

BOGAZICI UNIVERSITY
DEPARTMENT OF COMPUTER
ENGINEERING
Project Development in Software Engineering

**MILESTONE REPORT 2
(Group 1)**

Emirhan Sarac
Ufuk Yilmaz
Abdullah Coskun
Eray Kurtulus
Ilker Ozkan

Mete Han Kurt
Yagmur Ceren Dardagan
Mehmet Altay Ince
Irem Ustunboyacioglu
Omer F. Toptas



Contents

1 Executive Summary	6
1.1 Description	6
1.2 Project Status	6
1.3 Future Goals	6
2 List and Status of Deliverables	7
3 Evaluation of Status of Deliverables and its impact on project	8
3.1 Backend	8
3.2 Frontend	8
3.3 Android	8
4 Summary of Team Member's Work	11
4.1 Backend	11
4.2 Frontend	13
4.3 Android	15
5 Communication Plan	18
6 Requirements	19
7 Project Plan	27
8 API Documentation	28
8.1 POST trader register	28
8.1.1 Headers	28
8.1.2 Body	28
8.2 POST basic register	28
8.2.1 Headers	28
8.2.2 Body	28
8.3 POST login	29
8.3.1 Headers	29
8.3.2 Body	29
8.4 GET auto login/profile	29
8.4.1 Headers	29
8.5 GET User Retrieve	30
8.5.1 Headers	30

8.6	PUT User Update	30
8.6.1	Headers	30
8.6.2	Body	30
8.7	PUT User Password Change	30
8.7.1	Headers	30
8.7.2	Body	31
8.8	POST search	31
8.8.1	Headers	31
8.8.2	Body	31
8.9	POST Follow Someone With ID	31
8.9.1	Headers	31
8.9.2	Body	32
8.10	GET List Follower Of Current User	32
8.10.1	Headers	32
8.11	GET List Follower Of Given User	32
8.11.1	Headers	32
8.11.2	Body	32
8.12	GET List Following Of Current User	33
8.12.1	Headers	33
8.13	GET List Following Of Given User	33
8.13.1	Headers	33
8.13.2	Body	33
8.14	DELETE Unfollow Someone	33
8.14.1	Headers	33
8.14.2	Body	34
8.15	GET Currency List	34
8.16	GET Crypto Currency List	34
8.17	GET Metal Currency List	34
8.18	GET Stock List	34
8.19	GET Etf List	34
8.20	GET Trace Indices List	34
8.21	GET Currency Last Month	35
8.22	GET Currency	35
8.23	GET currency convert	35
8.23.1	Headers	35
8.23.2	Body	35
8.24	GET Metal Currency	35
8.25	GET Crypto Currency	35

8.26	GET Crypto Currency Last Month	36
8.27	GET Stock Currency	36
8.28	GET Trace Indices Currency	36
8.29	GET Gainers in Trace Indices	36
8.30	GET Last Month of Stock	36
8.30.1	Headers	36
8.30.2	Body	36
8.31	POST forgot password	37
8.31.1	Headers	37
8.31.2	Body	37
8.32	PUT User Password Change forgot password	37
8.32.1	Headers	37
8.32.2	Body	37
8.33	PUT User Upgrade	37
8.33.1	Headers	38
8.34	PUT user downgrade	38
8.34.1	Headers	38
8.35	POST Create Article	38
8.35.1	Headers	38
8.35.2	Body	38
8.36	PUT Update Article	39
8.36.1	Headers	39
8.36.2	Body	39
8.37	GET List Article	39
8.37.1	Headers	39
8.38	POST List Public Articles	39
8.38.1	Headers	40
8.39	POST List Article With User ID	40
8.39.1	Headers	40
8.40	DEL Delete Article	40
8.40.1	Headers	40
8.40.2	Body	40
8.41	POST Wallet Create	40
8.41.1	Headers	41
8.41.2	Body	41
8.42	POST Wallet Retrieve	41
8.42.1	Headers	41
8.42.2	Body	41

8.43	PUT Send USD to Wallet	41
8.43.1	Headers	41
8.43.2	Body	41
8.44	PUT Take Equipment	42
8.44.1	Headers	42
8.44.2	Body	42
8.45	PUT Sell Equipment	42
8.45.1	Headers	42
8.45.2	Body	42
8.46	POST Create Comment	43
8.46.1	Headers	43
8.46.2	Body	43
9	Evaluation of tools and managing the project	43
9.1	Tracking Tools(GitHub)	43
9.1.1	Git Feature of Github	43
9.1.2	Issues	44
9.1.3	Pull Requests	44
9.1.4	Project section of the Github	44
9.1.5	Wiki	44
9.2	Backend	44
9.2.1	Python Django	44
9.2.2	Postman	45
9.2.3	Docker	45
9.2.4	PyCharm	45
9.3	Web	46
9.3.1	ReactJS	46
9.3.2	Material-ui library	46
9.3.3	Axios	46
9.3.4	history	46
9.3.5	react-location-picker	46
9.3.6	react-router-dom	47
9.3.7	ESLint	47
9.3.8	Webstorm IDE	47
9.3.9	Visual Studio Code	47
9.4	Android	48
9.4.1	Kotlin for Android	48
9.4.2	Retrofit	48

9.4.3	IDE and Simulation Preferences	48
10	UI Design	49
10.1	Web	49
10.2	Android	53
11	User scenarios	63
11.1	Web	63
11.2	Android	65

1 Executive Summary

1.1 Description

Our Project, TradersPlatform, is a social platform for people who can be considered as a trader. The platform enables the users to trade and follow a broad variety of financial vehicles including indices, stocks, ETFs, bonds, commodities, currencies, funds, bonds, and cryptocurrencies. The platform will support various interactions, such as sharing ideas as an article, commenting and rating ideas of other users, commenting about trading equipment. Users will be able to follow other users, and trading equipment and also set alerts for certain levels of trading equipment.

1.2 Project Status

Most of the functionalities in the backend part is almost complete. Register, session control, log out, login, profile page, user follow list retrieval, follow, editing credentials, private-public profile, search, upgrade to trader or down-grade to basic, publish article, view article, wallet, sell-buy equipment, view current assets have been completed both in backend and Android part. Android part has completed almost all functionalities. On contrary, web part has fallen behind in the functionality, but the design of web is progressing coherently with functionality part but there is much to do in frontend part.

1.3 Future Goals

For the upcoming final milestone, we are planning to complete remaining parts of articles, events, portfolio, and notification on Android side. Frontend part will work harder to reach Android part and complete determined functionalities until final Milestone. We will show history graph for each trading equipment. To do that we will set chorono to retrieve daily data of each equipment and we will show last month on graph. We will set rendezvous acceptance system for follow requests. Moreover, both android and frontend part will implement profile picture part of profiles. We have experienced a lot until milestone 2 and there is no much time to complete. However, things will progress faster since we know better what to do and how to do now.

2 List and Status of Deliverables

Delivered	Name	Delivery Date
✓	Updated Communication Plan	Oct 1, 19
✓	Revised Requirements	Oct 1, 19
✓	Revised User Stories and Mockups	Oct 1, 19
✓	Updated Project Plan	Oct 18, 19
Backend		
✓	User Sign Up and Login Endpoint	Oct 15, 19
✓	User Profile Endpoint	Oct 22, 19
✓	User Profile Update Endpoint	Oct 22, 19
✓	User Follow Endpoint	Oct 22, 19
✓	User Search By Username Endpoint	Oct 22, 19
✓	User Password Update Endpoint	Oct 22, 19
✓	Trading Equipment Endpoints	Nov 15, 19
✓	Article Endpoints	Nov 15, 19
✓	Article Comment Endpoints	Nov 22, 19
✓	Wallet Endpoints	Nov 22, 19
✓	Event Endpoints	Nov 28, 19
✓	Article Like Endpoints	Nov 28, 19
Frontend		
✓	Homepage	Oct 15, 19
✓	User Sign Up and Login View	Oct 15, 19
✓	User Profile View	Oct 22, 19
✓	User Edit Profile View	Nov 25, 19
✓	Article Views (Create, List)	Nov 25, 19
✓	User Wallet View	Nov 25, 19
✓	User Portfolio View	Nov 25, 19
✓	Market Section View	Nov 25, 19
Android		
✓	User Sign Up and Login View	Oct 15, 19
✓	User Profile View	Oct 22, 19
✓	User Profile Update View	Oct 22, 19
✓	User Follow Button	Oct 22, 19
✓	User Search By Username View	Oct 22, 19
✓	User Password Update View	Oct 22, 19
✓	Follow List View	Oct 22, 19
✓	Article Views (Create, List)	Nov 25, 19
✓	User Upgrade/Downgrade Views	Nov 25, 19
✓	User Private Profile View	Nov 25, 19
✓	Trading Equipment Buy/Sell View	Nov 25, 19
✓	User Wallet View	Nov 25, 19

3 Evaluation of Status of Deliverables and its impact on project

3.1 Backend

w Since Milestone 1, we have implemented almost every functionality in the project requirements except the annotation and semantic search feature. These functionalities include forget password feature(1.1.1.3.2), every feature about the trading equipments(this include fetching the data from an external API and writing it to our database 1.2.4.1.6 and 1.2.5), portfolio and wallet operations(1.1.1.4.2 and 1.2.4.1.5) and also the article features(public and private articles, like and comment an article etc. 1.2.4.1.2). In conclusion, for the backend part we believe that we have implemented more than sufficient number of features before the Milestone 2 and we will complete the remaining few features before the final Milestone.

3.2 Frontend

We are very close to the plan that we planned for the second milestone during the semester. From the milestone 1 until now, we have implemented pages that are the edit profile page that users can edit their profile information, user profile page that enables to users see the profile information of his/her profile information and articles written by her/him, articles listing page where the articles of the users are listed, article page where a particular articled is shown and sections that enable the user to comment on the articles of other user and follow the other users. We also implemented static version of the traders wallet and market pages and their services but we cannot link this service with pages because of shortage of time. Even though we are a little behind the schedule, we think we will reach our goals for final milestone.

3.3 Android

For Milestone 2, we have focused on implementing the core features and the actions of a user as well as fixing the errors that we have faced in Milestone 1. In Milestone 1, our sign up was working but our application was not able to sign up via Google and to take the location of the user (1.1.1.1.1.3 and 1.1.1.1.2), this is fixed in Milestone 2. And also, the user now can log in with his/her Google account too(1.1.1.2.2).

In addition to login and sign up enhancements, we improved the user profile page by enabling the buttons for displaying the following users and followers. And also, we added the private/public user feature for users where they can change their preference any time from the setting section on the top bar (1.1.1.4.1). In Milestone 1, the user only was able to edit the name, surname and bio parts about itself and change the password. In addition to these features, In Milestone 2, the user can change its location, change the preference of public/private(as mentioned above) and change the preference of basic/trader (upgrade to trader user via providing IBAN and downgrading to basic) in settings section. Furthermore, the user can now follow/unfollow another user, see their followers and followings(1.1.1.5.7). For the follow/unfollow feature, we added the private/public context for a user and now the user has to follow to see the private accounts(1.1.1.4.1.1).

For the search part, our search was able to search a user with his/her email only in Milestone 1. As an improvement, now a user can search another user with his/her username, first name, last name or part of their names via search section of the Khaj-it app(enhancement for the requirement 1.2.6.1.1).

In Milestone 2, we also implemented entirely new features too, such as publishing an article and listing public articles. The user can publish an article via providing its title, content and the preference of private/ public of the article. And also, the user can see the public articles published by other users on their home feed page. In addition to users, we enabled the guest user option and guest users can also see the content of the public articles published by the users of the application(1.1.4 partly).

