinking is called "pattern recognition." In this step we will think about what we already know. We will decide how similar problems can help us solve our new problem.

Abstraction

"Abstraction" is the third stage of computational thinking.This word means taking something away from its surroundings; it can also mean thinking about something in a general way. In today's lesson we're using the first meaning: we will take the most important information from our ideas and get rid of parts that don't matter.

Algorithm

An "algorithm" is a set of rules that are followed one after another to solve a problem. You will write an algorithm for the dessert robot. If you write a good algorithm, the robot should be able to create lots of great-tasting new desserts.

Decompostion of the Problem

In our dessert robot problem, we are starting with a big question:

How can we teach a robot to make a lot of different kinds of yummy new desserts?

This is too much problem to solve all at once. Instead, we can break it into pieces and then think about the pieces separately. What are the parts of this problem?

Make a list here:

Here is one way to break this problem apart:

- What makes a dessert yummy?
- How will our robot know what people think is tasty?
- What are some ingredients we can tell the robot to use?
- How will we make sure the desserts are "new and unusual"?

Your list might look different--and that's okay!

Before we go to the next part of the activity, let's take a minute to look at our lists again and decide if we want to make any changes. If you think that your list needs a little work, you can go back and work on it, now.
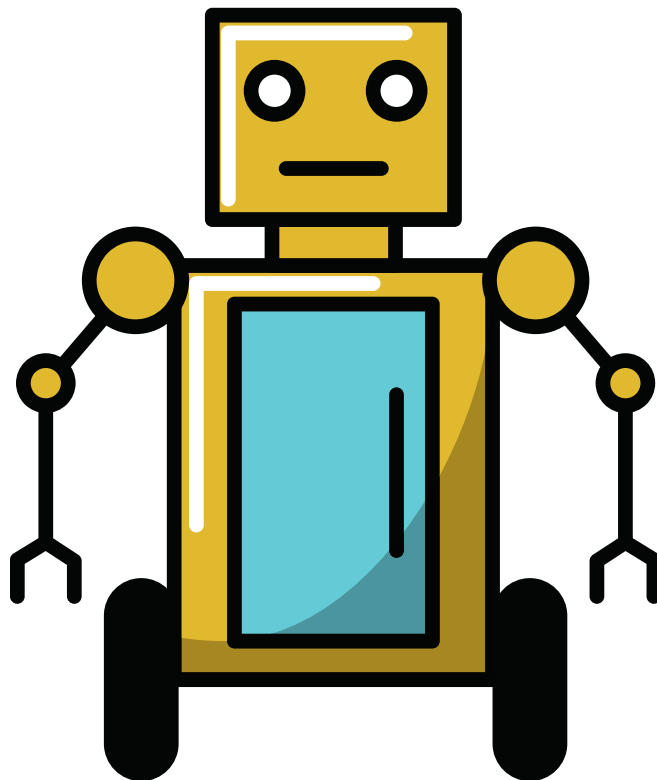
Recognition of Patterns in the Problem

What is true about most good desserts? List some qualities of good desserts.

(Some things to think about: Are there flavors that most people like in desserts? Can a dessert be TOO sweet? Are there desserts that are just too weird, or are unusual desserts even better than ordinary desserts? Are desserts with more ingredients always better?)

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What kinds of parts do desserts usually have? Write down the names of three desserts you like and then list their parts.

Abstration of Key Ideas in the Problem

Look at your lists again. Draw a neat line though anything that doesn't help you solve today's problem. Next, look at the ideas that are left. Before you move on, write a brief explanation of what you will need to teach the dessert robot so that it can create tasty new treats.

Solving the Problem With an Algorithm

This is it! You're at the last step of the computational thinking process, and in this step you'll solve the problem.

Look back at all of the ideas you've written down so far. How can you use them to write step-by-step directions for the dessert robot?

Use the outline below to create a set of instructions. You can add or subtract anything you need to from the outline--it's just a guide!

How to Create a New Dessert

1. **Take one ingredient from each _____ but only one from each _____:**

2. **Combine without mixing, in the following order:**

a.

b.

c.