Hochschule Fulda
University of Applied Sciences

Global Distributed Software Development

Milestone 5

Final Project for GDSD Class Fall 2020

Project

E-Markt Fulda

Team 04

Team Member Roles

Muhammad Adnan (muhammad.adnan1@informatik.hs-fulda.de)	Team Lead/Front end(lead)
Muhammad Waqas Hussain Lakhani (1310713)	Backend(lead)/DBA
Ahmed Shahid (1352032)	Backend/Github
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Muhammad Ziam	Frontend
Bilal Mehdi	Frontend

Url of the Application : http://gdsddata.s3-website-us-east-1.amazonaws.com/login

11 March 2021

CEO & CTO: Prof. Dr. Rainer Todtenhöfer

Contents

1. Product Summary

Product Name: E-Markt Fulda

E-Markt Fulda is an application specially designed for the people directly associated with the Fulda University of Applied Sciences. People can buy and sell the products by leveraging this application. The main goal of designing this application is to provide students with the opportunity to get the best products at a cheaper price, as slightly-used products are mostly cheaper and fulfils the purpose. This application will also play an important role to bring all the people associated with Fulda University of Applied Sciences on a single platform. Especially in these hard times when everybody wants to but cannot go outside, this application will prove itself to be a platform which helps everyone to get what they need without having an interaction with any human being. Users' satisfaction was and is the ultimate goal of designing this application and to achieve it, we have provided the opportunity for the customer to chat with the seller to have all the questions answered before buying a product.

Functionalities of E-Markt Fulda:

1. Login: With the functionality of Login, only the staff and students of Hochschule Fulda can login with their passwords
2. Sign Up/Registration: Only the staff and students of Hochschule Fulda can register themselves in this app, as It would only be available for them.
3. Home Page: Home page contains all the products that are approved form admin, and available to sell with buttons on the right top for 'Sell A Product' and 'Chat' along with a search bar to search anything by name.
4. Search Products: Users can simply search anything by its name and if the user gives nothing in the input field, all products will appear as a result.
5. Filter Products: Users can filter searched results. They can filter by alphabetical order, price range, and product posting date.
6. Post Product: Users can post the product that he wants to sell and can upload multiple images of products.
7. Product Details: Users can check the details, description and images of the product that he/she wants to buy with a chat button so users can instantly start chatting with the seller.
8. Admin User: The admin user maintains the decorum of the website by managing users and products.
9. Admin Product Approval: Admin takes care about posting of the products and checks if everything is in order or not and then the approved product is shown.
10. Chat With Seller: The users can chat with the seller if he/she has any query regarding the product or is interested in the product

URL of the product : http://gdsddata.s3-website-us-east-1.amazonaws.com/login

2. Milestone Document M1-M4

Milestone documents are attached from the next page.

Master AI Team Project Fall 2020

E-Markt Fulda

(Group 4)

Milestone 1 - Nov, 18 2020

Members:

Muhammad Adnan muhammad.adnan1@informatik.hs-fulda.de	Team Lead Frontend lead
Muhammad Waqas Hussain Lakhani	Backend lead DBA
Ahmed Shahid	Git Master
Bansi Jivani	Documentation
Muhammad Ziam	
Bilal Mehdi	

Version History:

Submission Date	Revision Date
18-Nov-2020	23-Nov-2020

Contents

1. Executive Summary

During recent times, the demand for e-commerce has exponentially increased. COVID has forced people to do businesses from online resources as well as people also prefer to do purchases for their groceries from online sources. This gives motivation to build a platform for the users to buy/sell or exchange any product or provide a service to the other users of the application.

E-Markt Fulda is an e-commerce web-based platform to provide buy/sell services to the users. Users will be able to post classified ads to sell anything or provide any service to other users of the application. The users will be able to see the ads posted on the platform and can communicate with the poster of the ad. Users will be able to search the marketplace to find the required products and will be able to filter the results within the user's price range.

This platform can be used by only students, Faculty and staff of HS Fulda University of Applied sciences. These users will be able to get in touch with each other to discuss the product/service or to ask any further questions.

Users can easily use the app on any web browser from their Desktop/Laptop computers as well as mobile phones.

To develop the application, a group of students team up from different origins of the globe for the MS program at HS Fulda. This diverse team includes a senior developer Muhammad Adnan as Team Lead & Frontend lead, Muhammad Waqas Hussain Lakhani as Backend lead and UI/UX lead, Ahmed Shahid as Git Master, and Bansi Jivani, Muhammad Ziam, and Bilal Mehdi as developers.

2. Personae and Use Cases:

Key Personas:

Category 1: Students

General Characteristics: Responsible, Self-Awareness

Goals: Cheap products, find a room, find a tutor for a specific course, find a part-time job.

Skills: Intermediate computer skills, Familiar with mobile UI

Pain points: They want a website, where he/she can find cheap products, room. In addition, there is no portal in the city to find a tutor for some courses offered in the university. In addition, they want to find a job which is offered in the University to save time as much as possible.

<u>**Persona example:**</u> Mohsin is a 20y old student, newly arrived in Fulda city from Asian region, He want to complete his Masters from the university, However, He is from poor family and apart from his studies he wanted to earn money but without wasting time on other odd jobs in the market, Apart from his studies he is trying to find a job in the university. Moreover, he just got his room without some mandatory furniture so he is looking for any help in the city to find him good and cheap furniture.

Category 2: Admin Staff

General Characteristics: Confidence, Teamwork

Goals: Sell unused items in the university, posting available jobs

Skills: Basic computer skills, Microsoft Office

Pain points: They want a facility, where they can sell unused items from the university, because every year the university scraps too many things, and they think that it can be useful for most of the students, Moreover, they want to post university jobs so that only their university's students can hire.

<u>**Persona example:**</u> David is one of administrative person, he used to post university related jobs on other ecommerce websites for only Fulda University's students, however, its very hard him to manage too many applications because most of the applicants are from other universities, so he finds a solution to post jobs for only University's students.

