

My 9th Science Report

Objective of this report

I'm Takashi Tsuruta. I live in Funabashi City, Japan. I propagate easy-understand Sci-Tech for everyone. I would like to inform my lovely people the following things. I hope that everyone could enjoy this report.

In this report, I would like to tell you about the following:

1. Introduction
2. About the cooking procedure of spaghetti with tomatoes and eggplants
3. Conclusion

If you have any questions, comments or feedback, then feel free to reach out via [my website](#). And, I'd like to reponse your questions and take care of your problem while going for a walk, etc.

My Webpage <https://neupro-25874.web.app/en/contact>

QRCodes



1. Introduction

In [previous report](#), I explained the policy (judo spirit) I am using to deal with this System. I also explained the importance of considering the cooking procedure as spaghetti dishes example. In this report, I'd like to write the cooking procedure of spaghetti with tomatoes and eggplants in the continuation of the previous time.

The cooking procedure means almost same as a recipe.

2. About the cooking procedure of spaghetti with tomatoes and eggplants

I had explained that the cooking procedure is important and it is better to make it quickly because the condition of the ingredients changes in the previous report. Also, as one of the tips for getting better at cooking, I had written that it's good that the condition of each ingredient in the dish I made when eating is felt delicious.

I'd like to explain my ideal cooking method as a reference. Even if I make it, it's not always the ideal state. My ideal condition for some ingredients is as follows.

My ideal condition of each ingredient when I eat this:

- Tomatoes are almost out of shape.
- Eggplants are sliced to create Round pieces and still remained and not hard.
- Onions are sliced to create elongated pieces and thin and soft.
- Spaghetti is not too soft.

You can measure a duration to become your ideal condition of each ingredient, but in general, you can't spend that much time cooking. If you're interested, I think it's good to try various things.

I will focus on an order of cooking tasks this time.

I'd like to consider a duration to become my ideal condition of each ingredient as follows. The duration here may include a duration to cut it with a kitchen knife, a duration to heat it and a duration to boil it. These values below are experientially determined.

Ingredient	Duration
Tomato	10 minutes
Eggplant	10 minutes
Onion	13 minutes
Spaghetti	6 minutes

Suppose I do not think about a duration to mix and serve each ingredient of cooking procedure this time, the longest duration among four above is 13 minutes of onions. In order to cook this dish in the shortest duration, I will consider parallelizing each task as much as possible.

Now, suppose I don't think about a task of cutting the ingredients above with the kitchen knife here. So, each duration except last one is equal to a duration for a task of heating each ingredient respectively, and it is possible to work on each task in parallel because there is no problem mixing the ingredients during the task of heating it. Ideally, I can do the three tasks in as little as 13 minutes to finish it.

And if I boil spaghetti in parallel during heating the other ingredients, I will be able to do all the tasks in as little as 13 minutes to finish it. However, in order to parallel each task of cutting the ingredient with the kitchen knife realistically, it will need three people. So I think about cooking this dish as efficiently as possible by myself. In other words, it is important to determine which task is possible in parallel.

I've explained a little about the task of heating the other ingredients above, but if you don't need to think about an influence of it each other due to some reasons that is such as becoming the same dish finally, you can heat it in parallel. And, you don't have to care about a task of cooking spaghetti

in the boiling water especially, so you can also do this in parallel.

Note:

In the case of cooking spaghetti in the boiling water, depending on the size of a pot and the amount of hot water, the spaghetti may adhere to the pot, or boiling water may overflow from the pot. So, you should check the pot sometimes and stir the spaghetti due to these reasons.

Adding consideration above, I'd like to think again about each duration to become the ideal state of each ingredient.

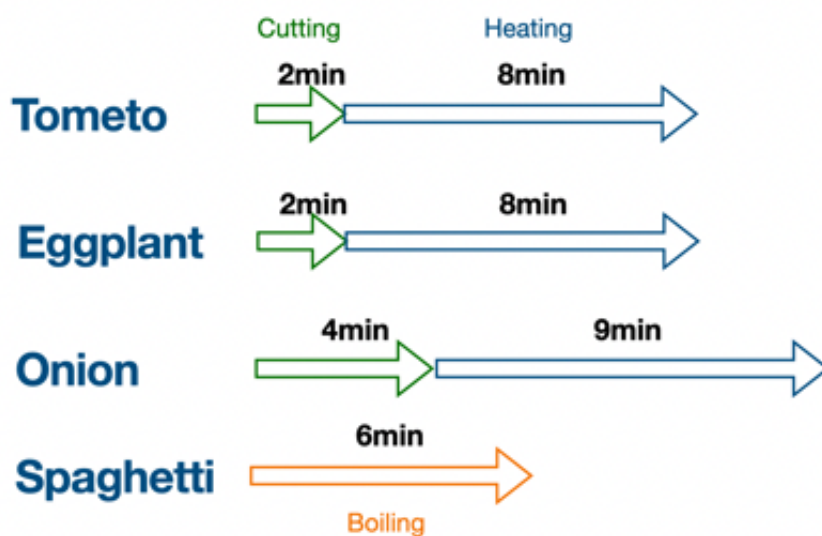


Figure 1. Duration to become the ideal state of each ingredient

As I explained above, each task of cutting the target vegetable can't be done in parallel, so the three tasks needs to be in series. Therefore, I sum the duration of cutting each vegetable. Cutting all the vegetables will take a total of 8 minutes.