Lastly, we enabled the trading equipment section of the application. In this section, the user can able to see the current price of the certain trading equipments which are "Currencies"(EUR, GBP,TRY), "Crypto-currencies"(BTC, ETH, LTC), "Commodities" (Gold(AUX), Silver(XAG), "Stocks" (GOOGL, AAPL, GM), "Trade Indices"(DJI, IXIC, INX) and "ETFs"(SPY, IVV, VTI)respectively(1.2.5.1) and the user can click on each equipment to see further information. However, for now, the user can only see the current prices on each equipment's page and the graphics and comments parts are added statically(1.2.5.2.4). For the trader users, the wallet feature is added, the trader user can load money to his/her wallet to buy trading equipments(1.2.1). The trader user can also buy/sell trading equipments via going into the desired trading equipment's page and use the buy and sell buttons to specify the amount with the pop up that comes after clicking the button(1.1.3.2).

In conclusion, we have fixed the bugs in Milestone 1, improved the functionalities of the features implemented before and also implemented entirely new features as mentioned above in Milestone 2. For the final demo, we will extend the features that we have implemented such as adding graphic and comment functionalities for trading equipment, improving the article feed in a way that a user only sees the articles that are published by the following users and enabling the article list button on profile pages and improving the search section to search articles, trading equipment, and events respectively. In addition to these improvements, we will work on implementing the rest of the features that we stated in our requirements.

4 Summary of Team Member's Work

4.1 Backend

Team Members	Contributions
Ömer Faruk Toptas	<p>First of all I have joined in every weekly meeting and I have took an active part in decision-making phase of our group meetings and also participated as a notetaker in some of our weekly group meetings. Additionally since Milestone 1, I have implemented the event (economic calendar) feature in the backend part of our project. I tried to regularly create issues about the current topics and I have tried to take an action to solve the currently opened issues. Reviewed the pull requests created by other teammates and tried to give constructive feedbacks about them.</p>
Abdullah Coşkun	<p>I attended all of the meetings both with entire of the group and just with backend. After Milestone 1 I have implemented forgot password mechanism, all of the equipment (both finding an external API and writing our database), portfolio and wallet operations. I publish both postman collection of mine and documentation of that collection with front end and android teams. I tried to explain that requests to that teams with documentation and additional meetings. Besides all of them I started to implement a system to execute our scheduled job but in postgresql an error occurred so I started to make that implementation with docker file. At last, I transferred API Documentation to milestone report and update Evaluation of Tools.</p>

Team Members	Contributions
İrem Üstünboyacıoğlu	In general, I took part in the decision-making phase of our group meetings and I participated in weekly actions. Since Milestone 1, I have implemented Article Endpoints, Comment Endpoints and Like Endpoints. I have updated Postman link for endpoints and shared it with other teams. I regularly updated issues, created and reviewed pull-requests. I have updated password security requirements according to our implementation in Milestone 1. I updated Project Plan by using ProjectLibre tool according to the feedback that we received from our customer. Finally, I added the Updated Project Plan, List and Status of Deliverables to Milestone Report 2.
İlker Özkan	Contributions

4.2 Frontend

Team Members	Contributions
Mete Han Kurt	<p>As a meeting note taker, I tried to attend all of the meetings. We also held extra meetings with the Frontend team. In general, I have done my duties as they should, although we need to produce different solutions for some functions. After the first milestone, I made changes in the following / following sections on the user profile page and added a search bar to the headers to functionalize in following days. In addition, I created a wallet page, an article creation page, and a reset password page. As the Frontend team, although everyone has a task on a particular page, we have progressed through each other's tasks, which means that we all have mastery of the code on each page. I think that I did my best to contribute to the project. In addition, in the milestone report 2, I wrote the Evaluation of Tools and Managing the Project in Frontend, and revised the requirements.</p>
Mehmet Altay İnce	<p>I tried to attend most of the general meetings and front-end meetings. After the first milestone we had a job sharing. My parts were : implementing general and individual article page, market page in which the user can follow/unfollow equipments, user profiles page subsections and search bar's auto completion functionality. Other than that I have revised merge requests and help other friends if needed.</p>

Team Members	Contributions
Ufuk Yilmaz	<p>From the first milestone, I participated in all of the group meetings (except the last one that is after the milestone) and front-end meetings and presented my ideas about the progress of the project. I played active role on creating the project structure of Frontend application. I implemented the pages that Edit Profile page, User Profile Page, Articles Listing Page, an Article Page with other teammates in the front-end team. I implemented the logics that enable the user to follow other users, to write comments on articles, to edit his/her profile. I also wrote service for taking currency values from backend but we have no more time to show it in the page. While implementing these logics, I sent feedback to back-end. e.g. Our frontend application cannot send a get request to backend, when it includes body. I deployed the front-end application to the Amazon Web Server. In the milestone report, I filled the contents of the sections that the front-end part of the evaluation of status of deliverables, and user scenario.</p>

4.3 Android

Team Members	Contributions
Emirhan Saraç	<p>First of all as a communicator, I have organized meetings and checked progress of other parts. I have been in active communication with all of team members. I have attended all meetings including group and android meetings. I have completed and improved design of Search Activity. I have resolved some bugs in the my profile page activity. I have implemented other user profile pages both design and implementation part. I have added upgrade to trader and downgrade to basic functionality. Moreover, I have completed public-private user features, that also includes other profile pages and how will they look like, follow-unfollow feature, and follower-following list pages. In the follower-following pages user can click to one of the profiles in the list to visit their profile pages. I have implemented current asset value, current balance, and current load features in wallet fragment. Besides from implementations and designs, I have collaborated with my team to handle some handy tasks, such as fragment transaction completed by Ceren, and integrated completed tasks. I have also worked on resolving conflicts due to huge pull requests. Finally, I wrote Executive Summary and Requirement Part in the Milestone 2(Also updated requirements).</p>

Team Members	Contributions
Yağmur Ceren Dardağan	<p>In general, I attended all the team meetings but one and all the android meetings. After Milestone 1, I have fixed the bugs in registration and login pages and add trader registration. And also, I enabled the guest feature and the home activity for the guest users. I fixed the structure of the home page that the user sees after login and re-structured the fragments in general for the sake of code hierarchy. Besides, I arranged all the transactions between fragment and wrote an interface so that all the activities and fragments can use it. After implementing the interface, I also explained to my friends so that each transaction between activities and fragments can be handled in the same way. I implemented a page for writing articles with public or private preference. To show published articles, I wrote a general list article fragment that shows only public articles to guest users, the articles that are published by following users to users, the articles that are published by the user itself, the articles that are published by another user via taking different parameters. Finally, I wrote the android part of "Evaluation of Status of Deliverables and its impact on project" section and the user scenarios on Milestone Report 2.</p>

Team Members	Contributions
Eray Kurtulus	<p>I have attended most of the meetings and contributed to the planning of the project and sharing of the project workload. Since the first milestone report, I have revised the app and updated the Google Sign-In and Location functionalities to work with the new API. Then, I have implemented the equipments fragment and created equipment models to request current equipment values from the API. After that, I have implemented the equipment details page, which shows details about the selected equipment. Users can also buy and sell equipments on this equipment details page. I have also implemented the money depositing functionality. Users can now deposit any amount of money in their wallet and see the current balance of their wallet. I have also made some small improvements on the Android UI. Finally, on this milestone report, I have added the Android UI screenshots and revised the "Evaluation of tools and managing the project" section.</p>

5 Communication Plan

Audience	Purpose	Delivery Frequency	Place	Delivery Method	Communicator
All team members	Discussion about instant issues	All the time	Online	Slack, GitHub, WhatsApp, Doodle	None
All team members	Evaluation and weekly plan	Every Tuesday 17.00 - 18.00	BM Building	Face-to-face	Emirhan Saraç
Available team members	Performing the planned job together	Every Tuesday 18.00 - 19.00	BM Building	Face-to-face	Emirhan Saraç
All team members	In case Tuesday meeting is cancelled	Every Wednesday 17.00 - 18.00	BM Building	Face-to-face	Emirhan Saraç
All team members	Feedback about progress of tasks individually	Every Friday night	Online	Through WhatsApp	Emirhan Saraç
Available members	Help and complete tasks that are not going to complete on-time	Every Saturday 12.00 - 18.00	BM Lounge	Face-to-face	None

Figure 1: Communication Plan

6 Requirements

Glossary

- **Annotation:** A note by way of explanation or comment added to the text and article.
- **Article:** Documents for users of traders platform about trading that helping users to reach knowledge and share with other users.
- **Basic user:** Registered user authorized to write comments and articles.
- **Comment:** Basic and traders users' ideas about relevant investment or the stock market.
- **Economic Event:** Important economic developments such as Fed Interest Rate, GDP of countries, ECB Interest Rate, and more.
- **Events:** News or happenings about stock, economy and trade.
- **Follow:** An act using for a user can reach others article, investments, comments and share their owns with others.
- **Guests:** Users who are only authorized to read reviews and view trading equipment.
- **Investment:** Buying and selling trading equipment(indices, stocks, ETFs, commodities, currencies, funds, bonds, and cryptocurrencies) in order to make a profit.
- **Log in:** When a user logs in to the system with the information they provided signing up.
- **Password:** String of characters used for user authentication to prove identity.
- **Prediction Success Ratio:** A scale that shows what percent of user's predictions were successful.
- **Profile Page:** The page providing information about prediction specified trading equipment of users on certain assets and success ratio on these predictions.

- **Portfolio:** A collection of trading equipments that are owned by the user.
- **Semantic search:** Semantic search seeks to improve search accuracy by understanding the users' intent and the contextual meaning of terms as they appear in the searchable dataspace, whether on the Web or within a closed system, to generate more relevant results.
- **Significance Level:** Marks for how much reliable and important events and news.
- **Tag:** A categorical designation that attaches to various items.
- **Trading user:** A person who can post, comment, like and invest in any trading equipment
- **Trading equipment:** Bills of exchange, commodities, crypto coins, stock market shares etc.
- **Username:** The name that identifies user account to the system.
- **1. Functional Requirements**
 - **1.1. User Requirements**
 - * **1.1.1. Common User Requirements**
 - **1.1.1.1. Sign Up**
 - **1.1.1.1.1.** Users shall sign up by following below steps.
 - **1.1.1.1.1.1.** Users shall sign up by providing their username, password, name, surname, e-mail address, and location.
 - **1.1.1.1.1.1.1.** Usernames and e-mail addresses shall be unique.
 - **1.1.1.1.1.1.2.** User passwords shall be in the specified form.
 - **1.1.1.1.1.1.3.** User location shall be specified via Google Maps.
 - **1.1.1.1.1.2.** Users shall verify their accounts by following steps in the mail sent to the user e-mail address.