Category 3: Faculty Member

General Characteristics: Responsible, Mature

Goals: Selling products and services

Skills: Expert computer skills

Pain points: They want a website, where they can buy products and sell their services e.g. teaching.

Persona example: Lynette is a PhD professor, she is very good in Programming and in the lecture-free period she wants to teach programming to students and wants a platform to advertise her teaching services.

Use Cases:

Selling an Item: A user from the university wants to sell any item on the website, he/she has credentials to log in into the application, he login to the application and go to the sell item page, where he adds some details about the item and some pictures and submit the form.

Buy an Item: University student wants to buy a cheap sofa for his room, he comes to the side and goes to the "furniture" category in the site and finds a cheap sofa, then he contacts the person who is selling it by phone that is mentioned in the ad. After that they decided to meet at some place because the buyer wants to see the sofa condition, after evaluation he buys the sofa.

Find a tutor: University student wants to find a language teacher, he come to the site and search a tutor, he got some results but he tried to find a teacher that resides in the Fulda city, he finally go the right contact and he contacted the person through a form on the website, he get respond after some time from the tutor and finalize the fees and time table.

Forgot Password: A user forgets the password and wants to recover the password, he goes to the site and enters his/her email address and get a recovery process on his email address to recover his/her password.

Add a Service: A PhD student working as a teaching assistant is good at programming and wants to teach students in his available hours. He will add an hourly service to teach programming. The interested students can contact him through chat and can discuss further.

3. List of main data items and entities – data glossary/description

User: id, name, dob, email, registeredDate, password, image, isActive

Product: id, name, description, price, sellingType, category, images, isSold, isActive, dateAdded

Message: id, sender, receiver, message, timestamp

SellRequest: id, userId, productId, timestamp, amount.

4. Initial list of functional requirements

i.   Users should only be able to register with their University's email address (emails with suffix, "hs-fulda.de").
ii.   Only registered users should be able to login to the platform.
iii.   Users should be able to update a profile.
iv.   Users should be able to search for products or services by a keyword.
v.   Users should be able to filter items by category and price range.
vi.   Users should be able to sort items by posted date and price in ascending or descending order.
vii.   Users should be able to view the details of items on the website.
viii.   Users should be able to send and receive messages between each other.
ix.   Users should be able to list their product/service on the platform.
x.   Sellers should be able to change the status of an item as sold, unavailable, available.
xi.   Sellers should be able to edit ad (price, images, description. etc).
xii.   Admin will review before publishing an ad to the website.
xiii.   Users should be able to report another user.
xiv.   If a user is inactive for a certain time, then he will be automatically logged out from the application.
xv.   Users will be able to see their recently viewed products.
xvi.   Showing similar or related products in the product page.
xvii.   Users will be able to review sellers.
xviii. Admin should be able to block/unblock users.
xix.   Users can request for a product/service they want to buy.
xx.   Sellers can add FAQs of listed products so they don't have to give answers to commonly asked questions to every person.
xxi.   Sellers can create a duplicate ad of their product/service.

5. List of non-functional requirements

i. Application shall be developed, tested, and deployed using tools and servers approved by Class CTO and as agreed in M0 (some may be provided in the class, some may be chosen by the student team, but all tools and servers must be approved by class CTO).

ii. Application shall be optimized for standard desktop/laptop browsers e.g., must render correctly on the two latest versions of two major browsers.

iii. All or selected application functions must render well on mobile devices.

iv. Data shall be stored in the database on the team's deployment server.

v. No more than 50 concurrent users shall be accessing the application at any time.

vi. Privacy of users shall be protected, and all privacy policies will be appropriately communicated to the users.

vii. The language used shall be English (no localization needed).

viii. Application shall be very easy to use and intuitive.

ix. Application should follow established architecture patterns.

x. Application code and its repository shall be easy to inspect and maintain.

xi. Google analytics shall be used (optional).

xii. No email clients shall be allowed. Interested users can only message to sellers via insite messaging.

xiii. Pay functionality, if any (e.g., paying for goods and services) shall not be implemented nor simulated in UI.

xiv. Site security: basic best practices shall be applied (as covered in the class) for main data items.

xv. Media formats shall be standard as used in the market today.

xvi. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development.

xvii. The application UI (WWW and mobile) shall prominently display the following exact text on all pages "Fulda University Software Engineering Fall 2020. For Demonstration Only" at the top of the WWW page. (Important to not confuse this with a real application).

6. Competitive Analysis

Features	E-Markt Fulda	Ebay	OLX	FB Marketplace
Product listing	YES	YES	YES	YES
Service listing	YES	YES	NO	NO
Home Delivery	NO	YES	YES	NO
Online Payments	NO	YES	NO	NO
International Shipping	NO	YES	NO	NO
Messaging	YES	YES	NO	YES
Audience	HS Fulda Students/Staff/ Faculty	Everyone	Everyone	Everyone

As our target audience is very specific, Students, Staff and Faculty can easily buy/sell or exchange any product or service within Fulda. It will be easier for users as they know that other users are also related to HS Fulda. Just like other platforms, our application will allow users to add product/service listings. Our product has all the required features as of our competitors the other key features are not added because of limitations and scope of the project

7. High-level system architecture and technologies used

Hosting server and solution: We are using AWS as a cloud provider for the hosting service, and a EC2 instance will be used as the server to host the web application.

Programming languages and frameworks: We are using NodeJs for the backend framework along with Express framework. Bootstrap will also be used in the frontend to help with the responsive design of the HTML pages.

Database Server: We are using MySQL database server for the web application.

Web Server: Nginx web server.

