Parallel Recipes

Goal:

This lesson gives students a chance to practice algorithmic thinking as well as parallel thinking and to deal with important questions in parallel algorithm design.

Materials:

• Parallel Computing Notebook, 1 per student.

Activity:

- Each student is given the task of writing out a recipe or set of instructions for something they know how to cook, how to make, how to play, a daily routine, etc. The students write out the instructions in their Parallel Computing Notebook in as much detail as possible, broken down into the smallest steps possible, as though they were being explained to a robot.
- 2. Each student is tasked with identifying and writing down all the **dependencies**, the steps that depend on other steps. For example, I need to open the toothpaste before I can put toothpaste on my toothbrush.
- 3. Each student is tasked with assuming that they can now have an infinite amount of friends or robots to help follow the recipe, in **parallel**, and the students rewrite their recipes with this in mind (e.g. while one of my friends turns on the oven, another one of my friends opens the refrigerator).
- 4. The instructor calls on a few volunteers to share their recipes with the class.

Questions to Answer in Your Parallel Computing Notebook:

- 1. In what ways was your **parallel** recipe different than your **serial** (non-parallel) recipe? What things stayed the same between your two recipes?
- 2. In what ways was your parallel recipe more efficient? In what ways was it less efficient?
- 3. Would anything need to change about the resources/materials/ingredients/tools in your recipes?
- 4. In what ways do you think this activity relates to computing and parallel computing?