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AUCTION WEBSITE

499A Project Presentation

INTRODUCTION

We all know what is an auction. An **auction** is usually a process of buying and selling goods or services by offering them up for bid, taking bids, and then selling the item to the highest bidder or buying the item from the lowest bidder. So, what does an auction website do? It does the same thing but virtually. But the advantage is huge. People don't have to physically present in the auction market and through a well built auction website bidding can be placed precisely and also users can have a smooth transaction process. The idea of Online Auction system is not new, in fact there are couple of giant auction websites who are dominating in this sector, for example "Ebay" is a giant online auction company. People enjoy contactless business and for the blessings of internet and technology it's becoming more popular. Merchants are selling their products online more than offline. So, it's obvious that online auction system has a bright future and it'll be more popular.

WHY WE CHOSE AUCTION SYSTEM !

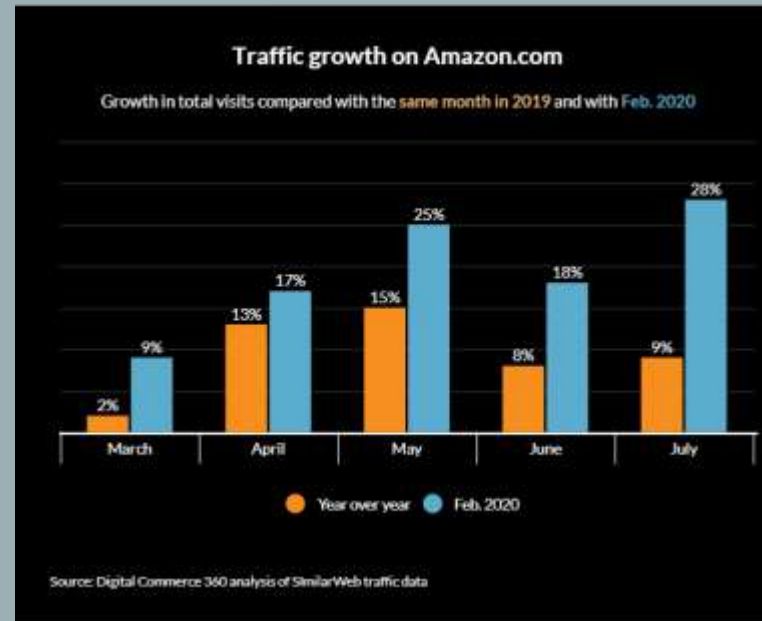
There were couple of interesting options to choose. It was very difficult for us to choose this as our senior level projects because all the ideas were very interesting and impactful. But we focused on some vital points such as –

1. Completion
2. Outcome
3. Future
4. Innovation

We wanted to complete the project within the timeline and we thought a web based project will be the best option to do so. Then we had to decide what we will learn from this project. We also analyzed if there's any real world application and also if the system has a future. Also we wanted to implement a unique idea.

THE FUTURE OF AUCTION SYSTEM!

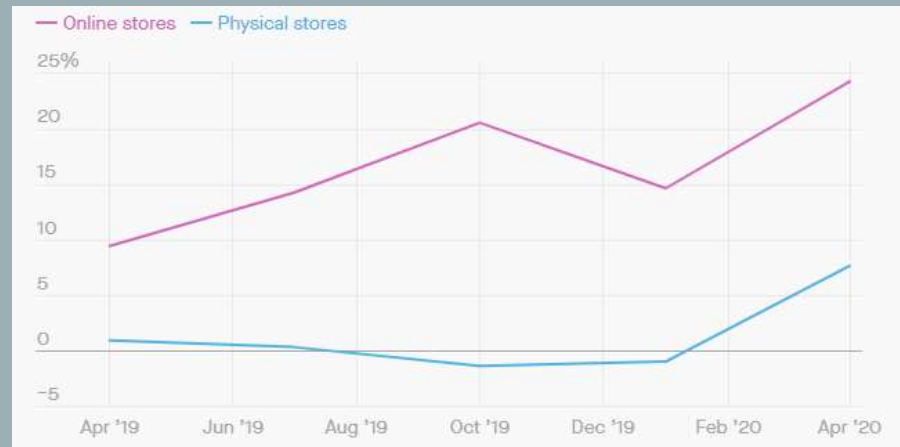
To explain why online auction system is becoming more popular here are some points we should discuss. We should take a look at the amazon's traffic and sales growth during covid-19. Although amazon is not an auction system but it's the most popular ecommerce website in the world.



Here in the graph, we can see that in 2019 march the traffic was 2% and in 2020 march it boosted up to 9% which is more than 300% increase of traffic. In July during the pandemic

THE FUTURE OF AUCTION SYSTEM!

the traffic rose from 9% to 28%. If we look at the amazon sales during pandemic compared to the offline stores,



source : Quartz | qz.com Data: Company filings

We can see that a huge bump in the online store sales' during pandemic. Because during the pandemic people used ecommerce services more than ever. Also same thing happened to “ebay” which is the leading auction company in the world.

One of the main reasons we've chosen this project because of it's current and future demands.