8. Team Roles

Member	Role
Muhammad Adnan	Team Lead/Front end(lead)
Muhammad Waqas Hussain Lakhani	Backend(lead)/DBA
Ahmed Shahid	Backend/Github
Bansi Jivani	Frontend/Documentation
Muhammad Ziam	Frontend
Bilal Mehdi	Frontend

9. Checklist

So far, all team members are engaged and attending WebEx sessions when required.	DONE
Team found a time slot to meet outside of the class.	DONE
Back end, Front end leads, and GitHub master chosen.	DONE
Team decided and agreed together on using the listed SW tools and deployment server.	DONE
Team ready and able to use the chosen back and front-end frameworks and those who need to learn are working on learning and practicing.	DONE
Team lead ensured that all team members read the final M1 and agree/understand it before submission.	DONE
GitHub organized as discussed in class (e.g., main branch, development branch, folder for milestone documents etc.).	DONE

Master AI Team Project Fall 2020

E-Markt Fulda
(Group 4)

Milestone 2 - Nov, 27 2020

Members:

Muhammad Adnan muhammad.adnan1@informatik.hs-fulda.de	Team Lead Frontend lead
Muhammad Waqas Hussain Lakhani	Backend lead DBA
Ahmed Shahid	Git Master
Bansi Jivani	Documentation
Muhammad Ziam	
Bilal Mehdi	

Version History:

Submission Date	Revision Date
27-Nov-2020	N/A

Contents

1. Functional Requirements (Prioritized)

PRIORITY 1 - Must have features

User Group: Non-Registered User

1. Users should only be able to register with their University's email address (emails with suffix, "hs-fulda.de").

    1.1 With this feature we will be able to authorize just user from the Fulda University

User Group: Registered User

2. Only registered users should be able to login to the platform.

    2.1 With this feature other users wont get access to this platform and just with the registration we can get to know if the user is a member of the Fulda University and in that way it will maintain the decorum of the concept of our application.

4. Users should be able to search for products or services by a keyword. 4.1 This feature allows users to find the product they are looking for.

5. Users should be able to filter items by category and price range.

    5.1 With this feature, users will be able to filter the item, so that it may help them to find the optimum product if it's available.

6. Users should be able to sort items by posted date and price in ascending or descending order.

    6.1 With this feature, Users search will become easy and will be able to find the item or service more easily.

7. Users should be able to view the details of items on the website.

    7.1 With this feature users will get to know the better function and feature of the product and it is always better to know the description of the product you are buying.

8. Users should be able to send and receive messages between each other.

    8.1 With this feature, if a user likes the product or wants to know more about the product, he/she can contact the seller and talk with him/her.

9. Users should be able to list their product/service on the platform.

    9.1 With this feature the seller can post the item or service he/she offers and so if there is any suitable buyer he/she can buy it.

10. Sellers should be able to change the status of an item as sold, unavailable, available.

       10.1 With this feature, users can easily know the status of the product i.e. if it is still available or is it for limited time or sold, etc.

11. Sellers should be able to edit ad (price, images, description. etc).

       11.1 With this feature, if the seller's product is not selling or if he/she has missed some details to add, this feature would b e helpful to make changes by editing it.

User Group: Admin

12. Admin will review before publishing an ad to the website.

       12.1 This will allow to maintain the good environment of the application as there are sometimes where people do mischievous activities which should be avoided.

18. Admin should be able to block/unblock users.

       18.1 With this feature, admin can control the good environment of the application if someone tries to cheat or does some activities that users shouldnt do.

PRIORITY 2 - Desired feature

User Group: Registered User

3.   Users should be able to update a profile.

       3.1 With this feature, the user will be able to update details of himself/herself.

13. Users should be able to report another user.

       13.1 This feature enables users to notify if there is some inappropriate activity from another user which will help to make a good environment for the application.

17.Users will be able to review sellers.

       17.1 With this feature, users will be able to give reviews to the seller which will reveal for other users how credible is the seller and how was his/her experience in dealing with the seller.

20.Sellers can add FAQs of listed products so they don't have to give answers to commonly asked questions to every person.

       20.1 This feature would help users to get know more about the product and not disturb the seller unless necessary and also save time of both seller and user.

PRIORITY 3 - Opportunistic feature

User Group: Registered User
14. If a user is inactive for a certain time, then he will be automatically logged out from the application.

14.1 This would create less traffic and will be easy to handle.

15. Users will be able to see their recently viewed products.

15.1 With this feature, users will be able to track the item that he has recently in his wish list or he is keeping track of.

16. Showing similar or related products in the product page.

16.1 This feature will enable users to consider new options.

19.Users can request for a product/service they want to buy.

19.1 There can be this feature where users can request for a product/service he wishes for.

21. Sellers can create a duplicate ad of their product/service.

2. List of main data items and entities

E-Markt Fulda is a marketplace for Fulda students. There will be multiple types of users and have different privileges using the application.

Administrators
- Administrators will have full privileges of the application.
- They can block users incase of any violation of terms
- They can approve/decline products posted by users.
- They can delete products from the marketplace.

Registered Users
- *Sellers can post/update a product request in the marketplace.
- Seller can only delete his approved product from the marketplace.
- All registered users can browse/search the marketplace.

*Products will be available on the marketplace after approval from the Administrator.

Users will have certain attributes associated with them.
- Email: only email with postfix of "hs-fulda.de" will be allowed to register.
- Username: name of registered user
- Type: type can be Admin or Normal user. Can be modified by any Admin.
- Products: products offered by users. (approval needed from admin)
- Id: unique identifier for user
- Status: status of user, it can be active or inactive.

Products:
There can be two types of products. Either it will be a physical item to be sold or a service to be offered.

Product will have these attributes associated with them.
- Type: it can be Product or a service
- PaymentType: it can be either one-type or hourly.
- User: user who is offering this product
- Amount: amount for which user is offering the product.
- Pictures: optional attribute where seller can attach pictures of the physical item to be sold.
- Id: unique identifier for product.
- Description: description provided by seller.
- Title: a title of product.
- Timestamp: date and time when product is added.
- Status: status of product. It can be pending, onsale, sold, inactive.
- Category: category of item where product lies. It can be "electronics", "mobile" etc.

Chat:

As a buyer can contact the seller using private chat.
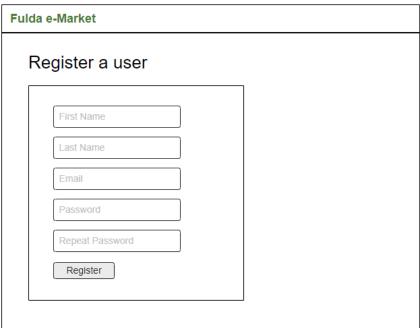
A chat can have following data.