- **1.1.1.1.2.** Users shall sign up via their Google account.
- **1.1.1.2. Sign In**
 - **1.1.1.2.1.** Users shall sign in by providing their e-mail and password.
 - **1.1.1.2.2.** Users shall sign in via their Google account.
- **1.1.1.3. Password Change**
 - **1.1.1.3.1.** Reset Password
 - **1.1.1.3.1.1.** Users shall be able to reset their password by requesting “Reset Password” operation at profile page.
 - **1.1.1.3.1.2.** Users should provide old password and new password they desire while logged in.
 - **1.1.1.3.2.** Forget Password
 - **1.1.1.3.2.1.** Users shall be able to request “Forget Password?” operation when users forget their password at sign in page.
 - **1.1.1.3.2.2.** Users should provide e-mail address.
 - **1.1.1.3.2.3.** Users shall get e-mail that contains randomly generated new password from system.
- **1.1.1.4. Profile**
 - **1.1.1.4.1.** Users shall have a profile either private or public.
 - **1.1.1.4.1.1.** Users with a private profile shall be followed in order to see the content of the private user.
 - **1.1.1.4.2.** Users shall have at least one **portfolio**.
 - **1.1.1.4.2.1.** Users shall be able to rename their portfolio.
 - **1.1.1.4.2.2.** Users shall be able to add any trading equipment to their portfolio.
 - **1.1.1.4.3.** Users each prediction success rate should be visible on their profile page.
- **1.1.1.5. User actions**
 - **1.1.1.5.1.** Users shall be able to share their portfolio on their profile page.

- **1.1.1.5.2.** Users shall be able to follow shared portfolios.
- **1.1.1.5.3.** Users shall be able to chase economic **events** and filter those events by considering the significance level and country base.
- **1.1.1.5.4.** Users shall have a “Profit/Loss” section that can show profit/loss amount in terms of currency they choose.
- **1.1.1.5.5.** Users shall be able to share their ideas(predictions) on any trading equipment.
 - **1.1.1.5.5.1.** Users shall be able to comment about predictions made by other users.
- **1.1.1.5.6.** Users shall be able to comment about any trading equipment.
- **1.1.1.5.7.** Users shall be able to follow other users.
- **1.1.1.5.8.** Users shall be able to send private messages to other users.
- **1.1.1.5.9.** Users shall be able to set alerts for certain trading equipment.
 - **1.1.1.5.9.1.** Users shall be able to set alerts for above or below of specific value on the trading equipment.
 - **1.1.1.5.9.2.** Users shall be able to set alerts for increase or decrease of specific change on the trading equipment.
- **1.1.1.5.10.** Users shall be able to see their search history.
- **1.1.1.5.11.** Users shall be able to send private private message to other users.
- **1.1.1.5.12.** Users shall be able to publish article.
 - **1.1.1.5.12.1.** Users shall be able to write a comment to article.
 - **1.1.1.5.12.2.** Users shall be able to like and dislike the articles.

* **1.1.2. Basic Users**

- **1.1.2.1.** Basic users shall be able to see their profit/loss amount in terms of the currency they choose by manually entering their investments.

* **1.1.3. Trading Users**

- **1.1.3.1.** Trading users should be able to see their profit/loss amount in terms of the currency they choose by both manually entering their investments and using the investments they made.
- **1.1.3.2.** Trading users shall have “My Investment” section where they can invest in any trading equipment, make a buy order for a specified rate, and set stop/loss limits.
- **1.1.3.3.** Trading users shall provide financial services corporation name and regarding IBAN number, name and surname of card owner, expiration date of the credit card and CCV number while signing up.

* **1.1.4. Guests**

- **1.1.4.1** Guests shall be able to view the price of trading equipment and read user comments about trading equipment.
- **1.1.4.2.** Guests shall be able to search, which includes semantic searching, for users and trading equipment.

* **1.1.5. Administrators**

- **1.1.5.1.** Admins shall be able to ban users for inconvenient behaviors.

- **1.2. System Requirements**

* **1.2.1. Transaction**

- **1.2.1.1.** The system shall support transaction from users' banking account to its account balance.

* **1.2.2. Notification**

- **1.2.2.1.** The system shall be able to notice if there is a private message from other users.
- **1.2.2.2.** The system shall be able to notify about following trading equipment.
- **1.2.2.3.** The system shall be able to recommend articles and trading equipment to users based on their history.

* **1.2.3. Interface**

- **1.2.3.1.** The system shall support Turkish characters.
- **1.2.3.2.** System interface language shall be English.

* **1.2.4. Database**

- **1.2.4.1.** The system shall store and update data for each user in the database:
 - **1.2.4.1.1.** Users' search history
 - **1.2.4.1.2.** Articles published by users and its comments
 - **1.2.4.1.3.** Alerts set by users
 - **1.2.4.1.4.** Investments made by Traders
 - **1.2.4.1.5.** Portfolios
 - **1.2.4.1.6.** Trading equipment and its comments
 - **1.2.4.1.7.** Events
 - **1.2.4.1.8.** Users' personal information

* **1.2.5. Trading equipment**

- **1.2.5.1.** The system shall support trading equipment as follow.
 - **1.2.5.1.1.** Trade Indices
 - **1.2.5.1.1.1** DJI
 - **1.2.5.1.1.2** IXIC
 - **1.2.5.1.1.3** INX
 - **1.2.5.1.2.** Stocks
 - **1.2.5.1.2.1** General Motors (GM)
 - **1.2.5.1.2.2** Google (GOOG)
 - **1.2.5.1.2.3** Apple (AAPL)
 - **1.2.5.1.3.** ETFs
 - **1.2.5.1.3.1** SPDR S&P 500 (SPY)
 - **1.2.5.1.3.2** iShares Core SP 500 (IVV)
 - **1.2.5.1.3.3** Vanguard Total (VTI)
 - **1.2.5.1.4.** Commodities
 - **1.2.5.1.4.1** Gold
 - **1.2.5.1.4.2** Silver

- **1.2.5.1.5.** Currencies
 - **1.2.5.1.5.1.** System shall support most common currencies.
 - **1.2.5.1.5.2.** System shall have exchange rates for existing currencies.
 - **1.2.5.1.5.3.** Examples :
 - **1.2.5.1.5.3.1** Pound
 - **1.2.5.1.5.3.2** Euro
 - **1.2.5.1.5.3.3** Turkish Lira
 - **1.2.5.1.7.** Cryptocurrencies
 - **1.2.5.1.7.1** Bitcoin
 - **1.2.5.1.7.2** Litecoin
 - **1.2.5.1.7.3** Ethereum
- **1.2.5.2.** Each trading equipment should include many functionalities as follow.
 - **1.2.5.2.1.** The previous close
 - **1.2.5.2.2.** Percentage change with the previous close
 - **1.2.5.2.3.** Amount change with the previous close
 - **1.2.5.2.4.** Day's range
 - **1.2.5.2.5.** Moving averages

* **1.2.6. Search Mechanism**

- **1.2.6.1.** The system shall support search with keywords.
 - **1.2.6.1.1.** The system shall support searching for users, trading equipment, and economic events.
 - **1.2.6.1.2.** The system shall support some semantic search mechanism to find semantically similar users and trading equipment based on the context information provided in the semantic tags.
 - **1.2.6.1.3.** The system shall enable the users to search for the other users in a specific location.

• **2. Non-functional Requirements**

- **2.1. Availability and Accessibility**

- * **2.1.1.** The application shall have a native web and native mobile(Android) client.
- * **2.1.2.** The application shall be deployable on a remote and manually configurable server.
- * **2.1.3.** The application shall be available in English.
- * **2.1.4.** The system should be able to continue operating properly in the event of the failure.
- * **2.1.5.** The number of system failures shall happen at most once in a year.

– **2.2. Annotations**

- * **2.2.1.** Annotations shall be congruent with the specifications of The W3C Web Annotation Data Model.
- * **2.2.2.** The platform shall follow W3C Web Annotation Protocol so that the contents (e.g., graph, figure, comment) can be annotated by users.

– **2.3. Performance**

- * **2.3.1.** The system shall respond to requests in 3 seconds.
- * **2.3.2.** The system should be able to respond up to 1000 requests per second.
- * **2.3.3.** The system shall be able to support up to 100000 users.

– **2.4. Privacy**

- * **2.4.1.** Personal data of users cannot be used explicit consent.
- * **2.4.2.** Processing personal data like location shall be asked for permission.
- * **2.4.3.** How Information About You is Shared
- * **2.4.4.** Your Choices

– **2.5. Security**

- * **2.5.1.** Users shall be forced to change their passwords 6 months after registration or the latest password change.
- * **2.5.2.** Users shall be prevented to construct his/her password with well-known public pieces of information such as his name or his birthday.

7 Project Plan

		Ad	Süre	Başlat	Bitirme	Önceki	Kaynak Adları
1		Backend	20 günler?	19.09.2019 08:00	16.10.2019 17:00		
2		Database Tables For Users	6 günler?	19.09.2019 08:00	26.09.2019 17:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
3		Sign Up	3,5 günler?	27.09.2019 08:00	02.10.2019 13:00	2	Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
4		Sign In	3,5 günler?	02.10.2019 13:00	07.10.2019 17:00	2;3	Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
5		Password Change	3,5 günler?	08.10.2019 08:00	11.10.2019 13:00	4	Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
6		Sign Up Via Google Account	6 günler?	08.10.2019 08:00	15.10.2019 17:00	3	Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
7		Privacy and Security Const	7 günler?	08.10.2019 08:00	16.10.2019 17:00		
8		User Profiles	7 günler?	08.10.2019 08:00	16.10.2019 17:00	2;4	Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
9		User Actions - Follow	2 günler?	15.10.2019 08:00	16.10.2019 17:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
10		Frontend	14,5 günler?	02.10.2019 13:00	22.10.2019 17:00		
11		Sign Up	10 günler?	02.10.2019 13:00	16.10.2019 13:00	3	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
12		Sign In	10 günler?	08.10.2019 08:00	21.10.2019 17:00	4	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
13		Sign Up Via Google Account	4,5 günler?	16.10.2019 13:00	22.10.2019 17:00	6;11	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
14		User Profiles	4 günler?	17.10.2019 08:00	22.10.2019 17:00	8	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
15		User Actions - Follow	4 günler?	17.10.2019 08:00	22.10.2019 17:00	9	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
16		Android	14,5 günler?	02.10.2019 13:00	22.10.2019 17:00		
17		Sign Up	10 günler?	02.10.2019 13:00	16.10.2019 13:00	3	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
18		Sign In	7 günler?	08.10.2019 08:00	16.10.2019 17:00	4	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
19		Password Change	3 günler?	17.10.2019 08:00	21.10.2019 17:00	5;18	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
20		Sign Up Via Google Account	2,5 günler?	18.10.2019 13:00	22.10.2019 17:00	6;17	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
21		User Profiles	2 günler?	18.10.2019 08:00	21.10.2019 17:00	8	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
22		User Actions - Follow	2 günler?	18.10.2019 08:00	21.10.2019 17:00	9	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
23		Milestone 1	1 gün?	22.10.2019 08:00	22.10.2019 17:00		All
24		Backend	25 günler?	23.10.2019 08:00	26.11.2019 17:00		
25		User Actions	11 günler?	23.10.2019 08:00	06.11.2019 17:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
26		Database Tables	2,75 günler?	23.10.2019 08:00	25.10.2019 15:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
27		Transaction	11 günler?	23.10.2019 08:00	06.11.2019 17:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
28		Trading Equipments	6 günler?	13.11.2019 08:00	20.11.2019 17:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
29		Search Mechanism	5 günler?	20.11.2019 08:00	26.11.2019 17:00	26	Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
30		Frontend	14 günler?	07.11.2019 08:00	26.11.2019 17:00		
31		User Actions	11 günler?	07.11.2019 08:00	21.11.2019 17:00	25	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
32		Transaction	11 günler?	07.11.2019 08:00	21.11.2019 17:00	27	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
33		Trading Equipments	4 günler?	21.11.2019 08:00	26.11.2019 17:00	28	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
34		Search Mechanism	4 günler?	21.11.2019 08:00	26.11.2019 17:00		Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
35		Android	15 günler?	07.11.2019 08:00	27.11.2019 17:00		
36		User Actions	11 günler?	07.11.2019 08:00	21.11.2019 17:00	25	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
37		Transaction	11 günler?	07.11.2019 08:00	21.11.2019 17:00	27	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
38		Trading Equipments	4 günler?	21.11.2019 08:00	26.11.2019 17:00	28	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
39		Search Mechanism	5 günler?	21.11.2019 08:00	27.11.2019 17:00		Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
40		Milestone 2	1 gün?	26.11.2019 08:00	26.11.2019 17:00		All
41		Backend	15 günler?	27.11.2019 08:00	17.12.2019 17:00		
42		Notification	6 günler?	27.11.2019 08:00	04.12.2019 17:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
43		Annotation	11 günler?	27.11.2019 08:00	11.12.2019 17:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
44		Performance Optimization	5 günler?	11.12.2019 08:00	17.12.2019 17:00		Abdullah Coşkun;Omer Faruk Toptaş;İlker Özkan;İrem Üstünboyacıoğlu
45		Frontend	9 günler?	04.12.2019 17:00	17.12.2019 17:00		
46		Notification	5 günler?	04.12.2019 17:00	11.12.2019 17:00	42	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
47		Annotation	4 günler?	12.12.2019 08:00	17.12.2019 17:00	43	Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
48		Performance Optimization	5 günler?	11.12.2019 08:00	17.12.2019 17:00		Mehmet Altay İnce;Mete Han Kurt;Ufuk Yılmaz
49		Android	9 günler?	04.12.2019 17:00	17.12.2019 17:00		
50		Notification	5 günler?	04.12.2019 17:00	11.12.2019 17:00	42	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
51		Annotation	4 günler?	12.12.2019 08:00	17.12.2019 17:00	43	Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
52		Performance Optimization	5 günler?	11.12.2019 08:00	17.12.2019 17:00		Emirhan Saracı;Eray Kurtuluş;Yağmur Ceren Dardağan
53		End-to-End Tests	2 günler?	14.12.2019 08:00	17.12.2019 17:00	All	
54		Delivery	1 gün?	17.12.2019 08:00	17.12.2019 17:00	All	

