

# CMPE451 - Milestone 2 Report

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# 1 Executive Summary

## 1.1 Introduction

The Trader Platform aims to build a social platform in which the users can follow market of stocks, indices, currencies, bonds, funds, and cryptocurrencies and trade the equipments. The platform provides a functional interface with various type of interactions targetting to maximize the communication, since our main purpose is to present a useful platform for the benefits of the customers.

## 1.2 Work done so far

In the last semester we made all the designing process including determining the requirements, creating user scenarios, mock-ups and UML diagrams. Although we did lots of design, we didn't start to write the code itself. By all of these, every team member became very familiar with the project. In this semester we start by making a division of labod and dividing the team into three group which are backend, web and mobile teams. Backend team members are Enes Turan Özcan, Burak İkan Yıldız and Barış Ege Sevgili. Web team members are Sadullah Gültekin, Burak Yüksel and Irmak Güzey. Mobile team members are Fatih Mustafa Kurt, Mustafa Alparslan and Baran Deniz Korkmaz. Every team selected which technologies to use in their implementation. Until first milestone, we planned to write the authentication part of the project because its the most essential functionality. Because we were able to finish authentication part in the web earlier than we thought, we also started to implement user profile page. In the android we made only login and register functionalities and cannot implement the profile page yet. The reason is our team was inexperienced with mobile platform and it took considerable amount of time to learn how it is working. Yet, we are planning to implement profile page as soon as possible. In the backend, we implemented the base for our project. We created our database in its initial form. Also, we wrote some endpoints that are used by web and mobile teams. Detailed information can be found in our github page.

## 1.3 Road ahead

Next step is implementing the parts that are much more related with economic concepts. As a first step we will implement user system. Currently, we are able to see only our own profile page which is inconvenient because if we can not see other users page, we cannot follow them which prevents us to use the basics of our system. Then we will implement trading equipment parts which will make users able to buy, sell and invest to different goods.

For now our team is good at cooperation. We try to divide the labor between each member. Probably, no essential change will be done after the milestone.

## 2 List and Status of Deliverables

#	Deliverable	Due Date	Status	Explanations
1	Project Plan	29.09.2019	+	The road map of the practise app is drawn -including the example tutorial application-
2	Authentication Endpoint	10.10.2019	+	The endpoint for login and registration is implemented in the API.
3	User Follow Endpoint	25.10.2019	+	The endpoint for following users is implemented in the API.
4	User Profile Endpoint	25.10.2019	+	The endpoint for getting into the profil page is implemented in the API.
5	Authentication Interface in Android	15.10.2019	+	The interface for login and registration is implemented in Android.
6	Authentication Interface in Web Frontend	15.10.2019	+	The interface for login and registration is implemented in Web Frontend.
7	User Profile Page in Web Frontend	22.10.2019	+	The user profile page is implemented in Web Frontend.
8	Home Page in Web Frontend	22.10.2019	+	Home page is implemented in Web Frontend.
9	Login Page Update	19.11.2019	+	Google sign in functionality is added to login page.
10	Register Page Update (Google Sign in)	19.11.2019	+	Google sign in functionality is added to register page so that users will be able to fill some fields automatically by signing in to Google account.
11	Register Page Update (Google Maps)	21.11.2019	+	Latitude and longitude input fields are removed and map is added to choose location.
12	Authentication Update in Android	21.11.2019	+	Forgot password layout has been modified. Reset password functionality has been added.
13	Trader Equipment in Android	14.11.2019	+	Equipment listing and details of equipment pages are implemented.
14	Transaction in Android	21.11.2019	+	Transaction for any type of equipment is implemented.
15	Alert in Android	21.11.2019	+	Creating Alert for any type of equipment is implemented.
16	Follwing System in Android	07.11.2019	+	Follow, unfollow, accept or reject follow request and remove follower are implemented.
17	Follwing System in Web Frontend	14.11.2019	+	Follow, unfollow, send follow request are implemented
18	Portfolio Operations in Web Frontend	21.11.2019	+	Create, delete portfolio functions are implemented. Also add/remove trading equipment functions are implemented.
19	Buy/Sell Functionality in Web Frontend	21.11.2019	+	Buying, selling trading equipment and depositing money to the system is implemented.
20	Edit Profile Update in Web Frontend	14.11.2019	+	Editing profile page is redesigned and linked with backend api.
21	Profile Page in Web Frontend	07.11.2019	+	Entering other user's profile page is implemented. Inner functionalities of this page are not completed yet.
22	Trading Equipment in Web Frontend	21.11.2019	+	Equipment listing and details of equipment pages are implemented.

## 3 Evaluation of the Status of Deliverables

### 3.1 General

#### 3.1.1 Project Plan

In order to have our project plan done we needed to split our team into three groups; Web Frontend team, Android team and Backend team. Our first plan was to have the Backend team start working as soon as possible so that our frontend teams would be able to implement the functionalities properly. So the approach was to have the endpoints done as soon as possible. And then for the first month our plan was to have the authentication and the user profile parts of the project done.

Now the next step is to have the trading equipments related features done, such as buying/selling trading equipments, making predictions and creating portfolios and etc... And while having these parts done backend endpoints should again be working in the future features which are the user functions such as creating events, articles, news and more features that makes the platform a social platform. After the frontend and android parts catching up with backend, our project will be done more or less.

After these basic and main features done, there will be a need for little modifications and then the Milestone 2 and the Final Delivery will arrive.

### 3.2 Android

#### 3.2.1 Authentication Interface

There are three pages existing in the authentication interface in Android: Login, Sign-Up, and Forgot Password pages. The designs of the pages have been successfully completed.