A BRIEF OVERVIEW OF THE PROJECT

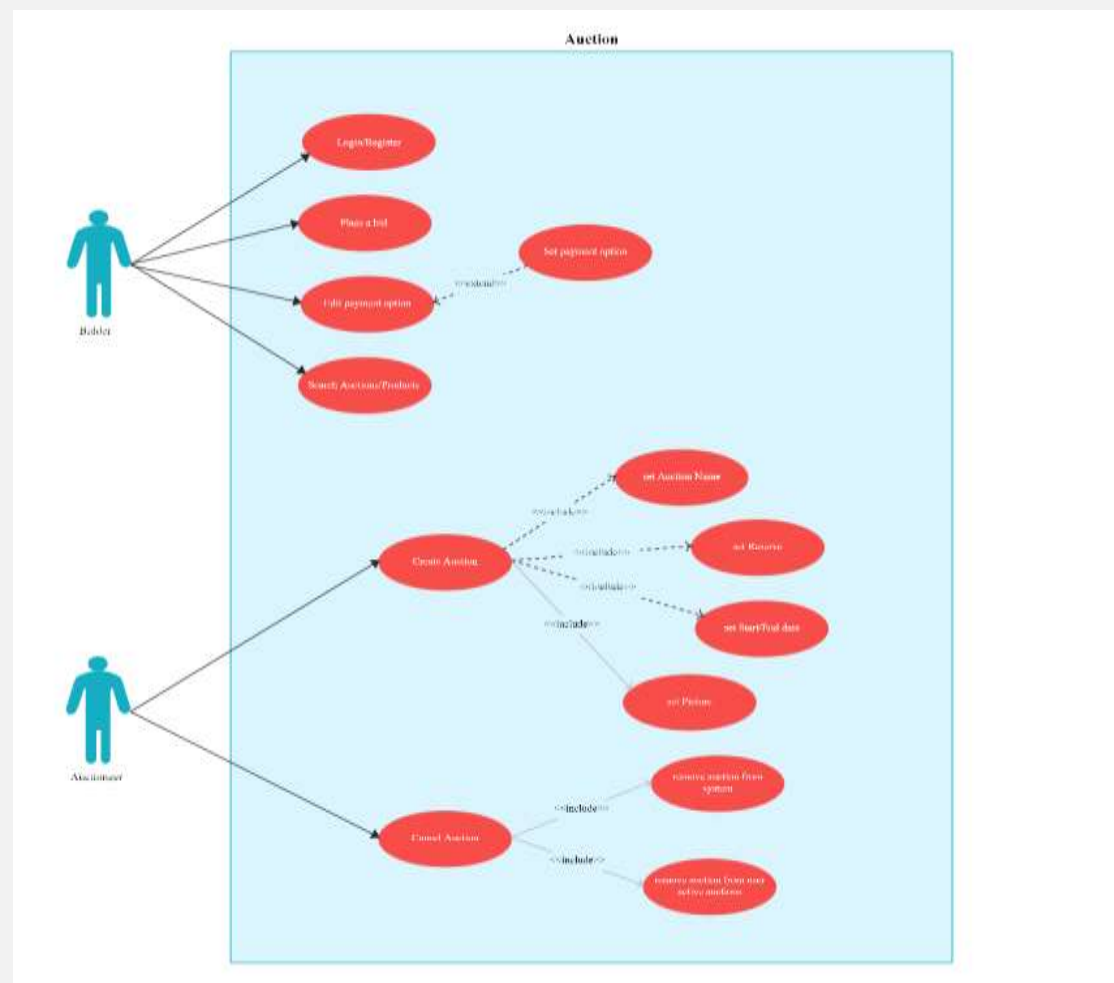
The functionality of our website will be minimal. Our main objective is to familiar with modern web technologies , solving problems and complete the project before the deadline. The auction website will have all the basic functionalities. We'll mainly focus on the performance, speed, optimization, smooth user experience, easy user interface, scalability etc.

Architecture:

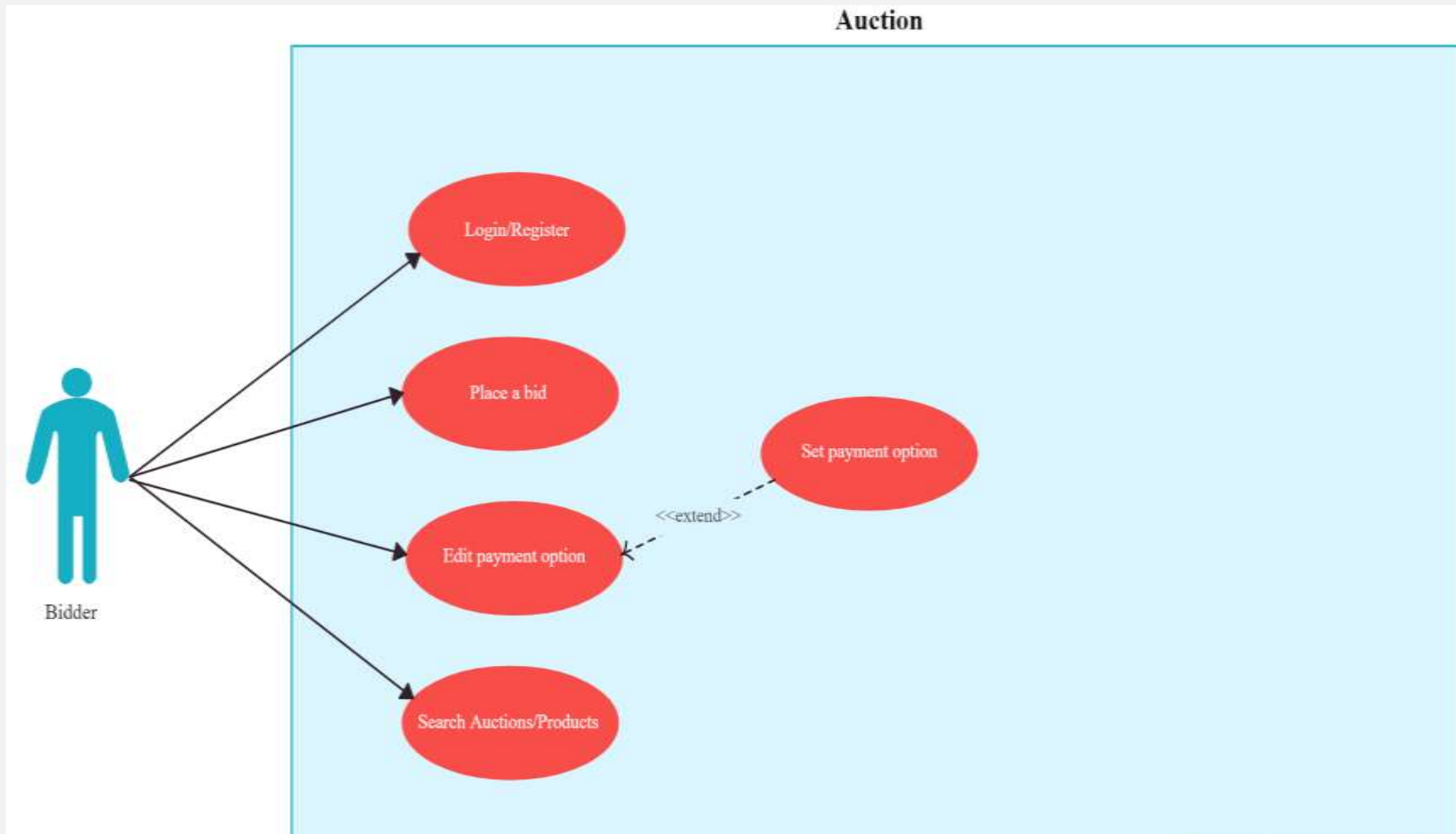
We'll develop frontend and backend separately. We'll develop an API to communicate with the frontend and backend. Because if we want to create a native mobile application for ios and android then we won't have to alter the architecture. Also we can easily change the frontend or backend separately and we won't have to think about the dependency.