- Message id: unique id of message
- Product id: product for which chat is initiated.
- Senderid: unique id of sender of message.
- Recieverid: unique id of receiver of message.
- Timestamp: date and time of message sent.
- Message: message sent by sender.

3. UI Mockups and Storyboards

Use Case 1 – Register a user:
In this scenario, users will register on the site, after clicking the Register button, another page will open where he/she needs to enter required information and press register button.

Fulda e-Market

Login

| Login |
| Password |

Sign In   Register

Fulda e-Market

Register a user

| First Name |
| Last Name |
| Email |
| Password |
| Repeat Password |

Register

Use Case 2 – Sell an item:

In this scenario, after the login process users can **Place an order**, they need to press **Place an order** button, and select the category, if user want to sell a **Service** then user needs to select Service category, he/she can add photos. Contact details would be mandatory.

Fulda e-Market		Hi, John
What are you looking for?	Find	Place an Order

Fulda e-Market		Hi, John
What are you looking for?	Find	Place an Order

Place an order

Category ▼

Title

Price

Address

Contact Details

Description

Add Photos

Place order

Use Case 3 – Buy an item:

In this scenario, after the login process users can **Buy any item**, either they can search by Category or Click on any latest ads on the Main page, after that they can contact th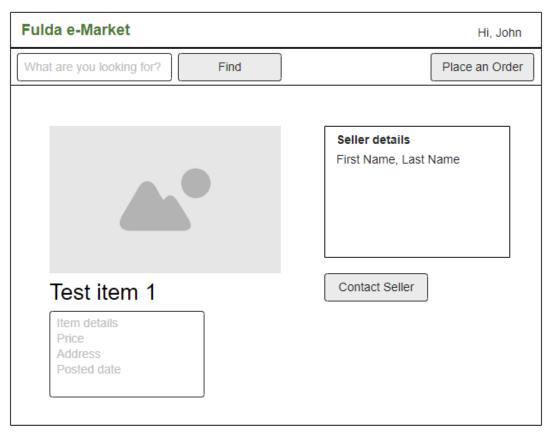e Seller by phone, or using the site "chat" functionality. Chat Portal will open by clicking on "Contact Seller" button.

Fulda e-Market

Hi, John

What are you looking for? | Find | Place an Order

Seller details

First Name, Last Name

Test item 1

Item details
Price
Address
Posted date

Contact Seller

Fulda e-Market

Hi, John

What are you looking for? | Find | Place an Order

Chat

| Seller 1 |
| Buyer 1 |
| Seller 2 ▶ |
| Buyer 4 |
| Buyer 2 |

Chat history

Message

Send

Use Case 4 –Approve Pending orders:

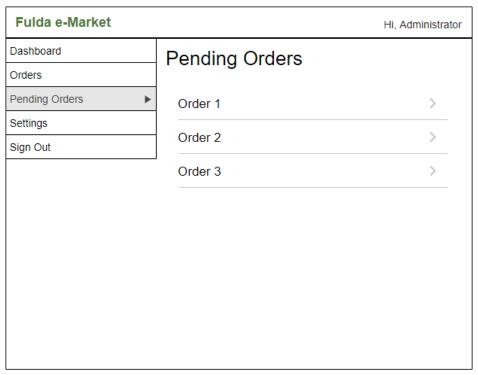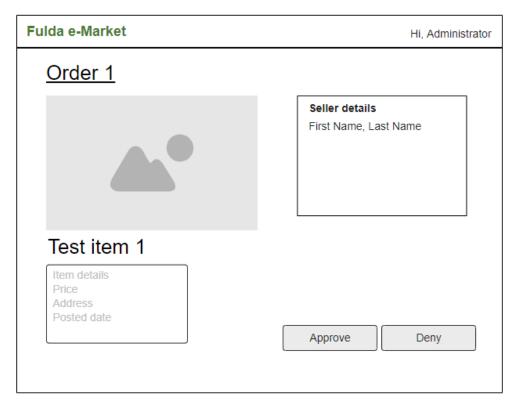In this scenario, administrator can **Approve Pending orders**, After the login he/she will land on the Admin portal, from where he/she will open Pending orders section, from where he opens any specific Order and can **Approve or Deny** any order based on the given data.

Fulda e-Market   Hi, Administrator

| Dashboard |
| Orders |
| Pending Orders ▶ |
| Settings |
| Sign Out |

Pending Orders

Order 1   >
_____

Order 2   >
_____

Order 3   >
_____

Fulda e-Market   Hi, Administrator

Order 1

Seller details
First Name, Last Name

Test item 1

Item details
Price
Address
Posted date

[Approve]   [Deny]

4. High level Architecture, Database Organization
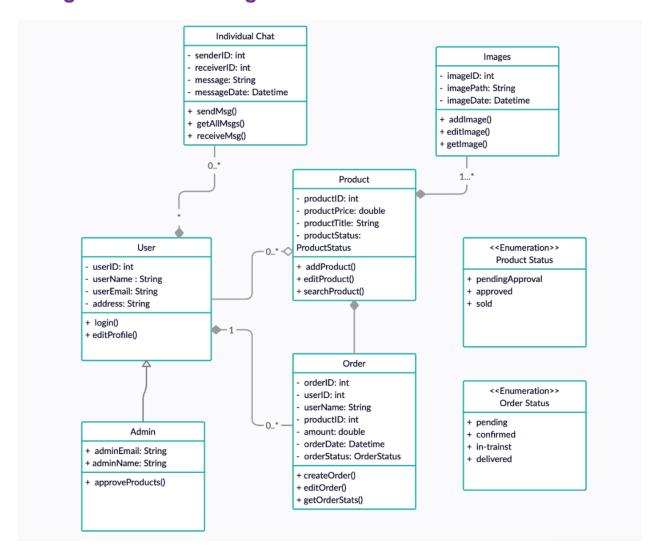

Above diagram illustrated the high-level architecture of application, in which Application would run on Amazon EC2 instance and we would be using Amazon S3 Storage for our images, in addition as per the diagram Client/Browser would interact with Front end application build on Angular and Bootstrap, back-end services and logics would be the in NodeJS which would get data from mySQL database.

