# Results and Discussion

## Project Outcome

### A Subtopic

### Another Subtopic

## Testing and System Evaluations

To evaluate the effectiveness of the recommendation algorithm, we have designed and conducted a simple test case based on preferences on brands.

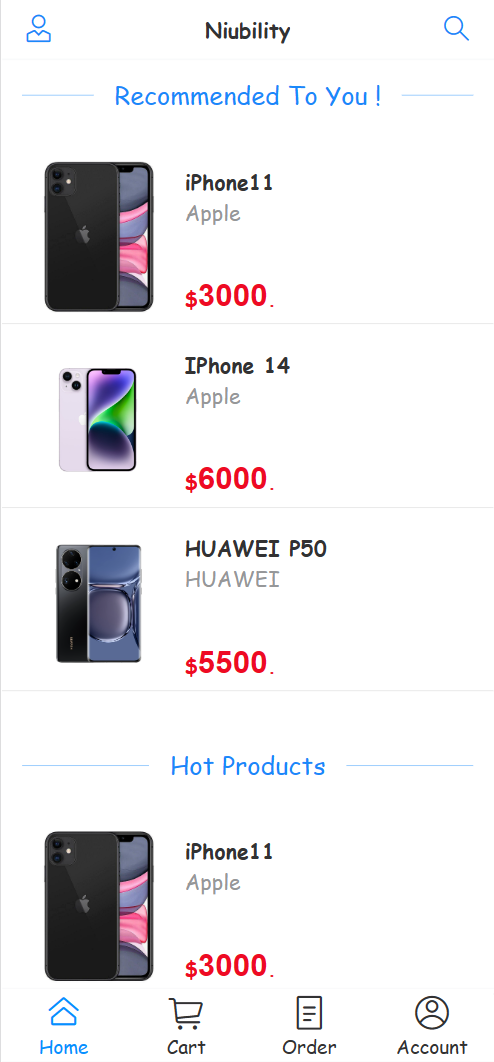
Firstly, we create 2 new accounts as User A and User B. We assume that User A likes Huawei. Oppositely, User B dislikes Huawei and like Apple. They both like Xiaomi.

Figure 1, 2, 3 show the top 3 products recommended to Tester 1, 2, 3. According to the brands of the products, we summarize the outcomes in Table X. We notice the algorithm is able to find out the similar users of a new user and recommend the preferences of them to the new user.

(Screenshots)

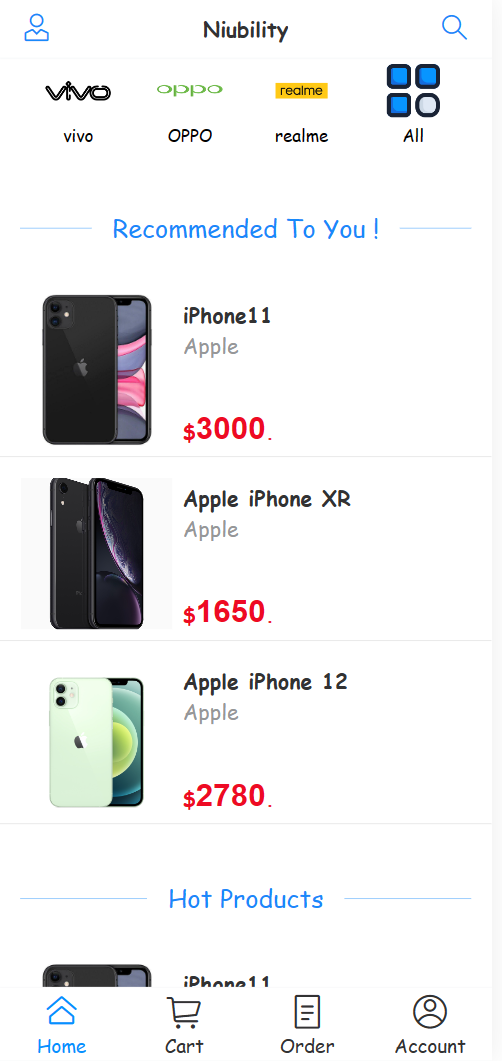
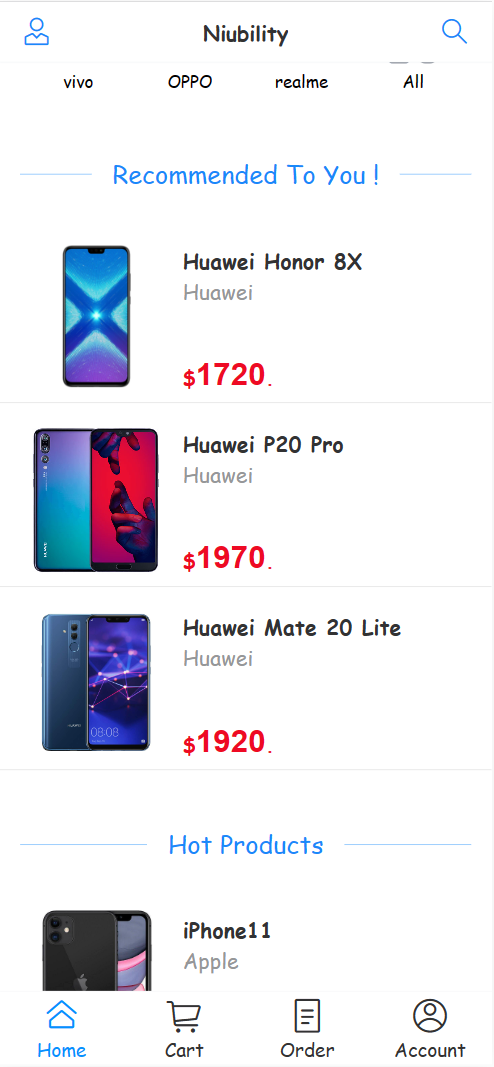


Then we use one customer account and stamp all the Apple products as “like”, and use another account to stamp all the Huawei products as “like”. In the end, we use another totally new account to check the powerfulness of the recommendation algorithm. Fig x. shows the list of recommended products on the product list page for the test account.