A BRIEF OVERVIEW OF THE PROJECT CONT.

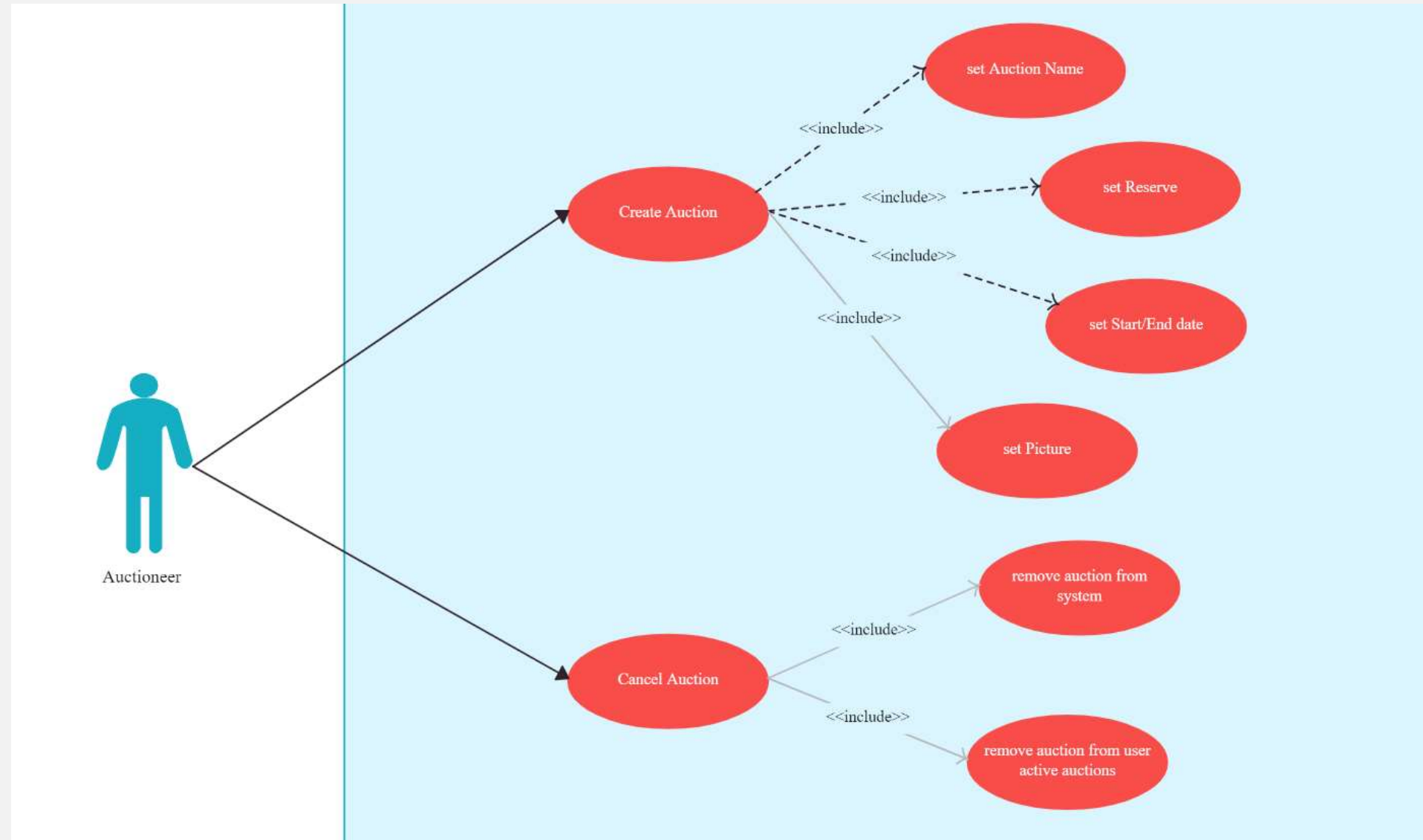
--USE CASE--



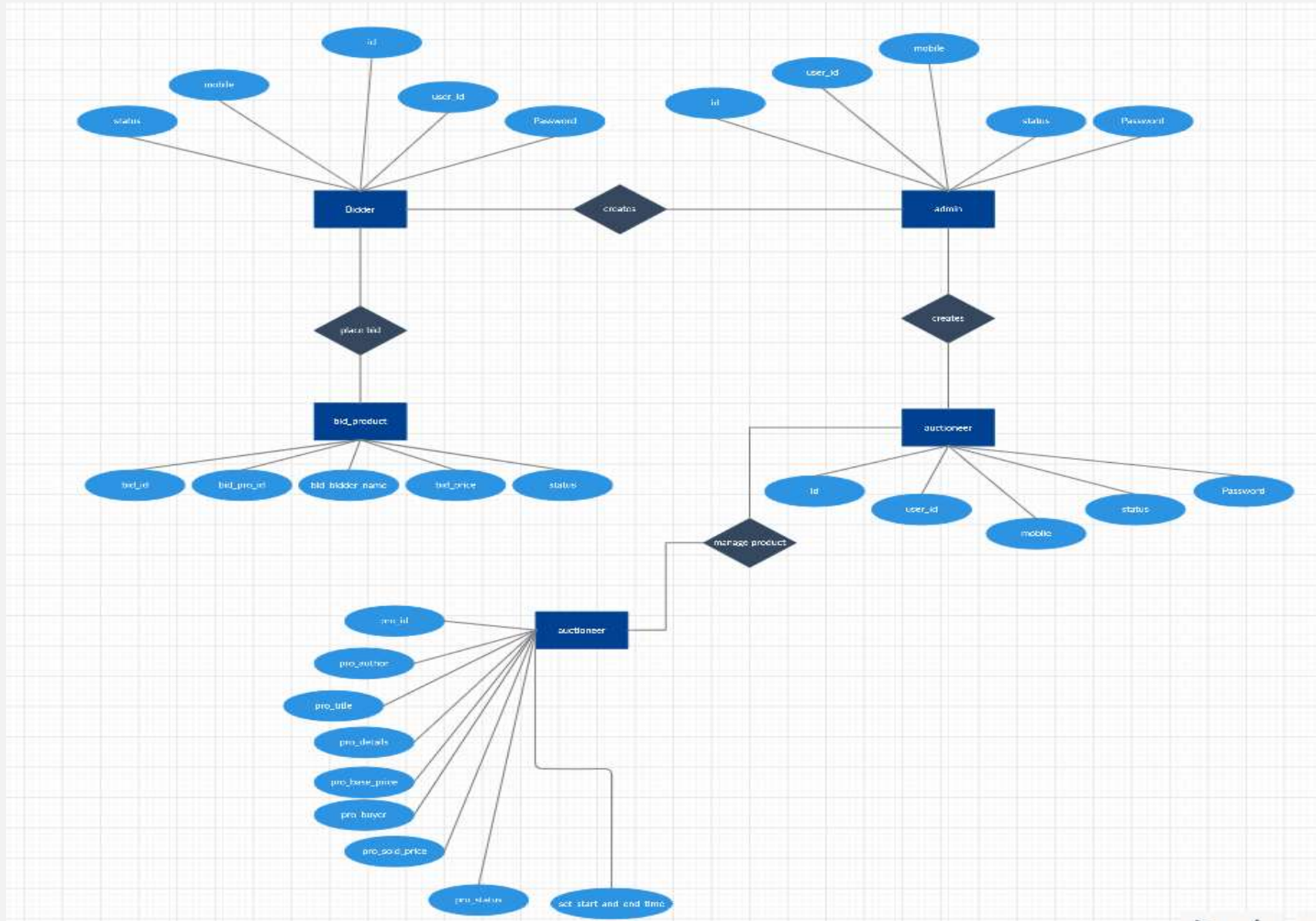
A BRIEF OVERVIEW OF THE PROJECT CONT. USE CASE (BIDDER)CONT.