- Above image shows the high-level basic database schema, with necessary tables and entities

- For Media storage, file system would be our choice as it's less complex to implement and read/write to a DB is always slower than filesystem.

- As describe in our functional requirements users can use filtration on the bases of many properties such as category, price, product posted date etc. For the search, we will be using MySQL '%LIKE' feature on the product name to fetch the any product which contain searched text.

- For the sake of simplicity, we will not use any fancy algorithm for rating, ranking or prioritization of products or user. But will store product rating and review in database for future analyses and for future admin approval of products.

5. High level - UML diagram

Individual Chat

- senderID: int
- receiverID: int
- message: String
- messageDate: Datetime

+ sendMsg()
+ getAllMsgs()
+ receiveMsg()

Images

- imageID: int
- imagePath: String
- imageDate: Datetime

+ addImage()
+ editImage()
+ getImage()

Product

- productID: int
- productPrice: double
- productTitle: String
- productStatus: ProductStatus

+ addProduct()
+ editProduct()
+ searchProduct()

User

- userID: int
- userName : String
- userEmail: String
- address: String

+ login()
+ editProfile()

<<Enumeration>> Product Status

+ pendingApproval
+ approved
+ sold

Admin

+ adminEmail: String
+ adminName: String

+ approveProducts()

Order

- orderID: int
- userID: int
- userName: String
- productID: int
- amount: double
- orderDate: Datetime
- orderStatus: OrderStatus

+ createOrder()
+ editOrder()
+ getOrderStats()

<<Enumeration>> Order Status

+ pending
+ confirmed
+ in-trainst
+ delivered

6. Key Risks

Skills risks (do you have the right skills),
Actually, we are the beginners to the technology of the Node JS and we will be learning and implement by working parallel so we can understand each and everything of the module and then implement it. We made to learn from the basics level and help to understand the nature how to undergo for a work in an effective way. So, as we are working and learning these problems may be reduced. The main and the major issue which we can is of skill risk is that we are new to the technology Node JS.

Schedule risks (can you make it given what you committed and the resources)
The schedule risks which we can face during the project completion comprises of the meetings of the group members in time. As the second wave of COVID 19 is going on some of the team members are physically present and some among them are not present due the difference of time. Our team members mostly reside in India and Pakistan and there is the difference of time zone. Although we will manage the timing of each team member as per all members schedule requirements and work accordingly. Though it is tough but sometimes we have the issues due to time zone different but we managed and understand the tough time and overcome these schedule risks

Technical risks (any technical unknowns to solve),
Although, there is not such a big technical issue or risk during the working of the project.
The technical issue which we can face may be of the learning of the new software and it tools as we are at the beginner level of learning Node. Moreover as some of our team members are not with us. They back in their countries so the issues of connectivity may happen as they live in 3rd world or not. Having the compatible software for this purpose. But the chance of this risk is not Much hence we are trying to gear up and use the software which is helpful for all of our team Members.

Teamwork risks (any issues related to teamwork)
As listed in schedule risk we are having teamwork issues because some of our team mates are not with Us because some of our team member are in home countries due to COVID 19 in Pakistan India etc. So we will be Having the biggest issue of time zone as some of our team members may not report on time. The other issues may arise May the version of software used may not be the same. We are making a strategy that We are looking and counter these issues and work and set it accordingly, to make our project successful.

Legal / content risks (can you obtain content/SW you need legally with proper licensing, copyright).

Our team members will take full care of the content risks and legal risks. If any kind of such risk is found we will mention in our project that we believe that doing such thing is an offensive measure. The legal / content risks may occur the software issues that there time we need to pay their fee. So, we will have to make sure in each and every case that there must not be any kind of the legal rights. The project will be tried to kept plagiarism free so that there must not be issues of such kind that will not occur in the project.

7. Project Management

E-Markt Fulda is being developed by a diverse team of six people from different educational and social backgrounds, including Adnan, the team lead and front-end lead, Waqas is back-end lead and he is also responsible for administrating database, Ahmed is the GitHub master, Bansi is the documentation expert, Ziam and Bilal are front-end developers. A lot of technologies are being used, including AWS as Cloud provider and EC2 instance will be used as the server for web hosting. We also need a web server, after analysis and consensus, Nginx web server was decided to be leveraged. Database is one of the most important components of any project, for this purpose, we will use MySQL server.

Now we come to languages and frameworks. For the front-end, HTML, CSS, JavaScript will be used and Angular and Bootstrap shall be employed to make E-markt Fulda a responsive and user-friendly e-commerce platform. For the back-end development, NodeJS along will the express framework shall be used.

To keep the team on one page and keep the updated version of this project, Trello is being used where everyone is obliged to update his/her work status. Each task of Milestone is equally divided into team members and everyone's opinion is respected. Regular group meetings are organized, for which Skype is used. The team regularly communicates using WhatsApp group. For the future, same plan will be executed for dividing and performing the tasks to develop and run E-Markt Fulda within time.

Master AI Team Project Fall 2020

E-Markt Fulda
(Group 4)

Milestone 3 - Jan, 20 2020

Members:

Muhammad Adnan muhammad.adnan1@informatik.hs-fulda.de	Team Lead Frontend lead
Muhammad Waqas Hussain Lakhani	Backend lead DBA
Ahmed Shahid	Git Master
Bansi Jivani	Documentation
Muhammad Ziam	
Bilal Mehdi	

Version History:

Submission Date	Revision Date
27-Nov-2020	N/A

Contents

1. Summary of feedback given by professor

2. List of tasks that team will focus for final delivery

3. List of final features

Summary of the feedback given by professor on 14th Jan

1. Signup feature was checked.
2. Login feature was checked.
3. Search function was checked.
4. Sorting function was checked.
5. Posting an item with images and description was checked.
6. Responsiveness of the application was checked.
7. Admin panel functions(approval of product, blocking of user, addition of category) was checked.
8. Chat function was checked.