#### 3.2.2 Authentication

The incomplete implementation of the reset password functionality has been completed. Currently, the authentication of the android team works successfully in every aspect.

#### 3.2.3 User Profile

The user can visit profile page to update info about IBAN, username, and password. Also its possible to change the type of user between Basic and Trader (which requires adding a valid IBAN address). User profile page also has links to all user based actions including transaction history, alerts, follow requests, and portfolio.

#### 3.2.4 Followers

The user can access to the follower details from user profile page. Page includes the exact number of user's followers and followed by the user with current follow requests. The user can allow or deny the following requests. Also user can unfollow any user from the following list or remove a follower from user's own follower list.

#### 3.2.5 Trader Equipments

The user can select any type of equipments among stocks, cryptocurrencies and currencies. After selection the type of equipment, user can see the listed equipments with their current values in terms of USD, current stock in terms of unit. Users can look at the details of any equipment at their detail pages. The details, in this page, are comments about equipment, prediction rate of equipment, last 30 days history of equipment. User also can create alert for selected equipment or buy some units of equipment. Current status of Trading Equipment feature lacks some of functionalities defined under Project Requirements 1.1.5 and are planned to add.

#### 3.2.6 Transaction

Transaction page is where the user starts to trade in our platform. In this page, user can buy some amount of unit which is restricted by user's deposit and current stock of equipment. User cannot make transaction which exceeds its deposit, and if the current stock is not sufficient for given amount. After specifying the amount, user can see how much value will be withdrawn from his/her deposit in terms of base which is selected by user. Transaction feature satisfy the functionality defined by requirements 1.1.7.3.

### 3.2.7 Alerts

Alert page is where the user can create stop/loss limits for their investment. User can navigate to creating alert page by choosing alert button on any equipment's details page. In this page, application expects from user to give an amount and a limit. User can specify which actions to make, like sell or buy. And user can specify the situation of limit, like above the limit or below the limit. Alerting feature satisfy the functionality defined by requirements 1.1.7.4.

## 3.3 Backend

### 3.3.1 Alert

The alert endpoint is supposed to set alarm for a particular currency and sell/buy that equipment when a predefined limit by user is exceeded. That is, a user defines a currency to be sold or bought and a limit indicating the value of that equipment if the current value of this equipment goes below or above this limit, the transaction is performed automatically with the amount defined in the alert. Currently, a user can set, delete or modify an alert. However, those alerts do not do the expected transactions. This functionality will be active by the Milestone 3 and planned to be performed by a background thread checking the alerts whenever the current value of an equipment is changed.

### 3.3.2 Asset

The Asset endpoint stands for the equipment the user have. In other words, users are able to see their own equipment and see how much they have from each equipment as amount. When a user makes a transaction(i.e. buy or sell equipment using the application), the asset table has also been updated and recorded on that table. The asset endpoints are also helpful for checking whether a user can make the desired transaction with his/her own assets. To sum up, in the asset table user, equipment and amount have been stored and it is also used for in other endpoints.

### 3.3.3 Comment

Users can write/edit/delete comments on equipment and see other comments posted by others. In order to see a comment, either the comment owner's profile must be public or it must be followed by the requester if the profile is private.

### 3.3.4 Equipment

Equipment are stands for currencies, crypto currencies and stocks available in the system. Their current and historical values are fetched from a third party service Alphavantage. On application startup, The first 3 currencies are initialized. After 120 seconds passed, the second 3 currencies are initialized with the current values. After 120 seconds, the first 3 crypto currencies are initialized and so on. The delay between these initializations is required since the API service allows a client to send request 5 times in a minute. These operations are performed once on startup and are not repeated during the runtime again. Also, scheduled cron jobs starting at xx:15 until xx:30 update the latest values of equipments every hour. The historical values of those equipments belonging the last 100 days are updated once at 4:15 A.M. everyday. Available equipments are the followings:

- Currency: JPY, EUR, TRY, CZK, GBP, CNY
- Crypto-Currency: BTC, ETC, VIB, ETH, BTG, ZEN
- Stocks: AMZN, BABA, MSFT, ORCL, SILK, ENSG

([https://api.traderx.company/equipment/\[stock — currency — crypto-currency\]/list](https://api.traderx.company/equipment/[stock — currency — crypto-currency]/list))

### 3.3.5 Investment

Investment endpoint can be considered as depositing and withdrawing money from the application. In other words, as in other trading platforms, the users have some loaded in the application and by using that money he/she deposit before, they are able to make some transactions. In the investment endpoint, while users can deposit and withdraw money to/from system, they are also able to see their all investments with the date and amount they

make. Besides these, in the investment endpoint, the user is also able to see his/her profit/loss value. Profit/loss value is calculated via adding withdrawn amount to the user's assets' value and subtracting deposited amount.

### 3.3.6 Portfolio

As its stated at our glossary, portfolio is grouping of financial assets such as stocks, bonds, commodities, currencies and cash equivalents. Each user can have their own portfolios, which can not be seen by others. A user can have at max 10 portfolios. A user can create/delete a portfolio, which has unique portfolio name. A user can add/discard equipments to/from a portfolio. The features of an equipment that can be reached in the portfolio are as follows:

- Equipment Code(JPY, EUR, TRY etc.)
- Current Value of Equipment
- Daily Change: Which is . calculated by the change from yesterday's closing and current value.
- Last Updated: The last time that values about the currency is updated using API
- Prediction Rate

### 3.3.7 Transaction

Transaction endpoint is the core part of the TraderX. As is known, the fundamental functionality of the trading platforms is being able to buy/sell some equipment, making transaction. Whole transaction related operations are handled in the transaction endpoint. It's datatable basically stores all the transactions with user name, amount, equipment type, and date. Briefly, while the users are able to make transactions by using this endpoints, they also can see their transaction history by date and how many transactions they made overall etc. Note that, the buy and sell endpoints is only authorized for trader users. For now, the users can only be able to make transactions by using USD which is base currency for TraderX. However, in the further versions, the users will also be able to make transactions by using any type of equipment as they wish.