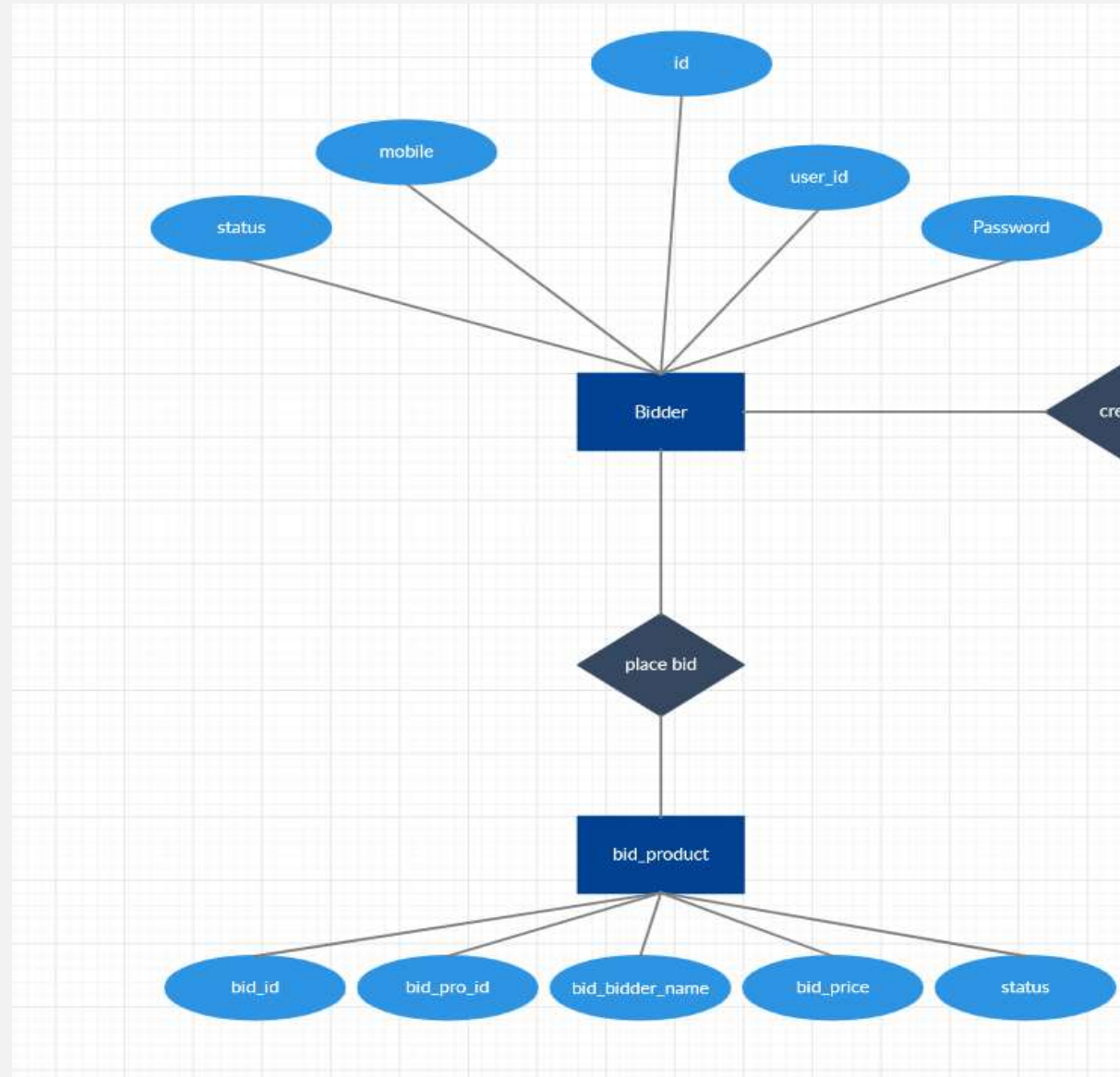
A BRIEF OVERVIEW OF THE PROJECT CONT. USE CASE (AUCTIONEER)CONT.