List of task that team will focus on for the final delivery

1. Chat function - User must be able to communicate with the seller if he has questions for the product.
2. Approval of an item - After posting the product, admin must approve it before the product is live on the web application.
3. Disapproval of product - Admin should be able to block the item to get live on the application if he finds it inappropriate.
4. Images of the product - User must be able to upload the images of the product he/she wants to sell.
5. List of users - Admin must be able to see a list of all users, using the application.
6. Block user - In case of any fraud user, admin must restrict him from using the application.
7. List of products - Admin must be able to see all the products on the website.

List of final features that E-Markt Fulda will have

1. Sign up - Users(students, professors, staff members of HS-Fulda) must be able to sign up with their university email(ending with hs-fulda.de).

2. Login - Registered users must be able to login the application to use the application.
3. Dashboard - After login the registered user must be able to see the dashboard.
4. Search product - Users must be able to search for products that they are looking for.
5. Filter product - Users must be able to filter the product by category.
6. Sort product - According to time or price users must be able to sort the products.
7. View details of the product - Users must be able to see the description of the product.
8. Post product - Seller must be able to post the item they want to sell on the application.
9. Chat function - Users must be able to communicate with sellers if they have questions regarding the product.
10. Approve products - Admin must approve the posted product before it goes live on the application.
11. Disapprove products - Admin can block a posted product after being published on the site.
12. Block user - If the user does some inappropriate activity admin can restrict them from using the application by blocking them.
13. Add categories - Admin can add new categories if the category does not exists.

Master AI Team Project Fall 2020

E-Markt Fulda

(Group 4)

Milestone 04 - Feb, 02 2021

Members:

Muhammad Adnan muhammad.adnan1@informatik.hs-fulda.de	Team Lead Frontend lead
Muhammad Waqas Hussain Lakhani	Backend lead DBA
Ahmed Shahid	Git Master
Bansi Jivani	Documentation
Muhammad Ziam	
Bilal Mehdi	

Product Summary

E-Markt Fulda is an application specially designed for the people directly associated with the Fulda University of Applied Sciences. People can buy and sell the products by leveraging this application. The main goal of designing this application is to provide students with the opportunity to get best products in cheaper price, as slightly-used products are mostly cheaper and fulfils the purpose. This application will also play an important role to bring all the people associated with Fulda University of Applied Sciences on a single platform. Especially, in these hard times when everybody wants to but cannot go outside, this application will prove itself to be a platform which helps everyone to get what they need without having an interaction with any human being. Users' satisfaction was and is the ultimate goal of designing this application and to achieve it, we have provided the opportunity for the customer to chat with the seller to have all the questions answered before buying a product.

Functionalities of E-Markt Fulda:

1. **Login:** With the functionality of Login, only the staff and students of Hochschule Fulda can login with their passwords

2. **Sign Up/Registration:** Only the staff and students of Hochschule Fulda can register themselves in this app, as It would only be available for them.

3. **Home Page:** Home page contains all the products that are approved form admin, and available to sell with buttons on the right top for 'Sell A Product' and 'Chat' along with a search bar to search anything by name.

4. **Search Products:** Users can simply search anything by its name and if the user gives nothing in the input field, all products will appear as a result.

5. **Filter Products:** Users can filter searched results. They can filter by alphabetical order, price range, and product posting date.

6. **Post Product:** Users can post the product that he wants to sell and can upload multiple images of products.

7. **Product Details:** Users can check the details, description and images of the product that he/she wants to buy with a chat button so users can instantly start chatting with the seller.

8. **Admin User:** The admin user maintains the decorum of the website by managing users and products.

9. **Admin Product Approval:** Admin takes care about posting of the products and checks if everything is in order or not and then the approved product is shown.

10. **Chat With Seller:** The users can chat with the seller if he/she has any query regarding the product or is interested in the product

URL of the product :

http://gdsddata.s3-website-us-east-1.amazonaws.com/login

Usability Test Plan

Test Objective:

The customer develops the perception back in the state of mind based on very first impression of a website. For this, the search functionality is selected to be tested because user searches for the product in the first go. The reason behind selecting this functionality is that it is going to be one of the mostly used functionalities of E-Markt Fulda. This function gives the desired result in the form of list containing all the products related to the user's search. example, if a user writes Samsung in the search bar and clicks the search button, it is going to return all the products having Samsung in their name somewhere. It matches the strings and numbers with the products already available in database and returns the matched values. Furthermore, to be more precise, some of the filters are added to this search. If a user wants a product within a specific price range, he/she can simply apply the filters.

Test Background and setup:

The user lands on the primary page after searching for the URL, here he/she is asked for logging in or registering. The user will not be allowed to proceed further without. This is the starting point.

Case 1:

When the user, who wants to buy a product, lands on the primary page of E-Markt Fulda. The form appears in which user is required to put the credentials if he/she already has signed up, in case user has not signed up for E-Markt Fulda, he/she must sign up first to proceed further. After the user has logged in to E-Markt fulda, random products will appear on the home page where there will be a search bar, user can search for a specific product by putting a keyword or to be more specific, user can apply several filters afterwards, user also has the chance to chat with the seller to get more details about the product.

Case 2:

If a user wants to sell a product, again he/she will see a form on the primary page where he/she will be required to login or sign up in case user has not signed up previously. After the user has logged in to E-Markt Fulda, he/she can click on the Sell an Item button, where the user will provide the details of product/s which are to be sold, such as, pictures, description, and the price. At least, one picture is required for the ad. To be posted. After the user posts an ad., it goes to the admin panel to be approved by admin. As E-Markt Fulda is designed only people directly associated with Fulda University of Applied Sciences, the admin will confirm and the ad. Will be only posted if it is approved by the admin. As soon as

the admin approves the ad., it will appear on the website. Keeping in mind that the admin has right to disapprove the request to sell a product.