8 API Documentation

8.1 POST trader register

{host}/user/registertrader/

8.1.1 Headers

Content-Type application/json

8.1.2 Body

```
raw
{
  "username": "melike_",
  "password": "12qwas.1?",
  "email": "melike.sonmez@boun.edu.tr",
  "first_name": "melike",
  "last_name": "sonmez",
  "location": "İstanbul",
  "iban_number": "1111111111131211
}
```

8.2 POST basic register

{host}/user/registerbasic/

8.2.1 Headers

Content-Type application/json

8.2.2 Body

```
raw
{
```

```
"username": "melike_",
"password": "12qwas.1?",
"email": "melike.sonmez@boun.edu.tr",
"first_name": "melike",
"last_name": "sonmez",
"location": "İstanbul"
}
```

8.3 POST login

{host}/user/login/

8.3.1 Headers

Content-Type application/json

8.3.2 Body

raw

```
{
"username": "melike_",
"password": "12qwas.1?"
}
```

8.4 GET auto login/profile

{host}/user/profile/

This request returns information about current user. It takes user id from token then accesses user information from it then returns that information. This request can be used in profile page.

8.4.1 Headers

Authorization JWT {token}

8.5 GET User Retrieve

{host}/user/retrieve/3/

8.5.1 Headers

Authorization JWT {token}

8.6 PUT User Update

{host}/user/updateuser/

8.6.1 Headers

Content-Type application/json
Authorization JWT {token}

8.6.2 Body

```
raw
{
  "title": "General Manager"
}
```

8.7 PUT User Password Change

{host}/user/updatepass/

This request updates password if user can give correct current password and a valid new password.

8.7.1 Headers

Content-Type application/json
Authorization JWT {token}

8.7.2 Body

```
raw
{
  "old_password": "qwerasdf",
  "new_password": "12345678"
}
```

8.8 POST search

{host}/user/search_user/

This request can returns a user list when given string is a substring of user-name.

8.8.1 Headers

Content-Type application/json

Authorization JWT {token}

8.8.2 Body

```
raw
{
  "username": "substring_of_username"
}
```

8.9 POST Follow Someone With ID

{host}/follow/follow/

With this request current user can follow another person.

8.9.1 Headers

Content-Type application/json

Authorization JWT {token}

8.9.2 Body

```
raw
{
  "following":2
}
```

8.10 GET List Follower Of Current User

{host}/follow/listFollower/

8.10.1 Headers

Content-Type application/json
Authorization JWT {token}

8.11 GET List Follower Of Given User

{host}/follow/listFollowerWithId/

When an id is given this request returns that user's followers.

8.11.1 Headers

Content-Type application/json
Authorization JWT {token}

8.11.2 Body

```
raw
{
  "id":1
}
```

8.12 GET List Following Of Current User

{host}/follow/listFollowing/

8.12.1 Headers

Content-Type application/json

Authorization JWT {token}

8.13 GET List Following Of Given User

{host}/follow/listFollowingWithId/

When an id is given this request returns that user's followings.

8.13.1 Headers

Content-Type application/json

Authorization JWT {token}

8.13.2 Body

```
raw
{
  "id":3
}
```

8.14 DELETE Unfollow Someone

{host}/follow/delete/

8.14.1 Headers

Content-Type application/json

Authorization JWT {token}

8.14.2 Body

```
raw
{
  "following":1
}
```

8.15 GET Currency List

{host}equipment/currencyList/

8.16 GET Crypto Currency List

{host}equipment/cryptocurrencyList/

8.17 GET Metal Currency List

{host}equipment/metalcurrencyList/

8.18 GET Stock List

{host}equipment/stockcurrencyList/

8.19 GET Etf List

{host}equipment/etfList/

8.20 GET Trace Indices List

{host}equipment/traceList/

8.21 GET Currency Last Month

{host}equipment/currencylastmonth/

8.22 GET Currency

{host}equipment/currency/

8.23 GET currency convert

{host}equipment/currencyconvert/

8.23.1 Headers

Content-Type application/json

8.23.2 Body

```
raw
{
  "from": "USD",
  "to": "TRY"
}
```

8.24 GET Metal Currency

{host}equipment/metalcurrency/

8.25 GET Crypto Currency

{host}equipment/cryptocurrency/

8.26 GET Crypto Currency Last Month

{host}equipment/cryptocurrencyhistorical/

8.27 GET Stock Currency

{host}equipment/stock/

8.28 GET Trace Indices Currency

{host}equipment/traceindices/

8.29 GET Gainers in Trace Indices

{host}equipment/traceindicesgainers/

8.30 GET Last Month of Stock

{host}equipment/lastmonth/

8.30.1 Headers

Content-Type application/json

8.30.2 Body

```
raw
{
  "company_symbol": "GM"
}
```

8.31 POST forgot password

{host}/user/forgotpassword/

8.31.1 Headers

Content-Type application/json

8.31.2 Body

```
raw
{
  "email": "abdullah.coskun1@boun.edu.tr"
}
```

8.32 PUT User Password Change forgot password

{host}/user/updatepassforgot/4/

8.32.1 Headers

Content-Type application/json

8.32.2 Body

```
raw
{
  "new_password": "12345678"
}
```

8.33 PUT User Upgrade

{host}/user/userupgrade/

8.33.1 Headers

Authorization JWT {token}

8.34 PUT user downgrade

{host}/user/userdowngrade/

8.34.1 Headers

Authorization JWT {token}

8.35 POST Create Article

{host}/article/create/

8.35.1 Headers

Content-Type application/json

Authorization JWT {token}

8.35.2 Body

raw

{

```
    "title": "Article of Requirements",
    "content": "This is an article about traders platform",
    "is_public": true
}
```

8.36 PUT Update Article

{host}/article/update/

8.36.1 Headers

Content-Type application/json
Authorization JWT {token}

8.36.2 Body

raw
{

```
"id": 2,  
"title": "Article of Requirements",  
"content": "EDIT! This is an article about traders platform",  
"is_public": true  
}
```

8.37 GET List Article

{host}/article/list/

8.37.1 Headers

Authorization JWT {token}

8.38 POST List Public Articles

{host}/article/listPublicArticles/

8.38.1 Headers

Authorization JWT {token}

8.39 POST List Article With User ID

{host}/article/listArticleByUserId/1/

8.39.1 Headers

8.40 DEL Delete Article

{host}/article/delete/

8.40.1 Headers

Content-Type application/json

Authorization JWT {token}

8.40.2 Body

raw

{

```
    "id": 2  
}
```

8.41 POST Wallet Create

{host}/wallet/createWallet/

8.41.1 Headers

Authorization JWT {token}

8.41.2 Body

8.42 POST Wallet Retrieve

{host}/wallet/retrieve/

8.42.1 Headers

Authorization JWT {token}

8.42.2 Body

8.43 PUT Send USD to Wallet

{host}/wallet/sendUSD/

8.43.1 Headers

Content-Type application/json

Authorization JWT {token}

8.43.2 Body

```
raw
{
    "USD": 12745
}
```

8.44 PUT Take Equipment

{host}/wallet/takeequipment/

8.44.1 Headers

Content-Type application/json
Authorization JWT {token}

8.44.2 Body

raw
{
 "name_of_eq": "VTI",
 "amount": 11.24
}

8.45 PUT Sell Equipment

{host}/wallet/sellequipment/

8.45.1 Headers

Content-Type application/json
Authorization JWT {token}

8.45.2 Body

raw
{
 "name_of_eq": "VTI",
 "amount": 1.24

```
}
```

8.46 POST Create Comment

{host}/article-comment/create/

8.46.1 Headers

Content-Type application/json
Authorization JWT {token}

8.46.2 Body

raw
{

```
    "text": "This article is awesome!",  
    "article_id": 5  
}
```

For further information about our API here.

9 Evaluation of tools and managing the project

9.1 Tracking Tools(GitHub)

9.1.1 Git Feature of Github

Git is a fast, low-weight distributed version control system with a rich command set which makes collaborative project development easier. GitHub provides us remote repository We can create easily a remote repository that we can push our local repository to it for other people to view, fetch, and update. We see the changes between commits with ease by using the user interface of the GitHub.

9.1.2 Issues

In addition to providing Git remote repository, GitHub has many other features like issues, pull requests, web hooks etc. Issue feature of the GitHub is one of the most useful feature along them. We assign the actions and duties of each teammate by using GitHub Issues. Issues provide us a way to document the tasks. By using it, we can track the status of tasks. It also give an environment to discuss about the new feature, report the bugs etc.

9.1.3 Pull Requests

By using Git, we work on independent branches to develop different features. When we complete the implementation of the feature on branch, we make sure this branch is what we want, and finally we create a pull request for merging the branch into your master branch which is deployed to production. In this flow, pull request give us a chance to review the code of each other. We can easily see differences, and we can add review comment line by line by using the user interface of GitHub.

9.1.4 Project section of the Github

We track the progress of the tasks(issues) by using GitHub. In a single view, we can see the status of tasks by using this project section of the GitHub.

9.1.5 Wiki

We usually document our project to wiki page on GitHub. The requirements, the meeting notes, the communication plan of our project can be seen in the wiki page of our repository on GitHub.