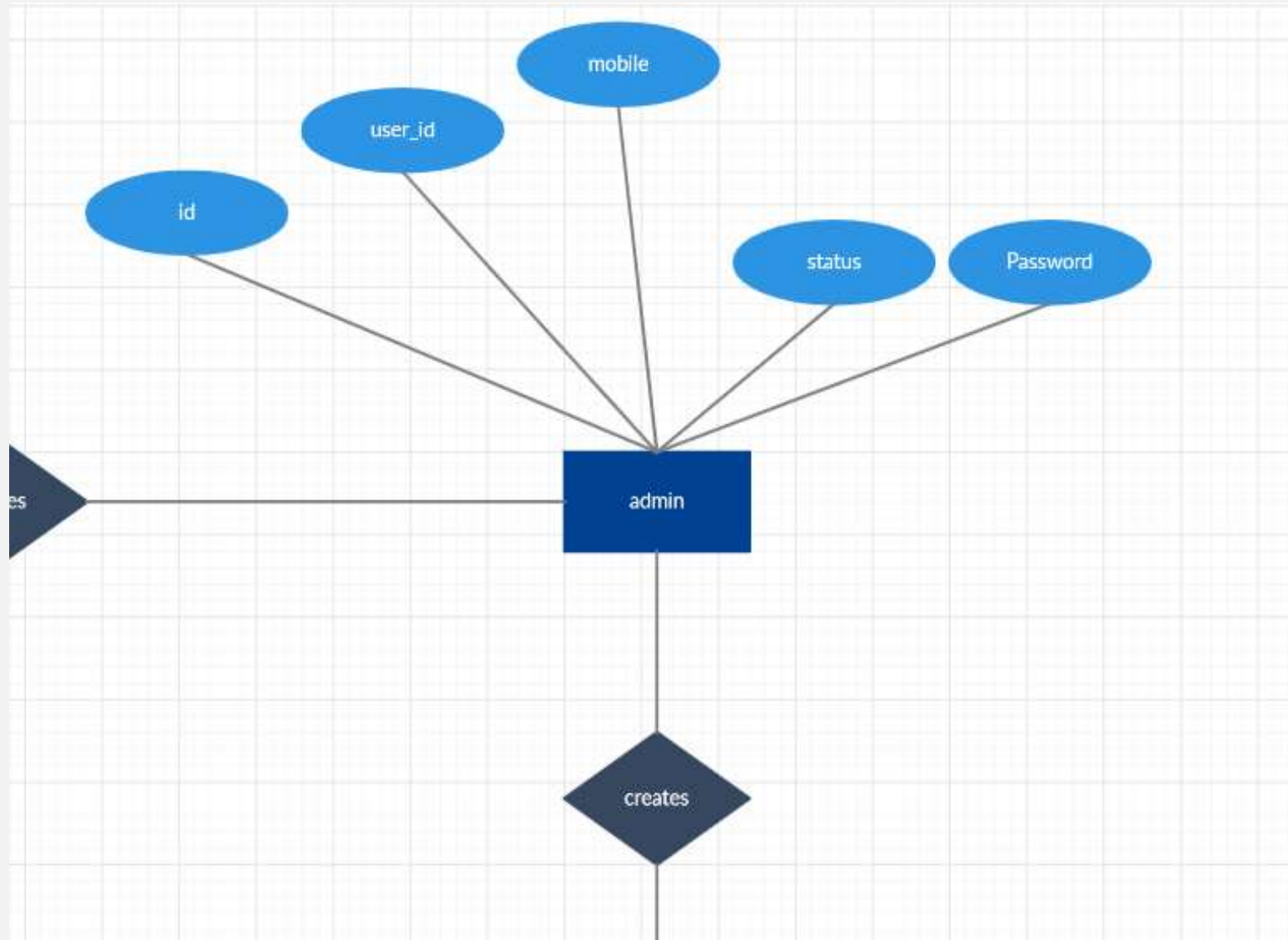
A BRIEF OVERVIEW OF THE PROJECT CONT. ENTITY RELATIONSHIP DIAGRAM



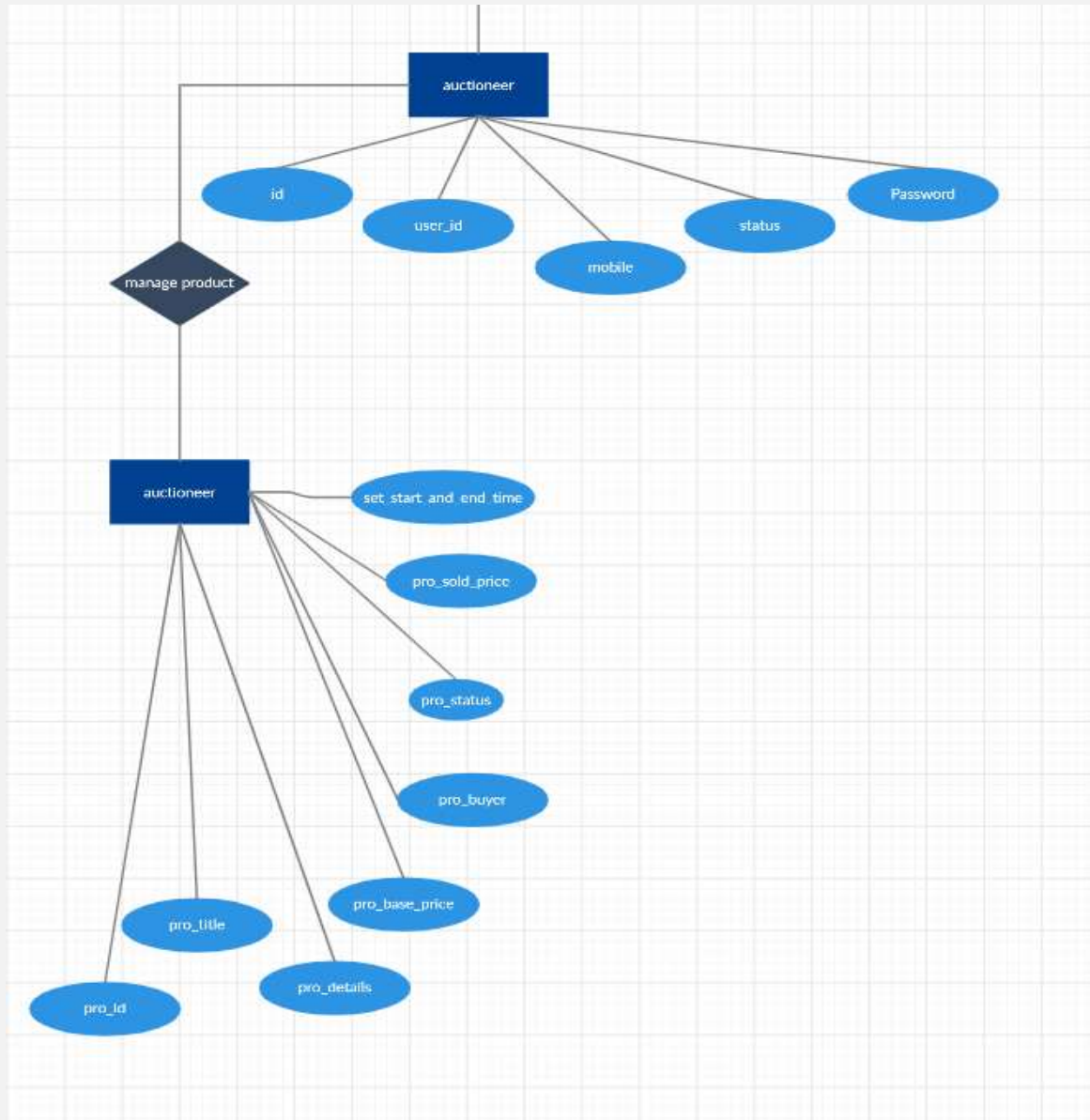
A BRIEF OVERVIEW OF THE PROJECT CONT. ER DIAGRAM (BIDDER) CONT.