## 3.4 Frontend

### 3.4.1 Authentication Interface

There are two pages existing in the authentication interface: Login and Registration pages. A simple template was used in Web Frontend implementation with a major modification in all of the deliverables.

Login page was in the template. But the check was made with a hard coded mock user in the template and it wasn't functioning. The authentication needed to be connected with the API. And this was done by connecting the whole system to our server and modifying the checking system. And the design of the login page was modified according to the home page afterwards.

There was no registration page at the template. Registration page was created from scratch by using the components at the template. Username, email address and a password is taken from the user, validity of them is checked and then sent to the backend. Design and connection to the backend was made after html, javascript and css files are written.

### 3.4.2 User Profile Page

The user profile page is slightly modified on top of the template. Article, events, profile editing and more tabs are added to the interface. Articles, events and portfolios can be made through profile page. Profile photo and more information about the user can be modified though profile page.

### 3.4.3 Home Page

The page when user first sees in the website is the home page. When a user gets into the website there are two options for him/her, to register or to login. First, the design of this page was done and then patched into the website instead of the login page as the first page.



### 3.4.4 Changes in Authentication Interface

With the Google sign in functionality, login and register pages are changed. When users sign in to Google account:

- In login page, password field disappears and only username field should be filled to log in to our system,
- In register page, email and password fields disappear and those fields are automatically filled with information gathered from user's Google account.

Additionally, in register page, a map is added using Google Maps API to help users pick their location instead of providing latitude and longitude information manually.

## 3.5 Trading Equipment

There are three types of Trading Equipment in the system: Money Currencies, Stocks and Crypto-Currencies. More information about the data that is being pulled from the API can be found in Sec. 3.3.3. Two features are implemented about the Trading Equipment in Web Frontend. One of them is the general listing of equipment. The second is detailed pages for each equipment type. Detailed explanation about these pages are as follows;

- **List of Equipment Page:** This page consists of a list of trading equipment types. Each type involves tabs for each of the equipment in that type. And in each tab there is a graph indicating the opening values of the corresponding equipment for the last 100 days. And there are two buttons for each tab. One can buy the corresponding equipment and/or go to the detailed page for the equipment type.
- **Detailed Pages:** Each detailed page involves different graphs about the equipment in that type. One graph is a Radar Chart comparing each equipment in that type in the categories such as stability, growth rate and the values. One graph is a line chart comparing the values of each equipment for the last 100 days. And there are two more graph for each equipment. One of them compares the opening, closing, highest and lowest values of the equipment for the last 20 days. The other one is the opening and the current value of the equipment for the last 100 days.

## 3.6 My Investments

In my investments page, a user can see his/her assets. Also all the money that the user has. Currently in the system a user can only deposit USD as a base currency, but we will implement other currency types later on. In this page the user can also sell his assets. When he/she sells an asset, current currency amount will increase accordingly.

## 3.7 Portfolio

In portfolio section we have two functionalities. One is creating a portfolio and one is deleting an existing one. When a user clicks to one of the buttons that is shown, a dialog pops up and ask a name to the user. By using this name, we create or delete the portfolio. We also make name checks in backend so that a portfolio can not has an empty name or a user cannot have two portfolio with the same name. Also he/she cannot delete a portfolio that doesn't exists. When the user creates a portfolio and clicks to it, he/she redirects to the portfolio page that shows the inner information of the portfolio.

In this page again we have two functionalities. One is adding an equipment and one is removing one from the current portfolio. To add an equipment a user needs to select the equipment from the shown options. To delete one, the user needs to push to the delete button shown on the very right side of related row.

## 3.8 Edit Profile

Edit profile page was designed in the previous milestone but its functionalities were not working. Now edit profile page is redesigned, linked with backend api and added some new features. Previously all features of edit profile page were visible and had different designs. But this time a dropdown feature is added so that it would seem much more clean. As a new feature changing user type from basic to trader or vice versa is added. To be able to change the type from basic to trader user needs to give his/her iban number. To the the opposite, selecting the basic user is enough. Another new feature is depositing money to the system. Currently we only allow user to add USD to the system, but later, we will turn in into more flexible design.

### 3.9 Follow System

In our system there are two ways to follow a user. First one is making a search in the search page and clicking to the button shown on the right side of the user's name. This button changes according to the status of the related user. If the user is not being followed, then the button will be a follow button. If the related user is already followed, then follow button will be shown. After clicking to follow button, if the requested user is private, a follow request will be sent and the button will be turned into requested button. Otherwise the user will be followed automatically.

### 3.10 Buy Sell Trading Equipment

We have two pages to see trading equipment in our system. One lists all trading equipment in our system. A user can see, analyze the trading equipment and decide to buy accordingly. Second page is to see detailed information about a trading equipment. Both of these pages work perfectly fine and allow the user to buy new trading equipment.

