

Scenario

You are a freelancer and you have just been assigned by the company "Les petits plats" as a Front-end Developer for a 3-month mission.

After having published cookbooks for several years, the company decided to launch a new project: to create its own recipe website like Marmiton or 750g.

Sandra, project manager, is in charge of the digitalization of the company with the creation of this website. For the moment, she is only working with freelancers like you, before creating an internal team to manage this project. To make sure you have everything you need at your disposal, she sends you an email:

From: Sandra

To: Me

Subject: Search algo details

Hello,

I'm delighted to have you on the team for this next stage of the project.

As you know, there are a lot of sites offering cooking recipes and the team felt that one of the things that can make a difference on our site is the fluidity of the search engine. As the back-end team is not yet formed, we only have a JavaScript file containing a JSON array of 50 recipes.

Your first task will be to implement the search functionality. Here you will find the description of the search use case. This is the document that will serve as a reference for all the development of this functionality. In addition to that, here is the layout of the page on Figma, make sure you follow the design to the letter.

What we want above all is something efficient because our users want a quick, almost instantaneous search! Your work will then be passed on to the back-end to be adapted by them. This is why you will have to send them a document explaining your work. I'll let you see how to proceed in detail directly with Jean-Baptiste.

Sandra

At the end of the morning, you receive a Slack notification from Jean-Baptiste, your Lead Developer:

JB

Hi! As you can see, search is a very important feature for the team and we are counting on you to develop it in an optimal way.

In our team, for any important algorithm we develop, we usually make two different versions to compare their performance and choose the best one. So you will have to do the same! To do this, you'll need to create a comparison document called a "feature investigation sheet". We recently did this for the "login/registration" feature and this is the result. So use the same template directly.

You

Thank you very much. So, how do you suggest I proceed?

JB

Well, my advice is to start by implementing your interface so you're out of the way. As for the rest of the site, you can use Bootstrap 4 if you want, but no other library. Make sure you write code that passes the W3C validator.

Then, on the algorithm side, you can proceed in 3 steps.

First, plan the 2 versions of the functionality you want to test. To do this, start filling in the feature investigation document as much as you can to describe the two algorithms you want to compare.

These two algorithms should only focus on the main search field.

Don't forget to make a diagram for each of the proposals so that the sequence of steps of each algorithm is clear, this will be especially useful for the back-end team. You can use the diagrams in the Login/Registration investigation sheet as a basis, but use the formatting you want.

You

Ok and then I implement them?

JB

Exactly, second step: you implement them both. For that, use 2 different branches on Git so that we keep the code separate for each. For your implementation, all the technical info is in the use case document Sandra sent you. For tag searches, you can use one and the same version of the search for both branches.

You

How do I choose the best algorithm then?

JB

This is your third and final step. To choose the best algorithm, you need to test their performance. For that, you can use any performance comparison tool you want, personally I use Jsben.ch for this kind of analysis. It will give you the number of operations per second carried out by each script and thus allows you to see at a glance which script is the most efficient. You can test only the main search (no need to use the filters). Then add the results to the feature investigation sheet you have written. Don't forget to finish the document with the recommendation of the algorithm to keep following your analysis and tests.

You

Perfect, thanks for your advice JB. I'll get started!

Now you have all the information you need to start your work. Let's get started!

Deliverables

A feature investigation sheet on the search algorithm (PDF format). You will include the choice of the final algorithm in comparison to the other search algorithm developed.

A link to the GitHub repo of the project including the two branches with the two different solutions for the search.

The GitHub repo should be named with the following convention: FullName_#_DatedStart. The # is the project number on the path and the date must be in ddmmyyy format. For example, FrancoisLenotre_5_05032020.

Oral presentation

During the oral presentation, your contact person will play the role of Jean-Baptiste, the project lead dev:

Presentation of deliverables (15 minutes)

During 5 minutes you will present how you have broken down the problem using the investigation document.

Then you will have between 10 and 15 minutes to show the rendering of the application with the best performing version of the search engine, justifying with figures why this version is better than the other version.

Discussion (10 minutes)

For 10 minutes, your interviewer will ask you about your choices, both on search and on how you implemented the interface (with or without Bootstrap).

The evaluator will question your choices, so be prepared to defend your work. At the end of the session, the evaluator will leave the role of Jean-Baptiste so that you can debrief together.