A BRIEF OVERVIEW OF THE PROJECT CONT. ER DIAGRAM (ADMIN) CONT.



A BRIEF OVERVIEW OF THE PROJECT CONT. ER DIAGRAM (AUCTIONEER) CONT.



A BRIEF OVERVIEW OF THE PROJECT CONT.

--FRONT END TECHNOLOGIES--

UI framework:

A good website should have an eye-catching design and very intuitive User Interface. Design and ease of functionality makes a website popular. Keeping that in mind we've chosen most popular UI framework Twitter Bootstrap 4. We thought it'd be easy to work with this framework because of its simplicity and vast community.

Front-end JavaScript framework:

There are three most popular JavaScript frameworks : Vue.js, Angular.js, and React. We chose vue.js among them. To chose our framework we gave importance on two of points.

A BRIEF OVERVIEW OF THE PROJECT CONT.

--FRONT END TECHNOLOGIES--

WHY WE CHOSE VUE.JS

Every framework has its pros and cons. To chose our framework we gave importance on couple of points – Learning curve, ease of usability, page loading speed, memory usage and compatibility. Among the Vue.js, Angular.js and Reactjs, vue.js is the easiest to learn , has a very high learning curve and very beginner friendly. It was our main point of interest since we are new to javascript framework and expecting to complete the project within the time. Also we'll make a single page application which will give users a fantastic user experience because there'll be no page reload like convectional php coded website has. Also Vue.js is very lightweight compared to other two which makes it faster to load on the client side. A comparison chart of vue, angular and react is given below.

A BRIEF OVERVIEW OF THE PROJECT CONT.

--FRONT END TECHNOLOGIES--

WHY WE CHOSE VUE.JS

Vue.js is the absolute winner in this case. As mentioned above, The notably small size of this framework helps a great deal when it comes to startup time. Source: Logrocket.

Also vue.js performs better in memory allocation than other two frameworks. Source: Logrocket.

Name	angular-v8.0.1-keyed	react-v16.8.6-keyed	vue-v2.6.2-keyed
ready memory Memory usage after page load.	4.8 ± 0.0 (2.22)	2.2 ± 0.0 (1.03)	2.2 ± 0.1 (1.00)
run memory Memory usage after adding 1000 rows.	9.2 ± 0.0 (1.34)	6.9 ± 0.0 (1.00)	7.0 ± 0.0 (1.03)
update each 10th row for 1k rows (5 cycles) Memory usage after clicking update every 10th row 5 times	9.5 ± 0.0 (1.28)	8.0 ± 0.0 (1.08)	7.4 ± 0.0 (1.00)
replace 1k rows (5 cycles) Memory usage after clicking create 1000 rows 5 times	9.8 ± 0.1 (1.29)	8.8 ± 0.0 (1.15)	7.6 ± 0.0 (1.00)
creating/clearing 1k rows (5 cycles) Memory usage after creating and clearing 1000 rows 5 times	6.5 ± 0.0 (1.75)	4.6 ± 0.0 (1.25)	3.7 ± 0.0 (1.00)
slowdown geometric mean	1.54	1.10	1.01

Name	angular-v8.0.1-keyed	react-v16.8.6-keyed	vue-v2.6.2-keyed
consistently interactive a pessimistic TTI - when the CPU and network are both definitely very idle. (no more CPU tasks over 50ms)	2,703.7 ± 0.4 (1.24)	2,353.2 ± 0.5 (1.08)	2,177.5 ± 0.3 (1.00)
script bootup time the total ms required to parse/compile/evaluate all the page's scripts	52.0 ± 70.5 (3.25)	16.0 ± 0.0 (1.00)	16.0 ± 0.0 (1.00)
total kilobyte weight network transfer cost (post-compression) of all the resources loaded into the page.	295.5 ± 0.0 (1.40)	260.7 ± 0.0 (1.24)	211.0 ± 0.0 (1.00)
slowdown geometric mean	1.78	1.10	1.00

A BRIEF OVERVIEW OF THE PROJECT CONT.

