Hamburger Cooking Activity

Teachers: Parallel computing is when we have a process that needs to do multiple tasks at the same time. We can use the different cores of a processor to work on different tasks at the same time. Normally, instructions would be carried out in order, one at a time. Parallelization is the act of dividing the process up into tasks that can be accomplished at the same time, so that the computer does not need to wait for the previous task to be completed. This concept is to be explained after the activity to show that the idea of parallelization is not too intimidating, and to show how it can be helpful and save time.

The goal of this activity is to teach students the basics and show the benefits of parallelization. To accomplish this, we will place students in a real-world situation to show that we actually use parallelization in everyday life, and tell them that that is what a computer does to accomplish large tasks.

Resources needed:
- Two workstations for each group, one is the "prep station" and and the other is the "grill"
- Cutouts or other objects to represent the following items: Bottom bun, top bun, burger patty, lettuce, tomato, onions, and a plate.
- Timers. (Could even use a large clock in the room as long as it is visible.)

Activity: There are two types of groups, parallelization groups, and non-parallelization groups. Split the class into as many groups as needed, preferably 3-5 students each and randomly assign them to one of the two types of groups.
Once the groups are formed, let the parallelization groups know that each member is their own "processor" that make up one computer, and that the non-parallelization groups represent a computer with just one processor.
Their goal is going to be to cook, prepare, and assemble a hamburger. The ingredients each have to be either cooked at the grill, or prepared at the prep station.
Both Buns need to be **grilled** for 15 seconds, while the patty needs to be **grilled** for 60 seconds. The tomatoes, onions, and lettuce must be **prepared** at the prep station for 10 seconds each.
Parallelization groups: Can cook and prepare multiple items at the same time, just need to make sure to assemble them on the plate in the proper order.
Non-Parallelization groups: Can only cook or prepare one thing at a time, once cooked or prepared, it must be added to the plate.

The burgers are constructed in the following order, Bottom Bun - Patty - Lettuce - Tomatoes - Onions - Top Bun.

Give each group 3-5 minutes to discuss the how they want to tackle the problem.
Note: The non-parallelization groups should quickly notice that they do not really have a choice in the order for which they will have to do things, and the parallelization groups will probably try to figure out the fastest way to build the burger.
After the teams are done discussing, it is time to cook! Have them cook and prepare their ingredients, and present you with their burgers when finished! The parallelization groups should be done a lot earlier than the non parallelization groups. Once teams are finished, repeat the activity, but switch the roll of each group so that every student gets to see the difference between parallelization and non-parallelization.