We could see from above; the algorithm calculates based on the preferences of the previous two customers and recommend two apple products and one Huawei products to the test account.

If this test account stamps a Hua Wei product as “dislike”, the product list page will recommend a list of Apple products. If this test account stamps an Apple product as “dislike”, the product list page will recommend a list of Hua Wei products.

## Testing and System Evaluations

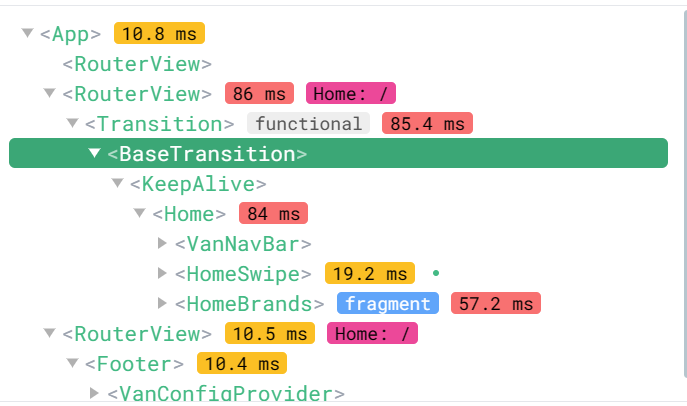
Because our e-commerce platform is a web-mobile application. So, in order to guarantee the performance on mobile phones, we first test its performance on the computer based on its load speed.

First, I want to talk about the reason why we choose load speed as testing metric. It is normal that the longer a webpage takes to load, the more its bounce rate will skyrocket. A high bounce rate will inform the search engine that this website has useless content. Therefore, the ranking will correspondingly decline. If e-commerce website loads check out page slowly, the customer might give up paying money. This website may fall behind the competitors inevitably.

So how fast should a website load? Based on the information we gained: “Ideally, you’ll want your website to load within three seconds, or two seconds if it’s an ecommerce site. The two-to-three second mark is the turning point where bounce rates skyrocket – in fact, 40% of consumers will wait no more than three seconds before abandoning a site.” We use two seconds as a criterion to judge whether our mobile application is user-friendly or not.

After testing, we found out the time all the pages of our application take to load is far less than one seconds. This indicates in the metric of load speed, our mobile application is quite brilliant.

[Website Load Time Statistics: Why Speed Matters in 2023 (websitebuilderexpert.com)](https://www.websitebuilderexpert.com/building-websites/website-load-time-statistics/)

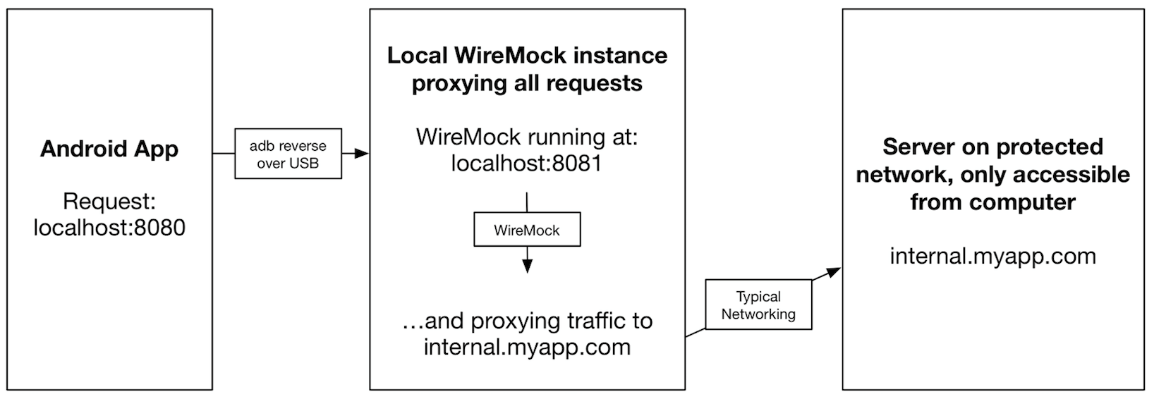


Testing on a real Android phone

* Deploy in a cloud server (complicated)
* Android Studio Simulator (failed)
* adb (success)

ip addresses (127.0.0.1 vs localhsot)

**Debug On a Real Android Phone**

Android Debug Bridge (adb) is a versatile command-line tool that enables communications with devices.

*Android Debug Bridge (ADB)*



*Android Studio WebView*

By using the adb command

$ adb reverse tcp:5173 tcp:5173

$ adb reverse tcp:8080 tcp:8080

So that it allows the mobile phone to access http server with 127.0.0.1 (loopback address) to access the same host in the PC locally. In addition, the API server running on port 8080 should also be bridged to allow data communication between the mobile app and the API server.



*The vue.js accesses API server running on port 8080.*

*Screenshot (to be added)*