--FRONT END TECHNOLOGIES--

WHAT IS NUXT.JS

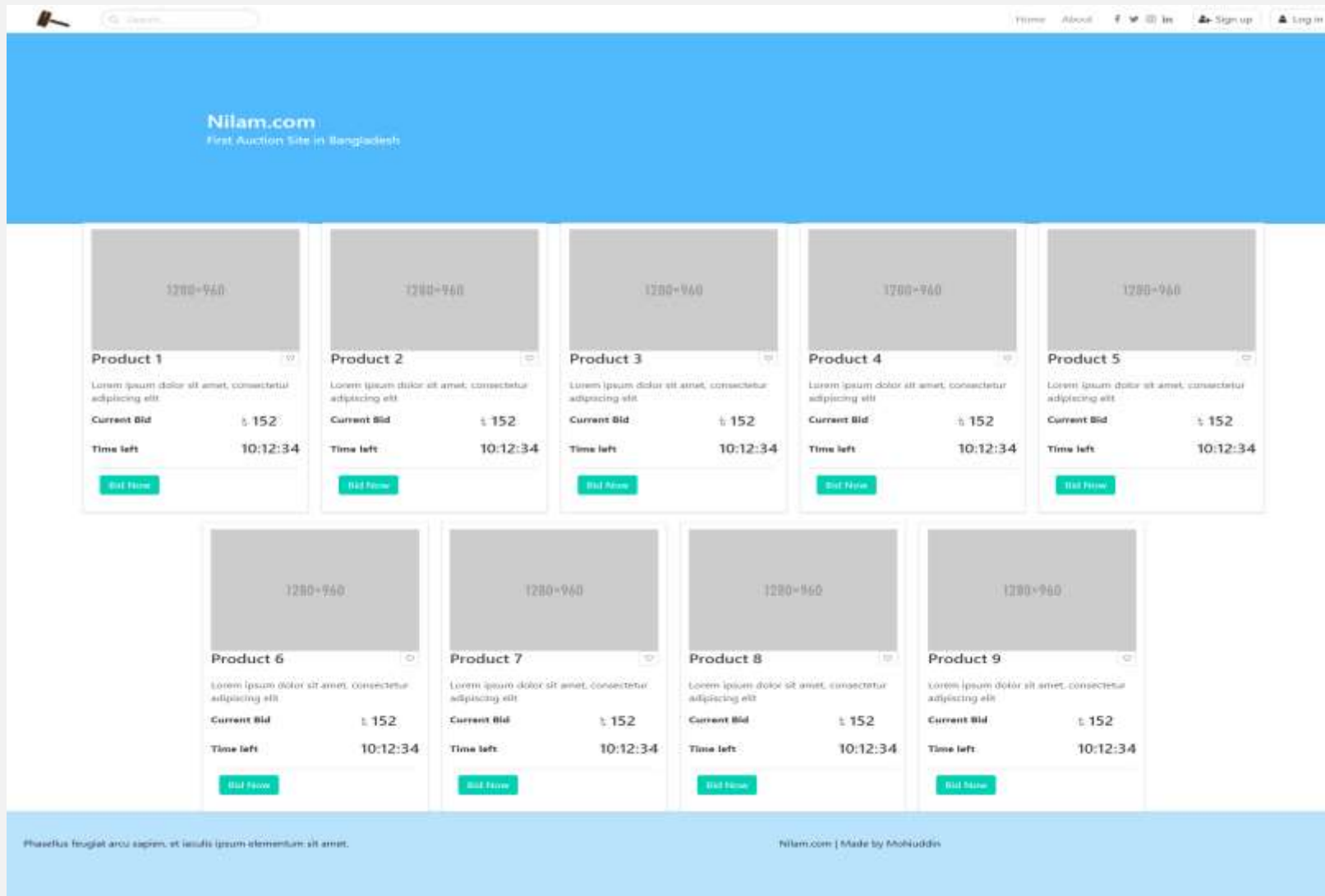
NUXT.JS is a framework or state management tool for vue.js. It's a framework for framework. We'll use NUXT.JS throughout the project because it makes vue.js folder structure better and maintainable. Also it'll save a lot of works like we don't have to import any vue.js router separately, the Nuxt.js will auto inject the router.

In single page application it's extremely difficult to maintain SEO. But Nuxt is shipped with SEO out of the box. It'll greatly speed up our frontend development process.

A BRIEF OVERVIEW OF THE PROJECT CONT.

--WHAT WE'VE MADE --

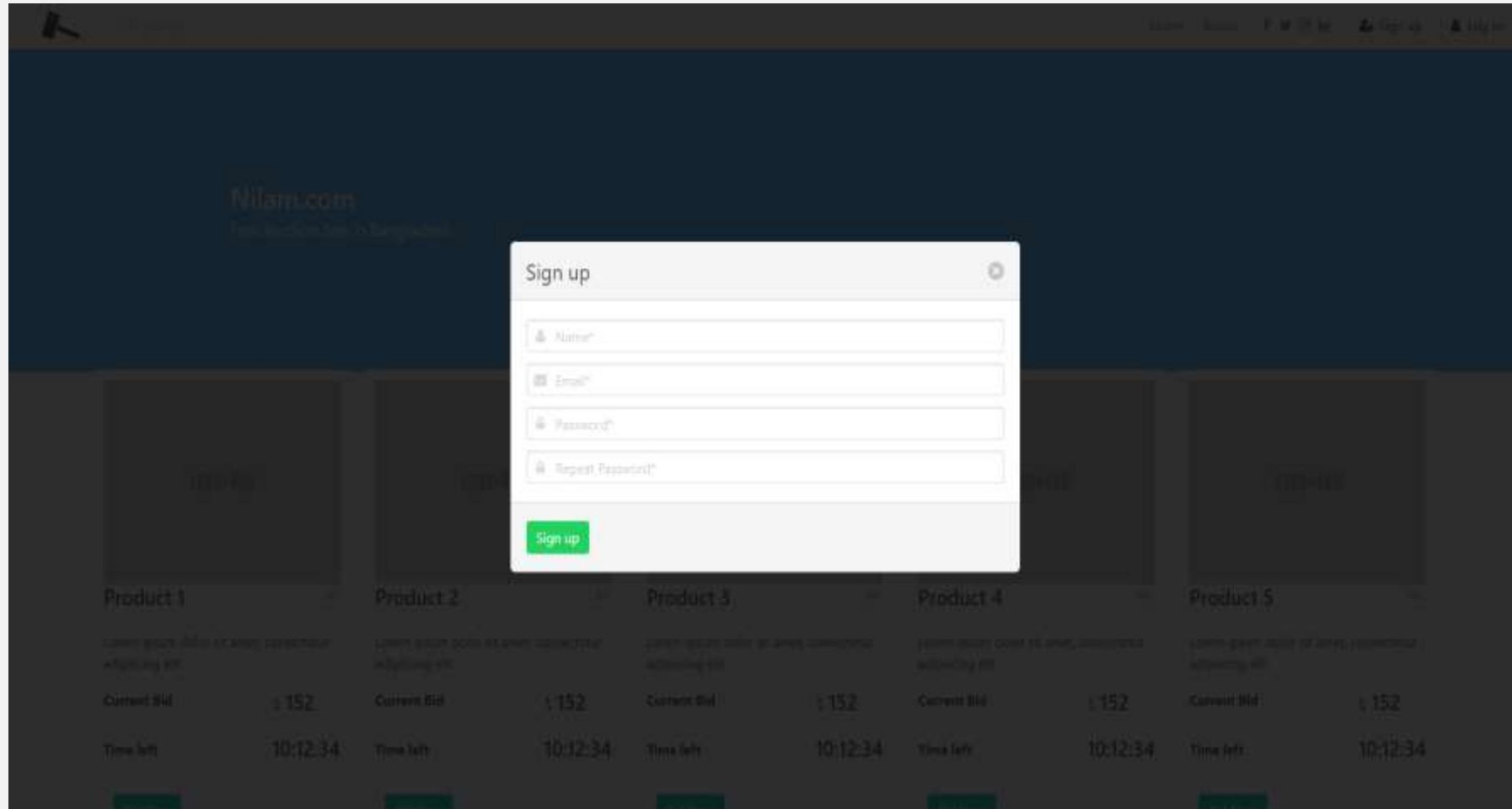
A QUICK LOOK



A BRIEF OVERVIEW OF THE PROJECT CONT.