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## 4 Summary of Work done

Group Member	Contribution
Sadullah Gültekin	Edit profile page is redesigned and all functionalities are linked to the backend api. Changing user type(basic to trader or vice versa) and depositing money functionalities are implemented. My investment page is implemented. Following, unfollowing, sending follow request functions are implemented. Buy and sell operations on trading equipment are implemented. Portfolio creation/deletion is implemented. Also adding/removing trading equipment to a portfolio is implemented. Visiting another user's page is implemented. Finally, user story is created for milestone presentation.
Enes Turan Özcan	Alert, Comment on equipment, equipment data types and scheduled update processes and the corresponding endpoints for these functionalities have been implemented. Also a few modifications on User endpoints (i.e. setting profile privacy feature) have been made. Equipment endpoints are redesigned according to the feedback from Android and frontend teams.
Burak Yüksel	Registering and logging in via Google account functionality has been implemented. Input fields for location have been changed to Google Maps.
Irmak Güzey	List of trading equipment page and detailed pages for each trading equipment type is implemented. Prepared the presentation for the milestone.
Baran Deniz Korkmaz	The design of the forgot password page has been modified, since the Android team have decided to make changes in the layout. The reset password functionality has been implemented successfully. Portfolio section has been added into the User Profile Page with Mustafa Alparslan via the division of labor whereby I've designed the fragment structure for the portfolios.
Barış Ege Sevgili	Portfolio System is Implemented. Create portfolio, Delete portfolio, adding/discarding an equipment to/from specific portfolio, getting a specific portfolio and getting all portfolios of a user endpoints and related functionalities have been implemented. According to feedbacks, error response messages have been modified and corrected.
Burak İkan Yıldız	The core part of the application, transactions, has been implemented. Asset tables and endpoints have been implemented. Investment(i.e. depositing/withdrawing money to/from application) has been implemented. According to feedback from frontend and android teams, user and equipment endpoints have been modified. Custom model mapper has been implemented in order to solve security issues.
Fatih Mustafa Kurt	On Android side: Trading Equipment, User's Profile, Follow System, Authorization of user, Transaction and Alerting functionalities have been implemented. Data flow architecture has been finalized.
Mustafa Alparslan	Android : Adding portfolio page to user profile page and merging all feature branches to android-dev for final product to be delivered.

## 5 Requirements

### 5.1 Functional Requirements

#### 5.1.1 User Requirements

1. Guests shall be able to only view the price of trading equipment.
2. Guests shall be able to browse economic articles, trading equipment and read comments about them.
3. Users shall be able to create an account by providing their username, e-mail, password and location using Google Maps. (implemented)
4. Registered users shall be able to login to the application by providing their username or email and password. (implemented)
5. Users should be able to sign up via Google account.
6. Already signed users should be able to sign in via Google account.
7. User shall validate account via e-mail. (implemented)
8. The users who want to be trader user shall provide their IBAN number. (implemented)
9. Users shall be able to reset their passwords if they forget their passwords by clicking "Forgot your password?" button. (implemented)
10. User shall be able to follow other users directly if the user's profile is public. (implemented)
11. User shall be able to send follow requests to users that have a private profile, and shall wait requests to be accepted.
12. User shall be able to accept or reject the following requests.
13. User shall be able to follow trading equipment.
14. User shall be able to set alerts for certain levels of trading equipment.
15. Users shall have at least one portfolio.
16. Users shall be able to create/delete their portfolios.
17. Users shall be able to change the name of their portfolios.
18. Users shall be able to add/delete new trading equipment to their portfolio.
19. Users shall be able to read/rate other users' articles, comments about trading equipment.
20. Users shall be able to write new articles and comments, make a prediction about any trading equipment, and view daily prediction rates of trading equipments.
21. Users shall be able to edit/delete their article comments.
22. Trader users shall be able to trade trading equipment.
23. Trader users shall be able to set stop/loss limits.
24. Users shall be able to make their profile public or private.
25. Users shall be able to see their own portfolios in their own profile page.
26. Users shall be able to edit their own bio in profile page.
27. Users shall be able to reach their own followers and following list and their old articles/comments. (implemented but articles/comments)
28. Users shall be able to see their own prediction success rate.

29. Users shall be able to see other users' prediction success rate in their profile.
30. Users shall be able to see other users' followers, articles, following list if the profile is public or if he/she follows him/her.
31. Users shall be able to only see other user's prediction rate if their profile is private and if he/she is not his/her friend.
32. Trading users shall have my investments page.
33. Basic users shall not have my investments page.
34. Trading users shall be able to invest on trading equipment in my investments page.
35. Trading users shall be able to create a buy order for a trading equipment for a specified rate in my investments page.
36. Trading users shall be able to set stop/loss limits on trading equipment in my investments page.
37. Users shall have a profit/loss section which is private to each user.
38. Users shall be able to see profit/loss in terms of currency chosen by user.
39. Users shall be able to manually enter investments to see calculated profit/loss.
40. Users shall be able to see news fetched from third party website.
41. Users shall be able to be redirected to third party site when click the news they would like to read in detail.

#### **5.1.2 System Requirements**

1. System shall provide a homepage for each user according to user interests.
2. System shall provide a homepage that enables registered users to see economic events, news and trading commodities that user is interested in.
3. System shall provide a navigation bar in order to enable users to switch to their profile section, articles section, news section etc.
4. System shall provide an "Events" section in which there are economic events, articles, news that is fetched from a third-party source.
5. System shall assign different significance levels for economic events.
6. Events shall be updated daily.
7. System shall support searching for users and trading equipment.
8. System shall support different type of searching criteria.
9. System shall support semantic search based on the context of information.
10. System shall support location-based search (be able to filter users based on city or district).
11. System shall support filtering events depending on their significance.
12. System shall notify users in accordance with their alerts.
13. System shall recommend articles, trading equipment, commodities for the users based on their history in the system.
14. System shall provide a "Trading" section where Trader users can buy/sell commodities, trading equipment.
15. System shall automatically detects when a trader make a transaction and update his/her portfolio.
16. System shall highlight the commodities that are trend or the user may be interested in based on his/her history.
17. System shall provide a simple, seamless and secure way for money transaction for trader users.
18. System should cooperate with 3rd party applications for money transaction and mobile payments.