<https://github.com/bounswe/bounswe2019group1/wiki>

9.2 Backend

9.2.1 Python Django

Django is chosen as main programming language for backend developments. Main reason behind that is Django is very simple and easy to learn. It is a high-level Python Web framework that encourages rapid development. We used Django REST framework which is a powerful and flexible toolkit for building Web APIs. The Django authentication system that handles both

authentication and authorization is used for user authentication part of the project. For further development we use external APIs to follow current value of trading equipment and use postgresql database to store them. Besides that we also found an API for events and provide users with ability to create read update article with Django.

9.2.2 Postman

Postman is a collaboration platform for API development. We used Postman's features that simplify each step of building an API and streamline collaboration so we can create better APIs. It is easy to use, we have created a collection for our endpoints and we update it regularly. We share the latest version of the collection with other teammates, so that we can work parallel with Frontend and Android teams. Also, Postman allows us to publish our API documentation quickly and easily.

9.2.3 Docker

Docker is a tool designed to make it easier to create, deploy, and run applications by using containers. Containers allow a developer to package up an application with all of the parts it needs, such as libraries and other dependencies, and ship it all out as one package.^[*]

We created a Dockerfile and a docker-compose.yml file to use Docker. Then, all we need to do to run the application was running docker-compose build and docker-compose-up commands.

By doing so, thanks to the container, we assured that the application will run on any other machine regardless of any customized settings that machine might have that could differ from the machine used for writing and testing the code. We also trying to use docker as organizer of our scheduled jobs but it is still in development stage.

^[*] <https://opensource.com/resources/what-docker>

9.2.4 PyCharm

As IDE, PyCharm is chosen since it is used in specifically for Python language and developed by JetBrains. It is one of the most widely used IDEs for Python programming language and also provides first-class support for a robust Python web framework like Django. It lets us to enhance productivity while coding by providing some features like suggestions, Local VCS etc.

9.3 Web

9.3.1 ReactJS

ReactJS is the most popular JavaScript library in front-end development. It has a good reputation among front-end developers and it gives us a learning motivation, and makes the learning process easier(a good reference sources can be found after a brief research). Hence, we decided to use ReactJS library in the implementation of our front-end application. React is a JavaScript library that enables us to create interactive user interface. React efficiently update and render just the right components when the data changes occurs at the state variables. Also, we can use XML like syntax called JSX with ReactJS that provide us a method for embedding HTML into React code. React is very ease of use, and modular. We used other js libraries with React such as:

9.3.2 Material-ui library

We used the production-ready components of material ui such as button, grids, card, menu item, icons etc. in our front-end pages. They are easy to use, and well-designed components that implement Google's Material Design.

9.3.3 Axios

Axios is a promise based HTTP client for the JavaScript front-end applications. It is very easy to use. We make HTTP Requests to Back-end with using it.

9.3.4 history

We manage the session history(feature that enables us go back to previous page and forward to next page in browser) by using history library.

9.3.5 react-location-picker

We used to react-location-picker library to implement the feature that pick location on Google Maps.

9.3.6 react-router-dom

We used to react-router-dom library to allow our application to navigate between different components, changing the browser URL, modifying the browser history, and keeping the UI state in sync.

9.3.7 ESLint

ESLint analyzes JavaScript source code to flag programming error, bugs, stylistic errors, and suspicious constructs such as:

- Strings should always use double quotes (never single quotes) and should always appear on a single line.
- Never use a slash to create a new line in a string.
- Numbers should be written as decimal integers, e-notation integers, hexadecimal integers or floating-point decimals with at least one digit before and one digit after the decimal point.
- The usage of the special value "null" is restricted only to special conditions.

By using ESLint, we have agreed on a particular coding style. Our code stays clean and easy to read as possible.

9.3.8 Webstorm IDE

Since we decided to implement our front-end application with ReactJS, we need to an IDE that will make this ReactJS implementation process easier. We search for different IDEs and finally decided to use WebStorm which is one of the JetBrains tools which can be used as free with student license. The code completion of the WebStorm is ahead of any other IDE. It has blazingly fast debugger. It has built-in support for ESLint, we can fix ESLint problems with automatically with using it.

9.3.9 Visual Studio Code

In addition to Webstorm, we produced solutions quickly and accurately with smart suggestions or completions by using VS Code, another popular application for writing javascript code. VS Code has syntax highlighting for the

various source code elements and, if you put the cursor on a parentheses, the matching bracket is also selected.

9.4 Android

9.4.1 Kotlin for Android

Kotlin, a new open source programming language, has become popular among Android developers since Google announced its preferred language as Kotlin for developing Android applications. Here is the list of properties that have made us choose Kotlin:

- Kotlin is compatible with Java and it operates under the Java Virtual Machine, so it is possible to switch language between Kotlin and Java without any side effect.
- Kotlin syntax offers to write less code and increase in readability compared to Java, results in saving in time.
- Kotlin handles NullPointerExceptions and runtime overhead problems in Java.

9.4.2 Retrofit

Retrofit is a library for Android to make HTTP requests as a REST Client. Retrofit basically creates model classes and uses these models to parse API responses and requests. The reason we have chosen this technology is that type-safe feature of Retrofit. By this way compiler will validate all the request bodies while compiling and it will reduce errors caused by API queries.

9.4.3 IDE and Simulation Preferences

We choose Android Studio IDE to develop our Android application considering integration with Kotlin and built-in emulators to simulate our Android application. In order to test our application and its compatibility, various devices have been used such as Pixel 3(API 27), Lenovo P2(API 24) and Lenovo 0560(API 25)

10 UI Design

10.1 Web

Figure 2: edit profile page

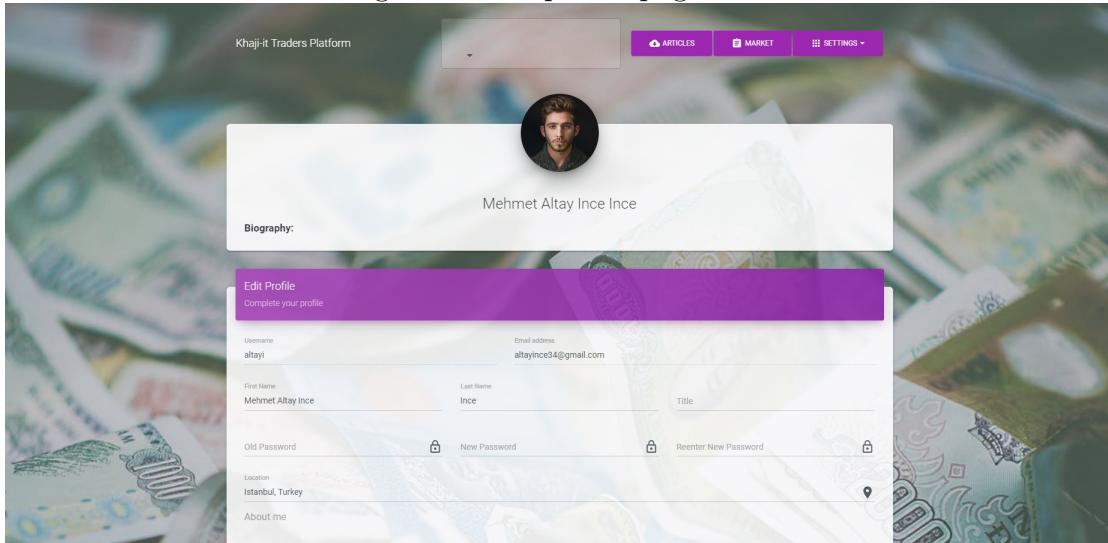


Figure 3: wallet page

The screenshot shows a wallet interface. At the top, there's a green button with a minus sign and a red button with a dollar sign. Below them, a message says "Just Updated" and "Updated on 26th November, 2019". A large orange bar labeled "Current Wealth" displays "Total \$0". To the right, there's a form with a dollar sign icon and a text input field. A blue plus sign button is at the top right. Below the wealth bar is a table titled "Current Wealth" with columns for ID, Currency, and Amount. The table lists six items: BTC, ETH, LTC, XAG, XAU, and GOOGL, all with an amount of 0.00000000.

ID	Currency	Amount
1	BTC	0.00000000
2	ETH	0.00000000
3	LTC	0.00000000
4	XAG	0.00000000
5	XAU	0.00000000
6	GOOGL	0.00000000

Figure 4: market page

The screenshot shows a market page with a purple header that says "Market" and "Equipments that is listed". Below is a table of currency pairs with their long names and parity rates.

Equipment Symbol	Equipment Long Name	Parity
TRY/BTR	Turkish Lira/Euro	0.1574
USD/JPY	United States Dollar/Japanese Yen	108.7480
GBP/TRY	British Pound Sterling/Turkish Lira	7.4000
EUR/USD	Euro/United States Dollar	1.1074
USD/TRY	United States Dollar/Turkish Lira	57.182
EUR/TRY	Euro/Japanese Yen	6.3329
GBP/USD	British Pound Sterling / United States Dollar	1.2952
BTC/TRY	Bitcoin / Turkish Lira	46239.9183
XMR/USD	Monero / United States Dollar	58.0200
GOOGL/USD	Alphabet Inc. / United States Dollar	1296.4000
AGTHX/USD	American Funds The Growth Fund of America Class A / United States Dollar	52.4900
USD/TRY	United States Dollar/Turkish Lira	57.182

Figure 5: edit market page

The screenshot shows a list of currency pairs with checkboxes next to them. The checked pairs are TRY/EUR, USD/JPY, GBP/TRY, EUR/USD, USD/TRY, and EUR/TRY. The unchecked pairs are GBP/USD, BTC/TRY, XMR/USD, GOOGL/USD, AGTHX/USD, and EUR/TRY. There is also an 'APPLY CHANGES' button.

Pair	Status
TRY/EUR	Checked
GBP/USD	unchecked
USD/JPY	Checked
BTC/TRY	unchecked
GBP/TRY	Checked
XMR/USD	unchecked
EUR/USD	Checked
GOOGL/USD	unchecked
USD/TRY	Checked
AGTHX/USD	unchecked
EUR/TRY	Checked

Figure 6: view article page

The screenshot shows a view article page. At the top, there is a circular profile picture of a man. Below it, the author's name is listed as "Author: Mehmet Altay Ince Ince". The timestamp is 2019-11-30T18:27:38.551332Z. The main title of the article is "Turkey's Erdogan says interest rates, inflation to fall to single digits". The content of the article states: "Turkish interest rates and inflation are on the path to desired levels "despite all the pressures" and both will fall to single digits in 2020, President Tayyip Erdogan was cited as saying by broadcaster NTV on Tuesday. Speaking to reporters on a return flight from Qatar, Erdogan said the fall in rates and inflation will be permanent, adding that once both figures hit single digits, the economy and currency in Turkey will be "very different."". Below the article, there is a "Comments" section with one comment from "Amazing" (Author: Mehmet Altay Ince Ince).

Figure 7: article page

TURKEY'S ERDOGAN SAYS INTEREST RATES, INFLATION TO FALL TO SINGLE DIGITS

Turkish interest rates and inflation are on the path to desired levels "despite all the pressures" and both will fall to single digits in 2020. President Tayyip Erdogan was cited as saying by broadcaster NTV on Tuesday. Speaking to reporters on a return flight from Qatar, Erdogan said the fall in rates and inflation will be permanent, adding that once both figures hit single digits, the economy and currency in Turkey will be "very different."

Author: Mehmet Alay Ince Ince

READ MORE

ADD ARTICLE

Figure 8: add article page

Share with us

The articles you share on this page can be read by the people who follow you.

Title
Turkey's Erdogan says interest rates, inflation to fall

Body of the article
Turkish interest rates and inflation are on the path to desired levels "despite all the pressures" and both will fall to single digits in 2020, President Tayyip Erdogan was cited as saying by broadcaster NTV on Tuesday.