Intended Users:

The target users for E-Markt Fulda are the people who are directly associated with Fulda University of Applied sciences. For this, it is mandatory for the user to use the email address ending up with "informatik.hs-fulda.de". Any other email address will not be allowed to be used for signing up for E-Markt Fulda.

http://gdsddata.s3-website-us-east-1.amazonaws.com/

URL will be analyzed based on its safety and its accessibility, SSL protocol will not be employed here because Amazon Education does not provide it. The time will be then calculated which it takes to load into a browser.

What is to be measured?: The usefulness of the website will be measured to analyze how easier it is for the users to understand and leverage the website. The main goal is to make the website self-explanatory, if a user is stuck somewhere then he/she could easily find a way out. It will also be analyzed how good the experience of E-Markt Fulda is, as per users point of view.

Usability Task description:

The tester will be provided with the primary page with the form where he/she can login or sign up for E-Markt Fulda and will be asked to perform some tasks:

Case 1:

Search for an Apple Pencil which is posted not more than a week ago.

Case 2:

Search for a Samsung phone which costs between 200 Euros and 500 Euros.

Measuring Effectiveness:

- Are the users easily able to search for the product they searched for?
- Are the users easily able to search for exact products after applying the filters?

Measuring Efficiency:

- How long does it take for the user to search for the product followed by the keyword they put in the search bar?

- Are the users applying filters to look for products or just browsing through products on the home page?

Questions/Feedback:

- How easy it was to use the search bar function on the scale of 1 to 5?
- How easy it was to search for the exact product as per the applied filters on the scale of 1 to 5?
- How was your overall experience with the search function of our website on the scale of 1 to 5?

QA Test Plan :

Test Objectives:

The main purpose of the given test plan is to test the core functionalities of the website.

HW and SW setup:

Here we will be testing the functionality using the following combinations of HW/SW:

Device	OS	Browser
MacBook Pro 2013 late	MacOS Big Sur	Safari
Motorola One Vision	Android 10	Google Chrome

Feature to be tested:

Register, Login, Product Search, Filters, Product Details, Chat, Sell, and Edit.

QA Test Plan Table:

Test #	Title	Description	Input	Expected Output	Result
1	Register a new user	Users must be able to register at the primary page of E-Markt Fulda	1. Click on the register button. 2. Provide the required information. 3. Click on the "Register" button.	The user will be landed on the home page of E-Markt Fulda.	PASS

2	Login to the website with correct credentials	Users must be able to login to E-Markt Fulda for buying and selling the products.	1. Provide the username and password. 2. Click the login button.	After clicking the login button, user will land on the home page of E-Markt Fulda.	PASS
3	Search for the product	Users must be able to search for the product by putting a keyword in search bar	1. Go to search bar on the homepage. 2. Put the keyword and press search button.	List of all the products will appear having the keyword in their title.	PASS
4	Apply filters	Users must be able to be more specific by applying filters in their search for the product.	1. Go to search bar and click more filters. 2. Set the filters according to choice and click search.	List of all the products will appear according to the filters applied by. The user.	PASS
5	Product detail	Users must be able to see the description of the product they have searched for.	1. Search for a product. 2. Click anywhere on the product.	The product description page will appear in which the description of the product will be provided by the seller.	PASS
6	Chat with the seller	Users must be able to chat with the seller and seller must be able to respond to the customer.	1. Open the product description page of any product. 2. Click on the "Chat with seller" button.	A chat box will appear where customer can chat with the seller and seller will be able to respond.	PASS
7	Sell an item	Users must be able to post an item for sale on E-Markt Fulda website.	1. Click on the "Sell an Item" button. 2. Provide all the required information, including pictures, description, and price. 3. Click "Post the Ad." Button and wait for it to be approved by the admin.	An ad should be posted on the website and the user should be redirected to browse products page.	PASS
8	Edit the posted advertisement	Users must be able to edit the ad. They have already posted, including pictures,	1. Click on the "posted ads." Button. 2. Click on "Edit"	The product details page with the changes will appear after the changes are made to	PASS

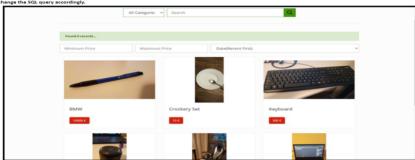|		price, and details.	button. 3. Click on the "Save" button after changes are done.	the posted ad.	

Code review

From: Muhammad Adnan <muhammad.adnan1@informatik.hs-fulda.de>
Sent: Monday, February 1, 2021 6:05 PM
To: 'whlakhani@gmail.com'
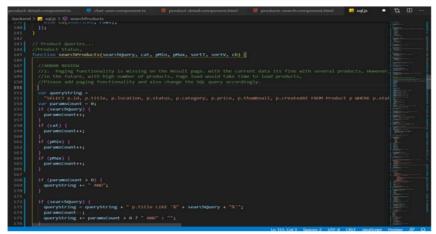Subject: Fulda Markt - GDSD Code and App review

Waqas,

Hope you are doing good, I have some issues in the **Search Component, I am also attaching screen-shots for your reference.** Please have a look

1. **Console.log** in the production code.

2. **Paging functionality** is missing on the Result page. With the current data its fine with several products, However, in the future, with high number of products, Page load would take time to load products, Please add paging functionality and also change the SQL query accordingly.