## **5.2 Non-functional Requirements**

### **5.2.1 Accessibility and Availability**

1. The system shall have a native web and native mobile client.(implemented)
2. The system shall be deployable on a remote and manually configurable server.(implemented)
3. The website and the mobile application shall be available in English. (implemented)
4. The system shall support UTF-8(Unicode) charset. (implemented)
5. The web app shall provide support for Screen Reader applications.

### **5.2.2 Annotatitons**

1. System shall support W3C Web Annotation Data Model and follow W3C Web Annotation Protocol so that the contents can be annotated by users.
2. System shall follow the standards introduced by the W3C.

### **5.2.3 Performance**

1. System shall respond to request in at most 5 seconds. (implemented)
2. System shall use queue system to reduce response time. (implemented)
3. System should cache the commonly used contents to reduce response time.
4. Native Android app and web app should run smoothly and use low system resources. (implemented)

### **5.2.4 Privacy**

1. The user shall be able to respond follow request before following is activated.
2. The user shall be able to choose whether he/she wants his/her profile to be public or private.

### **5.2.5 Security**

1. Financial Transactions shall be reliable and secure.
2. System shall be invulnerable against potential SQL injection, XSS attacks and DDOS attacks. (implemented)
3. System shall force users to use strong passwords, which must consist of at least six characters (and the more characters, the stronger the password) that are a combination of letters, numbers and symbols. (implemented)
4. System shall protect users' information by denying any unauthorized accesses. (implemented)
5. System shall store hashed version of user sign in password and don't store the password itself in anyhow. (implemented)
6. System shall backup all data to AWS Storage after each week.
7. System shall encrypt every connection and data transfer by using latest version of TLS encryption.
8. The deployment server must be secured from any possible attack types, such as open port issues. (implemented)

## 6 API Documentation

For the API Documentation of our project -rather than writing all the information for the endpoints manually, we use Springfox suite to create API Documentation automatically when our application is run. The Springfox suite of java libraries are all about automating the generation of machine and human readable specifications for JSON APIs written using the spring family of projects. Springfox works by examining an application, once, at runtime to infer API semantics based on spring configurations, class structure and various compile time java Annotations. For an endpoint, if you annotate and define the parameters and explanations for these parameters properly they show up on the documentation page with the corresponding data format for both request (i.e. Request parameter, path parameter or body parameter) and response. Once you configure the "Docket" in the application, for each endpoint annotated with Swagger annotations there will be a manual page describing the endpoint on the document. Here is an example:

```
1  @PostMapping("")
2  @ApiOperation(value = "Registers a new user to the system.")
3  @ResponseStatus(HttpStatus.OK)
4  @ApiResponses(value = {
5      @ApiResponse(code = 400, message = GlobalExceptionHandlerController.
6          GENERIC_ERROR_RESPONSE),
7      @ApiResponse(code = 422, message = "Username or email is already in use"),
8      @ApiResponse(code = 412, message = "Value does not match regex."),
9      @ApiResponse(code = 500, message = "Failed to send verification email.")})
10 public StringResponseWrapper signup(@ApiParam("Signup User") @RequestBody UserDataDTO user)
11 {
12     return new StringResponseWrapper(signupService.signup(modelMapper.map(user, User.class),
13         user.getAppSecret()));
14 }
```

Then the corresponding API documentation for this endpoint will look like the following:

Response Content Type <span>*/*</span>				
Parameters				
Parameter	Value	Description	Parameter Type	Data Type
user	<div></div> <div>Parameter content type: <span>application/json</span></div>	Signup User	body	<div>Model</div> <div>Example Value</div> <pre>{   "iban": "string",   "username": "string",   "email": "string",   "password": "string",   "latitude": "string",   "longitude": "string",   "isPrivate": false,   "googleToken": "string",   "appSecret": "string" }</pre>
Response Messages				
HTTP Status Code	Reason	Response Model	Headers	
400	This is a generic error response. That means this type of exception is not handled explicitly.Please see the exception on application log and report this to the backend team (e.g. open an issue) with the producer request.			
412	Value does not match regex.			
422	Username or email is already in use			
500	Failed to send verification email.			

As can be seen on the right, "UserDataDTO" object is converted to JSON format and field types are denoted. Also possible response messages and status codes are shown at the end. This rescues backend team from the burden of writing down all the document for all endpoints. Further, it helps us not forget to include an endpoint for a particular one since they are created automatically. Here is the API documentation screenshot of our project. It also can be seen on the website from the documentation link.

# CmpE451 Group 6 API Service
























































Beta version of CmpE451 Group 6 API Service.

Alert : Alert Controller	Show/Hide	List Operations	Expand Operations
Asset : Asset Controller	Show/Hide	List Operations	Expand Operations
Comment : Comment Controller	Show/Hide	List Operations	Expand Operations
Equipment : Equipment Controller	Show/Hide	List Operations	Expand Operations
Follow : Follow operations	Show/Hide	List Operations	Expand Operations
Investment : Investment Controller	Show/Hide	List Operations	Expand Operations
Login : Sign in raleted operations	Show/Hide	List Operations	Expand Operations
Password : Password related operations	Show/Hide	List Operations	Expand Operations
Portfolio : Portfolio Controller	Show/Hide	List Operations	Expand Operations
Sign out : Logout Controller	Show/Hide	List Operations	Expand Operations
Signup : Sign up related operations	Show/Hide	List Operations	Expand Operations
Transaction : Transaction Controller	Show/Hide	List Operations	Expand Operations
trial : Trial Controller	Show/Hide	List Operations	Expand Operations
Users : Operations about users	Show/Hide	List Operations	Expand Operations