Speaking to reporters on a return flight from Qatar, Erdogan said the fall in rates and inflation will be permanent, adding that once both figures hit single digits, the economy and currency in Turkey will be "very different."

SUBMIT

10.2 Android

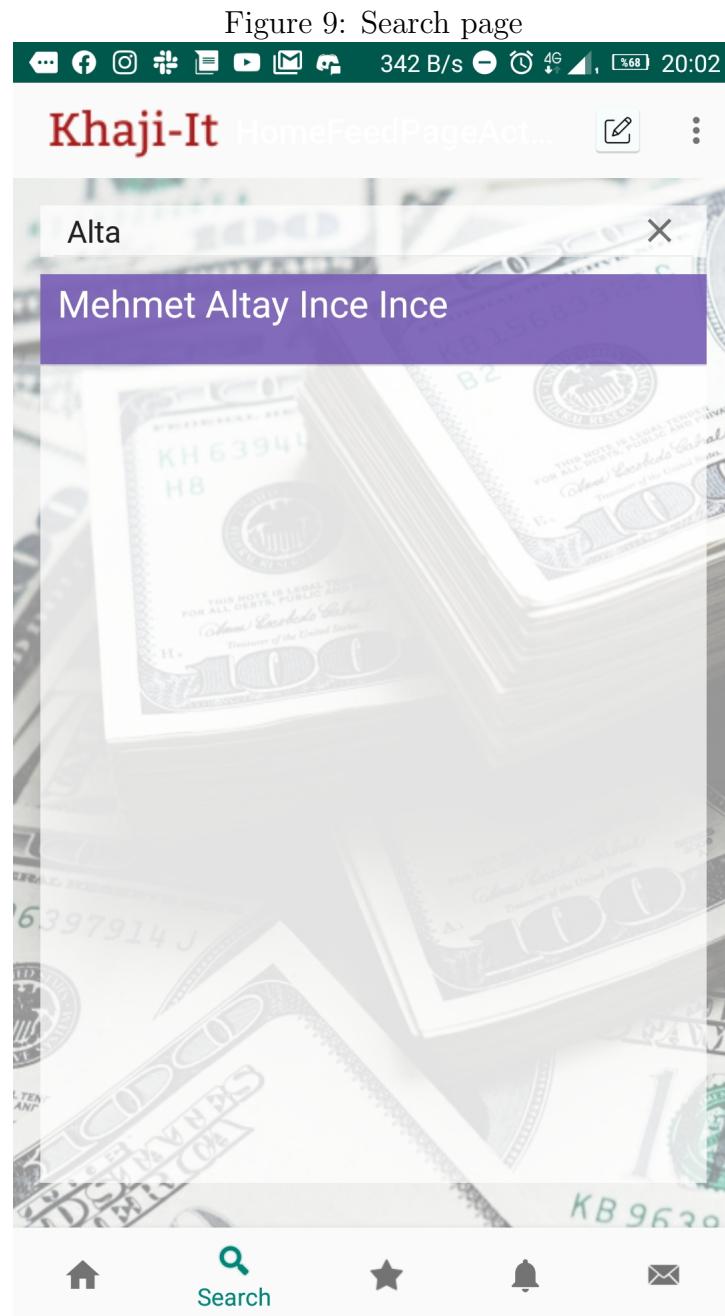


Figure 10: Profile page

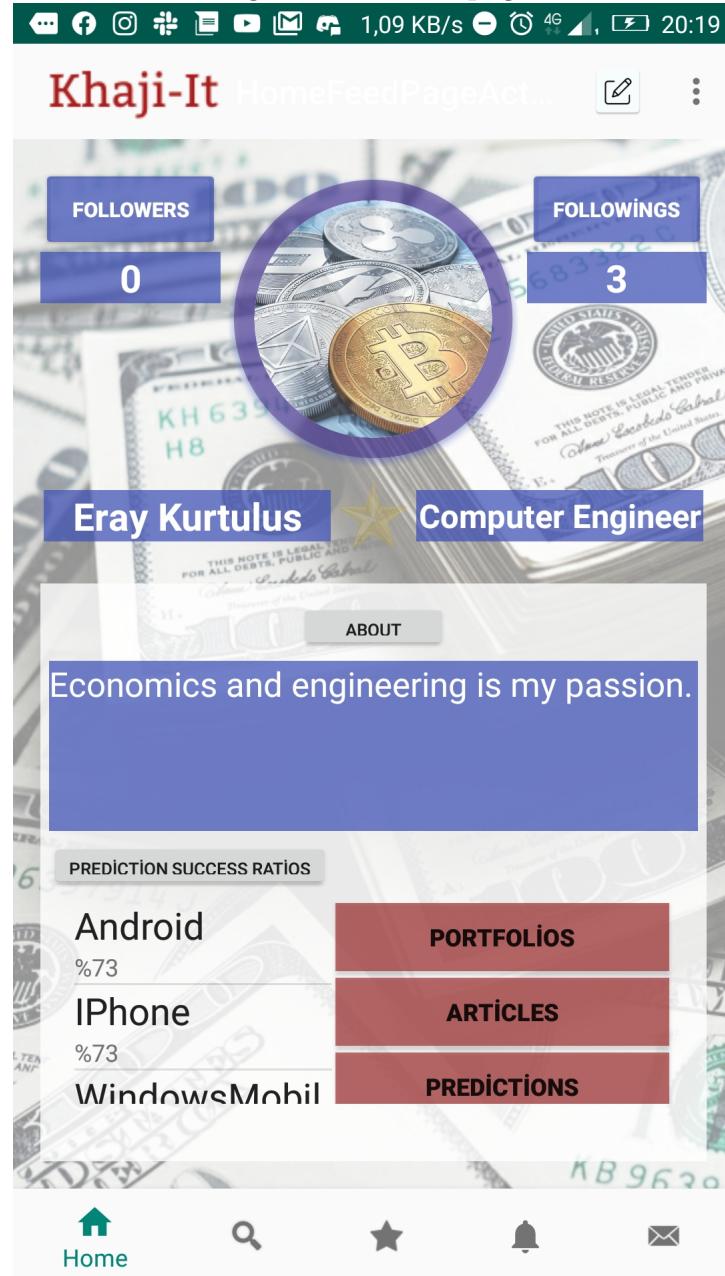


Figure 11: Edit profile page