Also, because it is necessary to finish all the tasks to be in the ideal state of all the ingredients at the same time, after cutting all the vegetables, it is better to do next work such as heating it and cooking spaghetti in the boiling water. For example, if you heat tomatoes after cutting it only, it will reach its ideal state first.

So, I think I can start cutting onions, start heating onions in a frying pan 1 minute before finishing cutting the last vegetable of either tomatoes or eggplants, and add both tomatoes and eggplants to the frying pan to heat these vegetables after 1 minute. Two minutes later, finally, I can start cooking spaghetti in the boiling water. I've completed the order of cooking tasks in which all the ingredients are finished in the ideal state as much as possible (Figure 2). This takes 16 minutes in total.

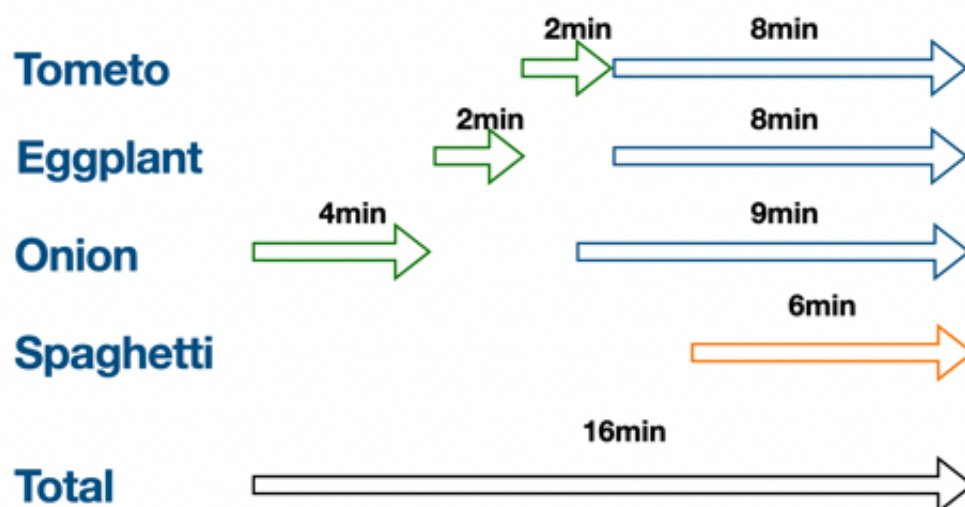


Figure 2. The whole duration of cooking tasks to become the ideal state of all the ingredients

In addition to the above tasks, considering a duration between each task, a task of boiling water (or you can use an electric pot), a task of draining the cooking water from spaghetti, and tasks of other ingredients not listed above, the order of cooking tasks will become more realistic. It also depends on your cooking utensils such as a gas stove and a number of people who cook. If you don't mind, you might want to think about it a little.

And, I did not consider tastes such as umami that are important for cooking here. If I have spare time to write this topic, I would like to write about it too.

I've explained the order of cooking tasks so far. This idea may be what you need to manage an efficient project. This is almost same as [Critical Path Method](#). This common use case is also listed on the wiki for construction projects, software development, research projects, product development, engineering, plant maintenance and etc. By the way, the description of a critical path in project management is explained as follows on the wiki.

a critical path is the sequence of project network activities which add up to the longest overall duration, regardless if that longest duration has float or not. This determines the shortest time possible to complete the project.

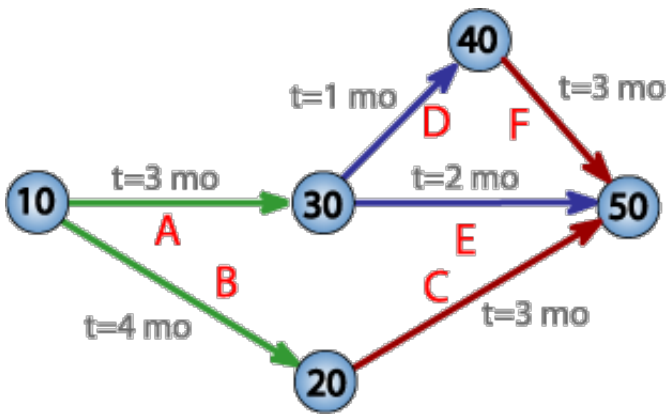


Figure 3. From this wiki page

Extra information:

Even if you cook a dish in accordance with a cooking recipe, it is very possible that you feel something different because your environment of cooking utensils and equipments is different from this author's environment. Recently in Japan, cooking in a microwave oven is increasing, but in the case of microwave ovens, if you set a suitable timer after checking the wattage, I think any device can reproduce almost the same environment. In that sense, I think the use of microwave ovens is a good cooking device that can share cooking methods of recipes.

3. Conclusion

In this report, I've explained the cooking procedure of spaghetti with tomatoes and eggplants. And I've also explained that the idea of the order of tasks leads to the critical path method.

Keywords: *Critical path method*