[ BASE URL: / , API VERSION: 0.0.1 ]



## 7 Project Plan

1		Implementation for part I	11 days?	10/1/19 8:00 AM	10/15/19 5:00 PM		
2		Backend	11 days?	10/1/19 8:00 AM	10/15/19 5:00 PM		
3		Auth	11 days?	10/1/19 8:00 AM	10/15/19 5:00 PM		
4		Register Endpoint	3 days?	10/1/19 8:00 AM	10/3/19 5:00 PM		Enes Turan Özcan
5		Login Endpoint	3 days?	10/3/19 8:00 AM	10/7/19 5:00 PM		Barış Ege Sevgili
6		Login Endpoint (With Google)	4 days?	10/7/19 8:00 AM	10/10/19 5:00 PM		Burak İkan Yıldız
7		Register Endpoint	2 days?	10/10/19 8:00 AM	10/11/19 5:00 PM		Enes Turan Özcan
8		Logout Endpoint	3 days?	10/11/19 8:00 AM	10/15/19 5:00 PM		Barış Ege Sevgili
9		Frontend	11 days?	10/1/19 8:00 AM	10/15/19 5:00 PM		
10		Auth	11 days?	10/1/19 8:00 AM	10/15/19 5:00 PM		
11		Register Page	5 days?	10/1/19 8:00 AM	10/7/19 5:00 PM		Sadullah Gültekin
12		Login Page	4 days?	10/7/19 8:00 AM	10/10/19 5:00 PM		Irmak Güzey
13		Profile Page	4 days?	10/10/19 8:00 AM	10/15/19 5:00 PM		Burak Yüksel
14		Android	11 days?	10/1/19 8:00 AM	10/15/19 5:00 PM		
15		Auth	11 days?	10/1/19 8:00 AM	10/15/19 5:00 PM		
16		Register Page	5 days?	10/1/19 8:00 AM	10/7/19 5:00 PM		Fatih Mustafa Kurt
17		Login Page	4 days?	10/7/19 8:00 AM	10/10/19 5:00 PM		Mustafa Alparslan
18		Profile Page	4 days?	10/10/19 8:00 AM	10/15/19 5:00 PM		Baran Deniz Korkmaz
19		Testing	1.333 day...	10/16/19 8:00 AM	10/17/19 10:40 AM	2;9;14	
20		Test For Backend	1.333 days?	10/16/19 8:00 AM	10/17/19 10:40 AM	2	Barış Ege Sevgili;Burak İkan Yıldız;Enes Turan Özcan
21		Test For Frontend	1.333 days?	10/16/19 8:00 AM	10/17/19 10:40 AM	9	Burak Yüksel;Irmak Güzey;Sadullah Gültekin
22		Test For Android	1.333 days?	10/16/19 8:00 AM	10/17/19 10:40 AM	14	Baran Deniz Korkmaz;Fatih Mustafa Kurt;Mustafa Alparslan
23		Milestone I	1 day	10/22/19 8:00 AM	10/22/19 5:00 PM	19	
24		Implementation for part II	17 days?	10/23/19 8:00 AM	11/14/19 5:00 PM	23	
25		Backend	11 days?	10/23/19 8:00 AM	11/6/19 5:00 PM		
26		Profile	3 days?	10/23/19 8:00 AM	10/25/19 5:00 PM		
27		Follow System	3 days?	10/23/19 8:00 AM	10/25/19 5:00 PM		Enes Turan Özcan
28		Profile Privacy	3 days?	10/23/19 8:00 AM	10/25/19 5:00 PM		Enes Turan Özcan
29		Trading Equipment	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		
30		Follow Endpoint	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Barış Ege Sevgili
31		Buy/Sell Endpoint	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Barış Ege Sevgili
32		Prediction Endpoint	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Burak İkan Yıldız
33		Set Alert Endpoint	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Burak İkan Yıldız
34		Profit/Loss Endpoint	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Enes Turan Özcan
35		Comment Endpoint	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Burak İkan Yıldız
36		Portfolio	3 days?	11/4/19 8:00 AM	11/6/19 5:00 PM	26;29	
37		Create/Delete Endpoint	3 days?	11/4/19 8:00 AM	11/6/19 5:00 PM		Barış Ege Sevgili
38		Add/Remove Trading Equipment Endpoint	3 days?	11/4/19 8:00 AM	11/6/19 5:00 PM		Barış Ege Sevgili
39		Follow Endpoint	3 days?	11/4/19 8:00 AM	11/6/19 5:00 PM		Burak İkan Yıldız
40		News	6 days?	10/23/19 8:00 AM	10/30/19 5:00 PM		
41		Get News Data	6 days?	10/23/19 8:00 AM	10/30/19 5:00 PM		Enes Turan Özcan
42		Comment Endpoint	6 days?	10/23/19 8:00 AM	10/30/19 5:00 PM		Barış Ege Sevgili
43		Frontend	17 days?	10/23/19 8:00 AM	11/14/19 5:00 PM		
44		Profile	3 days?	10/23/19 8:00 AM	10/25/19 5:00 PM		
45		Profile Page	3 days?	10/23/19 8:00 AM	10/25/19 5:00 PM		Sadullah Gültekin
46		Trading Equipment	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		
47		Trading Equipment Page	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Irmak Güzey
48		Buy/Sell/Follow Section	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Burak Yüksel
49		Prediction Section	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Sadullah Gültekin
50		Alert Section	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Irmak Güzey
51		Profit/Loss Section	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Burak Yüksel
52		Portfolio	3 days?	11/4/19 8:00 AM	11/6/19 5:00 PM	44;46	
53		Portfolio Page	3 days?	11/4/19 8:00 AM	11/6/19 5:00 PM		Sadullah Gültekin
54		News	6 days?	11/7/19 8:00 AM	11/14/19 5:00 PM		
55		News Page	6 days?	11/7/19 8:00 AM	11/14/19 5:00 PM		Irmak Güzey