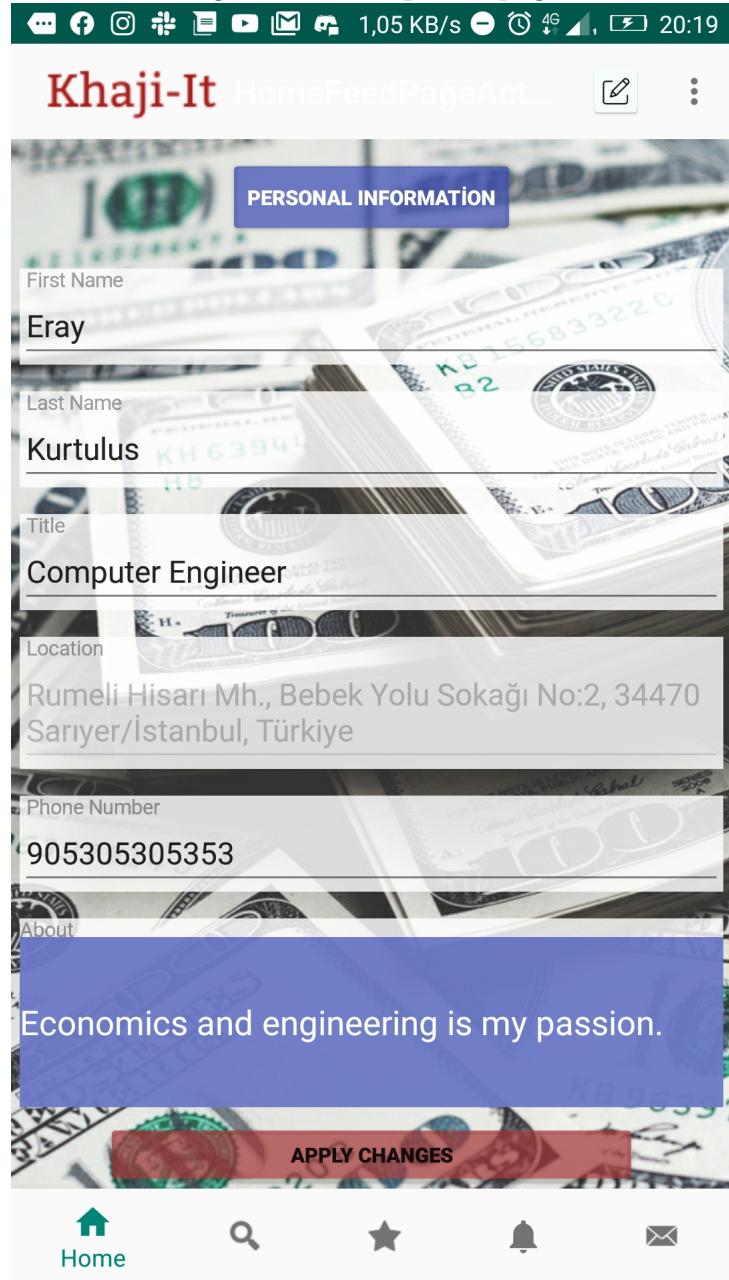


Figure 12: Change password functionality

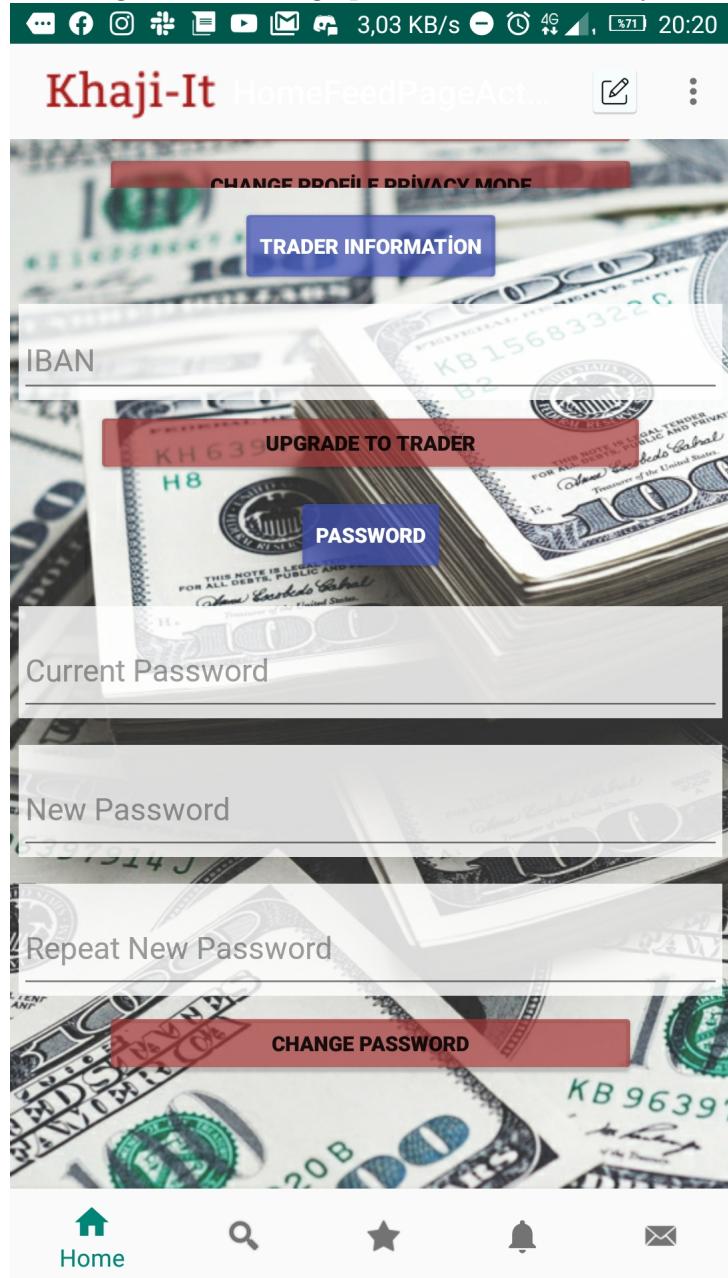


Figure 13: Article page

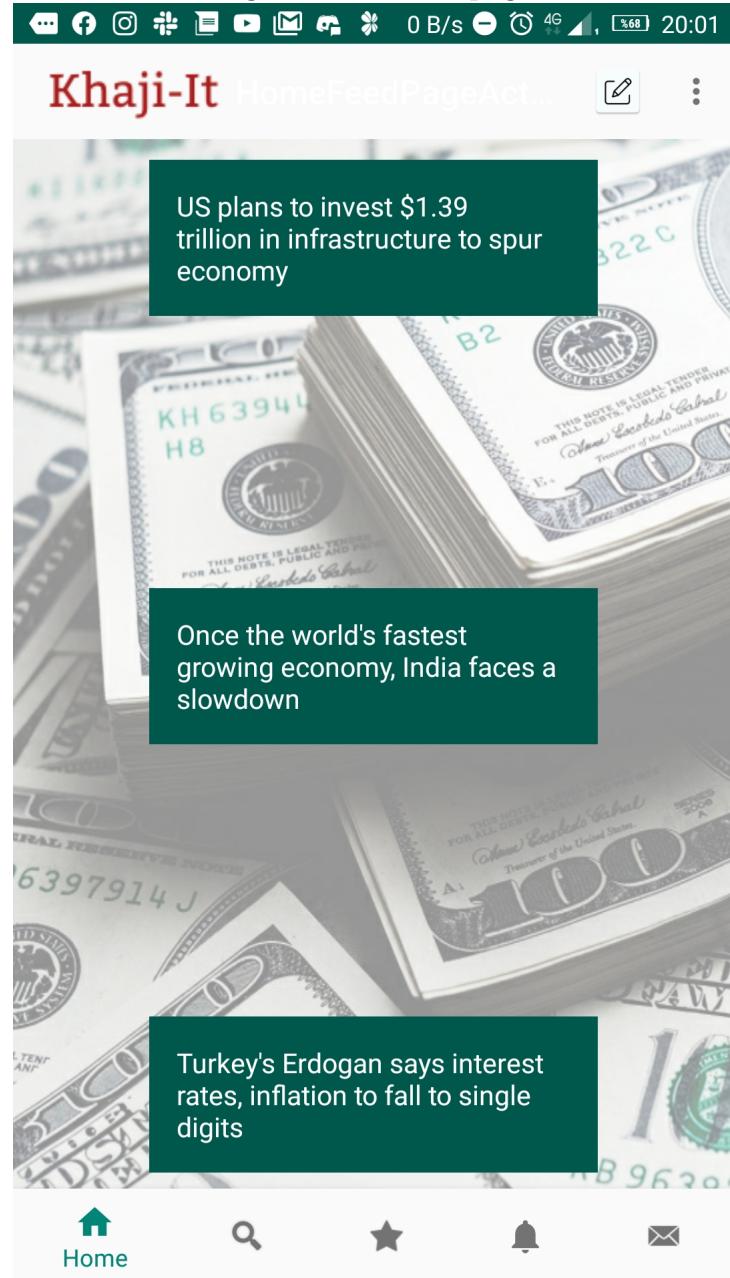


Figure 14: Create article page

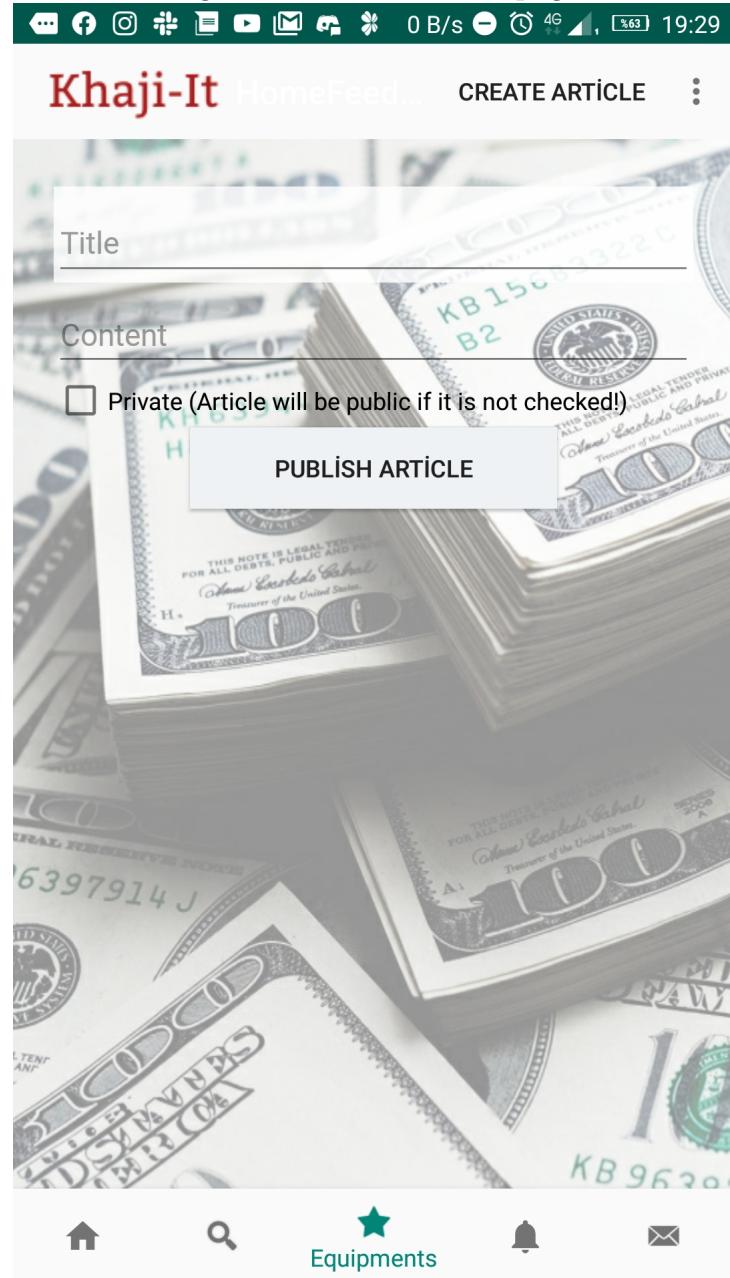


Figure 15: Read article page



Figure 16: Deposit funds page

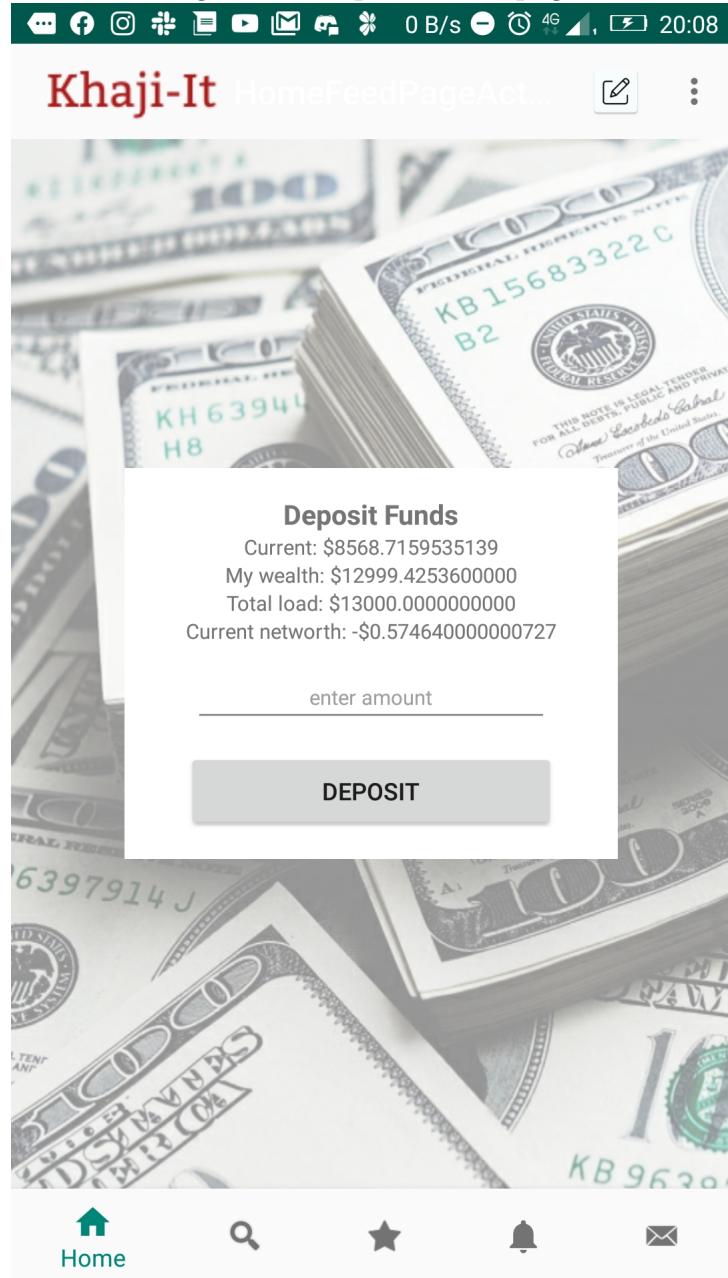
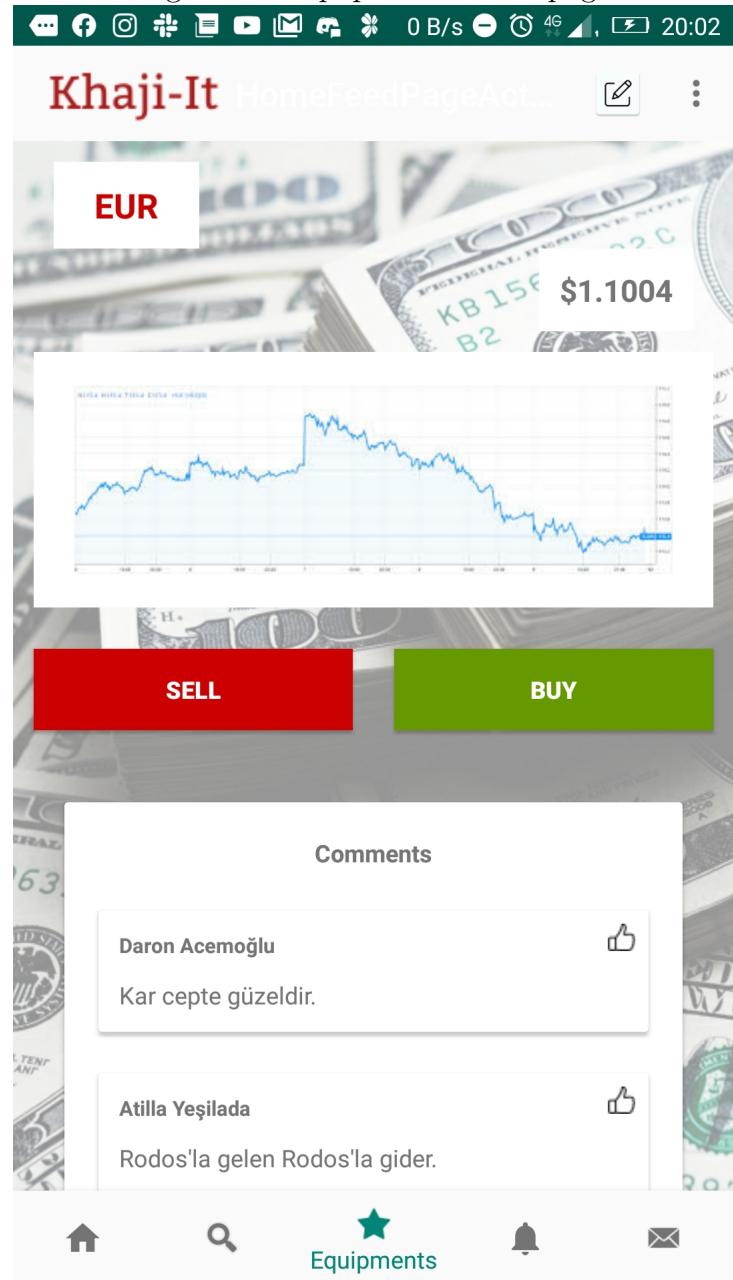