--WHAT WE'VE MADE --

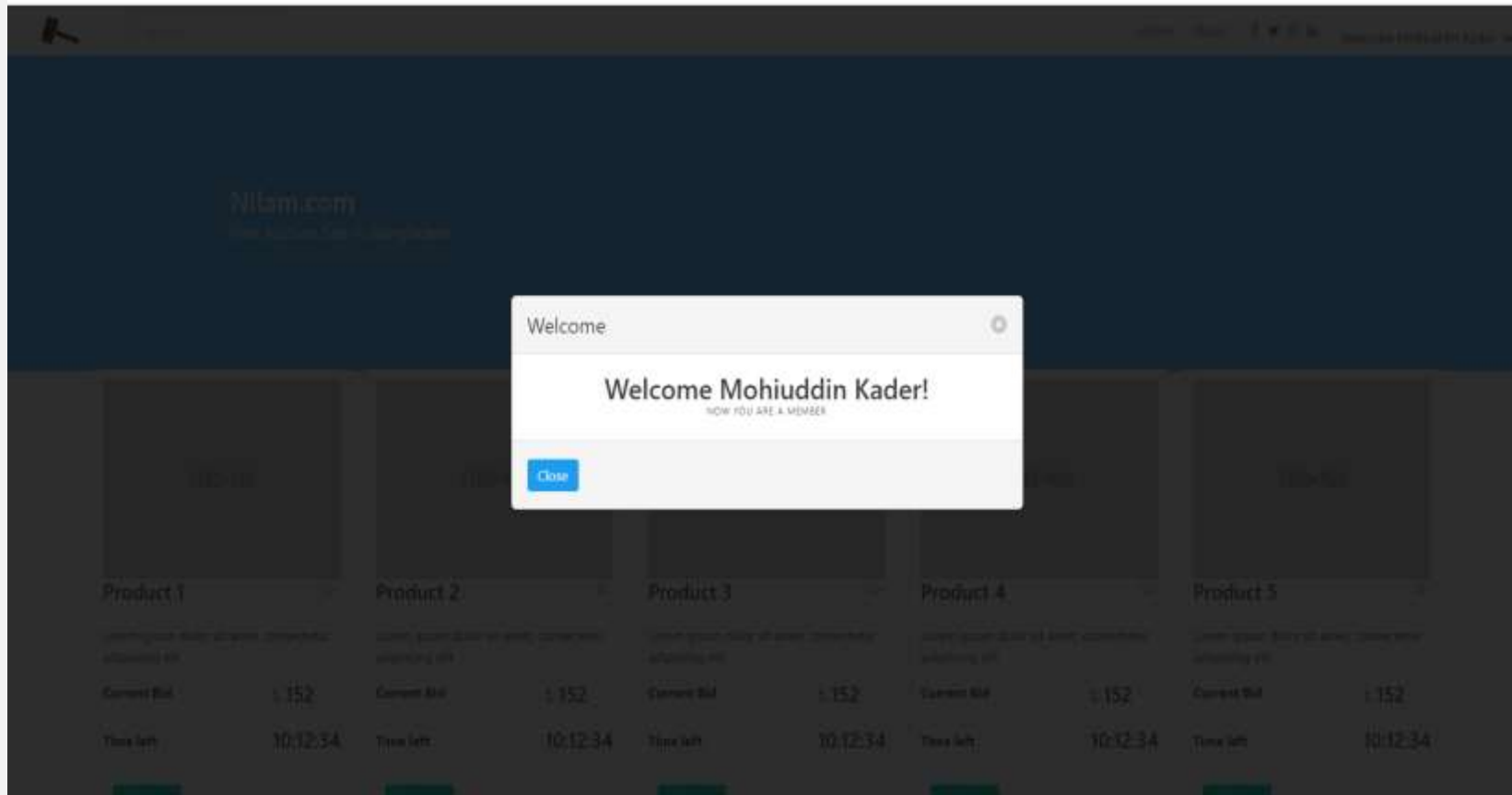
A QUICK LOOK



A BRIEF OVERVIEW OF THE PROJECT CONT.

--WHAT WE'VE MADE --

A QUICK LOOK



A BRIEF OVERVIEW OF THE PROJECT CONT.

--BACK END TECHNOLOGIES--

WHY WE CHOSE LARAVEL

For the backend and creating API we'll use Laravel. This is because there's only full featured and easiest framework and it's Laravel. Building API with Laravel is fun. Laravel ships with API package out of the box. Also the folder structure is very easy to maintain and understand.

There are also a lot of open source package for Laravel. For example – Laravel Nova is a Laravel official admin panel. No, other php framework has something like this. Laravel passport uses OAuth2 to authenticate users and communicate through API. Also Laravel ORM makes the query very easy. Now, we just make migration and run the migrations to create a table in the database.

For These reasons we chose Laravel as our backend framework of choice.

PROBLEMS

After successfully competing front end and backend, we have to focus on a unique problem which is latency problem. To explain it further, we can assume that there are two users, one bidding from Bangladesh and the other person is bidding from USA. Let's say the server is nearer to Bangladesh. So, it's obvious that the user from Bangladesh has low latency than the user located in USA. For a normal ecommerce website it wouldn't be a problem. Since it's going to be an auction website so, every response from user is important. For the latency issue the user located in USA will be penalized even if he/she bids for higher price. So this is the problem we have to solve. At this moment we don't know how to solve this problem but after implementing the frontend and backend it'll be our first priority.

THE DEMAND OF THIS PROJECT

As we know that the idea of online auction platform is not new but in my country there's no online auction platform. We have "bikroy.com" which is the largest online buying and selling platform but there's no full blown online auction platform in Bangladesh. Even the government auctions are held in various places all over in Bangladesh. So, we think if we can make a user friendly auction platform it'll definitely gain a huge popularity.

CONCLUSION

We are developing this online auction platform for our senior level design. We are learning two best frontend and server side frameworks along the way. Since, it's new for us we'll not implement a vast functionalities. But the major functionalities will be there. Once we'll complete the project we can then extend the functionalities according to the needs. During Covid-19 pandemic it has been proved that ecommerce is not optional , sometimes it's necessary. So, we are hoping that this project will be successful in our local digital market place.

THANK YOU !