56		Android	11 days?	10/23/19 8:00 AM	11/6/19 5:00 PM		
57		Profile	3 days?	10/23/19 8:00 AM	10/25/19 5:00 PM		
58		Profile Page	3 days?	10/23/19 8:00 AM	10/25/19 5:00 PM		Mustafa Alparslan
59		Trading Equipment	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		
60		Trading Equipment Page	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Fatih Mustafa Kurt
61		Buy/Sell/Follow Section	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Baran Deniz Korkmaz
62		Prediction Section	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Mustafa Alparslan
63		Alert Section	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Fatih Mustafa Kurt
64		Profit/Loss Section	6 days?	10/25/19 8:00 AM	11/1/19 5:00 PM		Baran Deniz Korkmaz
65		Portfolio	3 days?	11/4/19 8:00 AM	11/6/19 5:00 PM	57;59	
66		Portfolio Page	3 days?	11/4/19 8:00 AM	11/6/19 5:00 PM		Mustafa Alparslan
67		News	6 days?	10/23/19 8:00 AM	10/30/19 5:00 PM		
68		News Page	6 days?	10/23/19 8:00 AM	10/30/19 5:00 PM		Mustafa Alparslan
69		Testing	5.667 day...	11/15/19 8:00 AM	11/22/19 2:20 PM	25;43;56	
70		Test For Backend	0.667 days?	11/15/19 8:00 AM	11/15/19 2:20 PM	25	Barış Ege Sevgili;Burak İkan Yıldız;Enes Turan Özcan
71		Test For Frontend	0.667 days?	11/15/19 8:00 AM	11/15/19 2:20 PM	43	Burak Yüksel;Irmak Güzey;Sadullah Gültekin
72		Test For Android	0.667 days?	11/22/19 8:00 AM	11/22/19 2:20 PM	56	Baran Deniz Korkmaz;Fatih Mustafa Kurt;Mustafa Alparslan
73		Milestone II	1 day?	11/26/19 8:00 AM	11/26/19 5:00 PM	69	
74		Implementation for part III	9 days?	11/27/19 8:00 AM	12/9/19 5:00 PM	73	
75		Backend	9 days?	11/27/19 8:00 AM	12/9/19 5:00 PM		
76		Event	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		
77		Event Page	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		Burak Yüksel
78		Article	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		
79		Create/Delete Endpoint	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		Barış Ege Sevgili
80		Rate/Comment Endpoint	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		Burak İkan Yıldız
81		Search	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM	76;78	
82		Search Trading Equipment Endpoint	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM		Enes Turan Özcan
83		Search Articles Endpoint	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM		Barış Ege Sevgili
84		Search Events Endpoint	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM		Burak İkan Yıldız
85		Search Users Endpoint	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM		Enes Turan Özcan
86		Annotation	3 days?	12/5/19 8:00 AM	12/9/19 5:00 PM	76;78	
87		Annotation Endpoint	3 days?	12/5/19 8:00 AM	12/9/19 5:00 PM		Enes Turan Özcan
88		Frontend	9 days?	11/27/19 8:00 AM	12/9/19 5:00 PM		
89		Event	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		
90		Event Page	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		Burak Yüksel
91		Article	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		
92		Article Page	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		Sadullah Gültekin
93		Search	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM	89;91	
94		Search Bar	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM		Irmak Güzey
95		Result Page	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM		Burak Yüksel
96		Annotation	3 days?	12/5/19 8:00 AM	12/9/19 5:00 PM	89;91	
97		Annotate Profile	3 days?	12/5/19 8:00 AM	12/9/19 5:00 PM		Sadullah Gültekin
98		Annotate Trading Equipment	3 days?	12/5/19 8:00 AM	12/9/19 5:00 PM		Irmak Güzey
99		Annotate News/Event/Article	3 days?	12/5/19 8:00 AM	12/9/19 5:00 PM		Burak Yüksel
100		Android	8 days?	11/27/19 8:00 AM	12/6/19 5:00 PM		
101		Event	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		
102		Event Page	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		Burak Yüksel
103		Article	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		
104		Article Page	6 days?	11/27/19 8:00 AM	12/4/19 5:00 PM		Baran Deniz Korkmaz
105		Search	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM	101;103	
106		Search Bar	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM		Fatih Mustafa Kurt
107		Result Page	2 days?	12/5/19 8:00 AM	12/6/19 5:00 PM		Baran Deniz Korkmaz
108		Testing	0.667 day...	12/10/19 8:00 AM	12/10/19 2:20 PM	75;88;100	
109		Test For Backend	0.667 days?	12/10/19 8:00 AM	12/10/19 2:20 PM	75	Barış Ege Sevgili;Burak İkan Yıldız;Enes Turan Özcan
110		Test For Frontend	0.667 days?	12/10/19 8:00 AM	12/10/19 2:20 PM	88	Burak Yüksel;Irmak Güzey;Sadullah Gültekin
111		Test For Android	0.667 days?	12/10/19 8:00 AM	12/10/19 2:20 PM	100	Baran Deniz Korkmaz;Fatih Mustafa Kurt;Mustafa Alparslan
112		Final Delivery	1 day?	12/10/19 2:20 PM	12/11/19 2:20 PM	108	

## 8 User Scenarios

Mustafa Kundurga is a history teacher at Kucukyali Anatolion Highschool. He has been following crypto currencies for 4 years. He knows a lot about trading and can easily estimate the trends. He has already stroke it rich when many others has no idea about crypto currencies, by investing in ETH and now he has around 100 ETHs plus many other small coins. One day, he meets Firuz Hayati, who is an old-but-gold friend from highschool, on a lunch. Firuze talks about his instability about in which currencies to invest. Mustafa unwaveringly advice him to get into the crypto-currency market. He gives necessary fundamental information about crypto-currencies and his own investment plans with ETC and ZenCash. As Mustafa is an experienced player in the market, he knows many trading platforms and he recommends using TraderX to Firuze.