Figure 17: Equipments page



Figure 18: Equipment details page



11 User scenarios

11.1 Web

Persona 1

- Arda Sayar
- 23 years old
- Lives in İstanbul
- Graduated from Boğaziçi University, Department of Economics.

Goals

User Story

Arda is a new graduated economist at Accenture. In addition to his business, he is looking for a useful platform where he can quickly trade, track fluctuations for cryptocurrencies in the market and follow experienced economists to learn how to earn extra income by investing. He also wants to use his economy information which he learned at the university. He hears about trader's platform from his friends and starts to look up cryptocurrencies. His main goal is following successful investors then making his own investments for extra income.

Scenario

After logging in, he wants to edit his profile information from the settings tab and updates his address. Then he comes back to the profile page and tries to create an article and displays the article from the articles page. Meanwhile he realizes that someone else has commented on his article. He checks that user's profile and reads his article and shares his comment on it.

Acceptance Criteria

- 1.1 User Requirements
 - 1.1.1.1. Sign Up

- * 1.1.1.1.1. Users shall sign up by following below steps
 - 1.1.1.1.1.1. Users shall sign up by providing their e-mail address, password, name, surname and location.
 - 1.1.1.1.1.1.1. E-mail addresses shall be unique.
 - 1.1.1.1.1.1.2. User passwords shall be in the specified form.
 - 1.1.1.1.1.1.3. User location shall be specified via Google Maps.
 - 1.1.1.1.1.2. Users shall verify their accounts by following steps in the mail sent to the user e-mail address.
- * 1.1.1.1.2. Users shall sign up via their Google account.
- 1.1.1.2. Sign In
 - * 1.1.1.2.1. Users shall sign in by providing their email address and password.
 - * 1.1.1.2.2. Users shall sign in via their Google account.
- 1.1.1.3. Reset Password
 - * 1.1.1.3.1. Reset Password
 - 1.1.1.3.1.2. Users should provide old password and new password they desire, when they want to reset their password
- 1.1.1.5. User actions
 - * 1.1.1.5.7. Users shall be able to follow other users.
 - * 1.1.1.5.12 Users shall be able to publish article.
- 1.2. System Requirements
 - 1.2.3. Interface
 - * 1.2.3.1. The system shall support Turkish characters.
 - * 1.2.3.2. System interface language shall be English.
 - 1.2.4. Database
 - * 1.2.4.1. The system shall store and update data for each user in the database:

- 1.2.4.1.2. Articles published by users and its comments
- 1.2.4.1.6. Trading equipments
- 1.2.4.1.8. Users' personal informations

11.2 Android

Persona 1

- Emirhan Saraç
- 30 years old
- Lives in Zurich
- Coin Economist at Acture Capital GmbH

Goals

- To share his personal opinions about the market situations.
- To keep the pulse of the market via reading the articles published by other users.
- To find his friends and expand his network.

User Story

Emirhan is a coin economist at Acture Capital in Zurich. Since he has been living in Zurich for a long time, he has lost touch with lots of people he knew from the university. He wants to find a girl he knew from university, however, he can't remember her name, he only remembers her name starts with the "C" letter. Also, he has learned that US productivity drops by most since the fourth quarter of 2015 and he wants to publish his opinions about this major event as an article in public.

Scenario

Since Emirhan has already registered before, he directly clicks the "Login" button at the main page and enters his e-mail he used and the password he provided in the registration and the application authenticates him since he enters his credentials correctly. After clicking the "Login" button, the home feed page with recently published by other users appears on the screen and he decides to find his friend first before reading the articles or publish his own article that he is planning. To find his friend, he uses a navigation bar to switch the view from the home feed page to the search page. Since the application has a simple design and helpful icons, he immediately understands the icon with magnifying glass on the navigation bar is the button that he is looking for and clicks the button to navigate the search page. After navigating on the search page, he types the only information about his friend from his university, her initial C, on the search bar on top of the page. After clicking on the search button, the Khaj-it app displays all the users that contain the "C" letter in their names which are "Canan Karatay" and "Ceren Dardağan" respectively. First "Canan Karatay" comes familiar to him and he clicks on the name "Canan Karatay" for more information. After clicking the name "Canan Karatay", her profile appears on the view and he understands she is not his friend that he is looking for after reading her bio ". Then he comes back to the search page via clicking the back button and clicks the name "Ceren Dardağan". After clicking, her profile page appears on the screen, but her profile is private, he cannot see any information about her. To understand whether the profile belongs to her, he clicks to the "Follow" button to make the information about her visible. After clicking to the follow button, he understands Ceren is his friend from the university because the same university that he went to writes on the bio section of her profile. After finding his friend from university and following her, he comes back to home feed and decides to publish an article about the information he has heard about America. To write his article, he looks for a button to direct him to write the article page. Thanks to the simple design of Khaj-it application, he realizes the button that has a writing icon on the top action bar and he clicks on the write article button. After clicking on the button, the page that contains an edit box for the title, an edit box for content and a checkbox to state whether the article will be private or public appears on the screen. He types the title of his article as "US productivity drops by most since the fourth quarter of 2015" and the content part with his opinions about this news and he does not click on the private checkbox because he wants to make visible to all users and guests. After clicks on the "Publish

"Article" button, the application automatically directs him to the page that he was in before clicking the "Write Article" button, the home feed page in this case. He sees again the latest articles published and he sees his own article too. Then he scrolls the articles and looks at the titles of articles to choose one to read. He decides to read an article that has an interesting title and clicks on the article title to read the content of the article. After clicking on the article title, he reaches the content of the article and reads the whole article. After reading the article, he clicks the "Log Out" button on the top action bar to log out and he logs out successfully from the application.

Acceptance Criteria

- 1.1.1.2. Sign In
 - 1.1.1.2.1. Users shall sign in by providing their e-mail address and password.
- 1.1.1.4. Profile
 - 1.1.1.4.1. Users shall have a profile either private or public.
 - * 1.1.1.4.1.1. Users with a private profile shall be followed in order to see the content of the private user.
- 1.1.1.5. User actions
 - 1.1.1.5.7. Users shall be able to follow other users.
 - * 1.1.1.4.1.1. Users with a private profile shall be followed in order to see the content of the private user.
 - 1.1.1.5.12 Users shall be able to publish article.
- 1.2.6. Search Mechanism
 - 1.2.6.1. The system shall support search with keywords.

- 1.2.6.1.1. The system shall support searching for users, trading equipments, and economic events.

Persona 2

- Oğuz Coşkun
- 40 years old
- Lives in Istanbul
- IBAN: TR3456000346534667
- Product Manager at Insider

Goals

- To keep track of trading equipments and learn the latest rates.
- To buy/sell trading equipments to make profit.
- To load some money on his wallet.

User Story

Oğuz is a product manager at Insider. He wants to keep track of the latest rates of currencies and stocks so he can make some investment with his money on trading equipments via buying or selling them. And also he wants to add some money on his wallet on the application because the money on his wallet is not enough to buy any trading equipment currently.

Scenario

Oğuz has already registered before, he directly clicks the "Login" button at the main page and enters his e-mail he used and the password he provided in the registration and the application authenticates him since he enters his credentials correctly. After clicking the "Login" button, the home feed page with recently published by other users appears on the screen and he switches to the trading equipment page via clicking on the button that has money icon on the bottom navigation bar. On the equipments bar he sees "Currencies" (EUR, GBP, TRY), "Crypto-currencies" (BTC, ETH, LTC),

"Commodities" (Gold(AUX),Silver(XAG), "Stocks" (GOOGL,AAPL,GM), "Trade Indices"(DJI,IXIC,INX) and "ETFs"(SPY,IVV, VTI) sections and the instances of these titles(each instances that titles have specified in brackets) and the rates of each trading equipments instances near their names. He clicks on the "BTC" button under the "Crypto-currencies" section to see further information about Bitcoin. After clicking on the "BTC" button, the graphic that shows past prices of Bitcoin, "Buy" button, "Sell" button and the comments about the BTC price appears on the screen. After checking all the information about Bitcoin, he decides to buy 3 Bitcoin from the app as an investment. Since he knows, there is not enough money on his wallet, he clicks on the "Deposit Funds" button on the top action bar to go to his wallet. After clicking on "Deposit Funds" he sees the current money on his wallet, his current wealth, total load and current networth values as a summary of his transactions. Under this information, he sees a box to type the amount of money he wants to load on his wallet and he types 500\$ and clicks on the "DEPOSIT" button to load the money on his wallet. After clicking on the button, he returns to the BTC page via clicking the back button of android itself and clicks on the "BUY" button to buy bitcoin. After clicking on the "BUY" button, he types "3" as an amount of bitcoin he wants to buy on the box appears and clicks on the "BUY" button to buy. After this investment, he comes back to the general trading equipment page with the back button of android and clicks on the "ETH" button under the "Crypto-currencies" section to see further information about Etherium. After clicking on the "ETH" button, the graphic that shows past prices of Etherium, "Buy" button, "Sell" button and the comments about the ETH price appear on the screen. After checking all the information about Etherium, he sees there is an increase in the Etherium price and decides to sell 10 Etherium that he has bought before. He clicks on the "SELL" button and he types "10" as an amount of Etherium he wants to sell on the box appears and clicks on the "SELL" button to sell the Etherium he bought before. After all the investments he made with the Khaj-it app, he clicks the "Log Out" button on the top action bar to log out and he logs out successfully from the application.

Acceptance Criteria

- 1.1.1.2. Sign In

- 1.1.1.2.1. Users shall sign in by providing their e-mail address and password.
- 1.1.3. Trading Users
 - 1.1.3.1. Trading users should be able to see their profit/loss amount in terms of the currency they choose by both manually entering their investments and using the investments they made.
 - 1.1.3.2. Trading users shall have "My Investment" section where they can invest in any trading equipment, make a buy order for a specified rate, and set stop/loss limits.
 - 1.1.3.3. Trading users shall provide financial services corporation name and regarding IBAN number while signing up.