At the night Firuze Registers to system as a basic user. After examining the functionalities becomes a trader. She buys some ETC. Creates a portfolio named "Equipments to follow", adds ETC and USD to it.

Meanwhile Mustafa opens the app and checks the currencies on Equipment page as his daily routine, decides to finish buying ETC as he discussed about it today.

- Frontend User scenario

- Firuze logs in to the system using sign with Google option
  - \* Picks her Gmail to log in
  - \* Picks a username to use in platform
  - \* Picks basic user
  - \* Logs in by her username
  - \* Checks out the graphics of equipments.
  - \* From profile page, clicks Trader to become one.
  - \* Enters a valid IBAN number end finalizes
  - \* Navigates to equipments page
  - \* Clicks Buy equipment icon of ETC, which directs her to transaction page
  - \* Writes the intended value and presses buy and buys.
  - \* Goes to her profile page.
  - \* Goes to Portfolio section
  - \* Clicks Create portfolio, writes a Portfolio Name to create.
  - \* Adds the equipments that she want to add using toolbar.
  - \* From the main search bar, searches for "Mustafa"
  - \* Presses the Follow button next to "Mustafa" and sends follow request.
- Firuze logs out from the system using Logout button at her profile page.
  - \* He checks historical values of the currencies.
  - \* He directs to equipments page
  - \* From the Equipment list he selects Crypto and ETC
  - \* He sets 100 ETC and presses buy button. When he clicks to Buy button application redirects him to Login page since that action requires authentication.
  - \* He logs in to the system with his username and password
  - \* He buys 100 ETC, buy entering the amount that he wants and pressing buy button.
  - \* He Selects ZenCash from Equipment list
  - \* He sets buy alert, by indicating alert type, equipment and alert level. He set buy alert for ZenCash to the 3.13 USD level.
  - \* He goes to profile page
  - \* He notices that he has a follow request sent by Firuze from UI.
  - \* He approves the request by pressing approve button.
- He logs out from the system using logout button at his profile page

- Android User scenario

- He logs in to the system with his username and password and gets to his profile page directly

- \* He checks historical values of the currencies.
- \* He directs to equipments page
- \* From the Equipment list he selects Crypto and ETC
- \* He sets 100 ETC and presses buy button. When he clicks to Buy button application redirects him to Login page since that action requires authentication.
- \* He logs in to the system with his username and password
- \* He buys 100 ETC, buy entering the amount that he wants and pressing buy button.
- \* He Selects ZenCash from Equipment list
- \* He sets buy alert, by indicating alert type, equipment and alert level. He set buy alert for ZenCash to the 3.13 USD level.
- \* He goes to profile page
- \* He notices that he has a follow request sent by Firuze from UI.
- \* He approves the request by pressing approve button.
- He logs out from the system using logout button at his profile page

## 9 Code Structure

We have three main projects to develop, Web app, Android app and Backend app. Each projects has its own directory under the github repository, which are located as frontend/Traderx, android/Traderx, backend/Traderx. We have dedicated group members to each projects. Every member is responsible for his/her dedicated project's issues, bugs, and implementing new features.

We are using branch system to differ applications development from each other. Therefore, we have three main branches in addition to master branch, these are frontend-dev, android-dev, backend-dev. This branching system offers great flexibility to track the development of apps independently from other apps developments. If a new feature will be added to a application, a new branch will be opened which is branched from related application's development branch. Since our applications are started to development yet, we do not have a main development branch which will be the parent of three application development branches. As the main functional requirements are met by apps, we will create a main development branch which differs from master branch. Master branch always will be containing a bug free application.

Hot-fixes, which must be merged into master immediately, are branched from master. After merging hot-fixes into master branch, other development branches pulls this fixes into their branch. With this method, we can offer fixes quickly to production application. All these opened branches merged into its parent branch by opening a pull request. If these pull requests are merging into development branch, reviewers will be set application's dedicated group members.

We are using Github issue system to state the app's bugs, discuss the topics to decide the best. This issue system helps a lot to our application developments. For example, if a group member forgets something which was decided so long ago, he/she can find the related issue and remember the reasonings behind the decision.

## 10 Evaluation Of Tools And Managing The Project

As we have stated at Milestone 1, that we were facing some difficulties about project development, most of these problems are solved as we get used to project development environments, such as branching on git and communicating with each other. Yet, other problems arise from the ground.

We could not make an agreement on the project related discussions, which yields unknowns about project. For an instance, both android and frontend team could need different information from backend, and backend could decide different type information on the endpoints. After some long discussion related to these types of disagreement, all of the teams changes their design to match on agreed pattern about endpoints. From this point, we have decided to pre-discuss the required information and requested information about endpoints related to the features.

With this way, we hoped to improve our quality of work and lessen the work we have done. And yes, it has worked very well except on some features which were implemented towards to Milestone. All teams are proud of what they have achieved upto this Milestone.

Although we have encountered some difficulties about developing the project, we have managed to overcome these and implemented the features which are on the project plan.