3. Search results persisted on the Main page after searching a product.
   a. Steps to reproduce error:
      i.   Open Site
      ii.   Search any product
      iii. Open the main page again

Self-check on Security Best Practices

Major Assets being protected

1. **Server Login credentials**
2. **Database**
3. **Deployed Application Code**

Major threats for each Asset above and how they are protected

1. **Server Login credentials**
   a. Private Key Compromise - Private key is only accessible to one administrator who manages the server.
   b. Unauthorized SSH Access - SSH credentials to server is only known to one administrator.
2. **Database**
   a. Privilege abuse – Database has only one user who administers the database deployed in server.
   b. SQL Injection – SQL injection has been mitigated by using data sanitizing filtering for all search, signup, login, product and message posting forms inputs.
   c. Exploitation of Vulnerable, Misconfigured Databases – Database can not be accessed from the web or without first logging in using the SSH credentials of the server.
   d. Denial of Service – Server is deployed using Amazon web services which prevents the Denial-of-Service vulnerability.
   e. Storage media exposure – Media is stored on AWS EC2 instance and is called only from a server route which is only accessible to registered users of the application.
3. **Deployed Application Code**
   a. Complete code of Angular application is only available on Github to the authors and project manager of the application. Generated build is deployed on Amazon S3 storage for public access which is a compiled Javascript of the application.
   b. For the NodeJS application. Its hosted-on AWS EC2 instance and Node doesn't allows to access files on port. Thus, server code is not accessible directly from URL. Node only allows registered routes to access through HTTP request and sends response accordingly.

Confirmation of User Information Security: All user supplied passwords are saved as encrypted values in the database.

Confirmation of Input data validation: Application codes validates,

1. Signup form – Emails for suffix, character limits and data type.
2. Login form – Validity of User Email and Password.
3. Product posting – Character limits for each form text inputs.
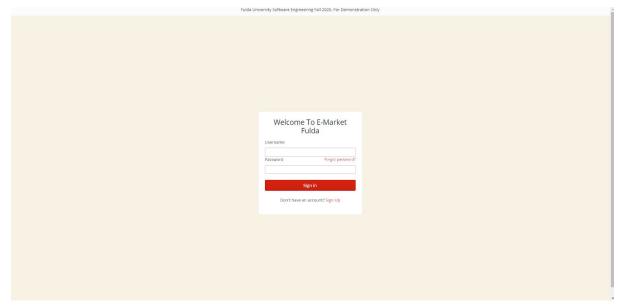4. Search bar – Search inputs up to 40 alphanumeric characters.

Adherence to original Non-functional specs

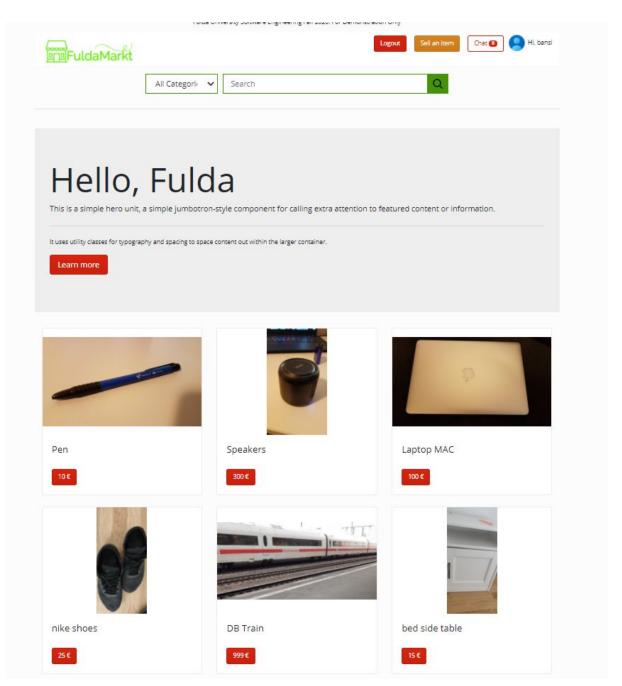| No.	Non-Functional Requirement	Status	Notes (If any)
1	Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in M0 (some may be provided in the class, some may be chosen by the student team but all tools and servers have to be approved by class CTO).	DONE	
2	Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers	DONE	
3	All or selected application functions must render well on mobile devices	DONE	
4	Data shall be stored in the database on the team's deployment server.	DONE	
5	No more than 50 concurrent users shall be accessing the application at any time	DONE	
6	Privacy of users shall be protected and all privacy policies will be appropriately communicated to the users.	DONE	
7	The language used shall be English (no localization needed)	DONE	
8	Application shall be very easy to use and intuitive	DONE	
9	Application should follow established architecture patterns	DONE	
10	Application code and its repository shall be easy to inspect and maintain	DONE	
11	Google analytics shall be used (optional)	NOT DONE	Not Implemented as it was optional.
12	No e-mail clients shall be allowed. Interested users can only message to sellers via in-site messaging.	DONE	
13	Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.	DONE	
14	Site security: basic best practices shall be applied (as covered in the class) for main data items	DONE	
15	Media formats shall be standard as used in the market today	DONE	
16	Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development	DONE	
17	The application UI (WWW and mobile) shall prominently display the following exact text on all pages "Fulda University Software Engineering Fall 2020. For Demonstration Only" at the top of the WWW page. (Important so as to not confuse this with a real application).	ON TRACK	

3. Product Screenshots:

Register to E-Market Fulda

Full Name

Email

Password

Confirm Password

Address

Postal Code

Date of Birth

dd-mm-yyyy

Register

Already Registered? Sign In

Registration

Welcome To E-Market Fulda

Username

Password   Forgot password?

Sign in

Don't have an account? Sign Up

Login

![FuldaMarkt logo]

Logout Sell an item Chat 0 Hi, bansi

All Categori ▾ | Search | 🔍

Hello, Fulda

This is a simple hero unit, a simple jumbotron-style component for calling extra attention to featured content or information.

It uses utility classes for typography and spacing to space content out within the larger container.

Learn more

Pen

10 €

Speakers

300 €

Laptop MAC

100 €

nike shoes

25 €

DB Train

999 €

bed side table

15 €

Homepage

FuldaMarkt

Logout   Sell an item   Chat 0   Hi, bansi

All Categorie ▾ | Search | 🔍

Found 8 records...

| Minimum Price | Maximum Price | Date(Recent First) ▾ |

Pen

10 €

Speakers

300 €

Laptop MAC

100 €

nike shoes

25 €

DB Train

999 €

bed side table

15 €

Search page

FuldaMarkt

Logout | Sell an item | Chat 0 | Hi, bansi

All Categorie ⌄ | Search | 🔍

Found 2 records...

| 20 | 150 | Date(Recent First) ⌄ |

Laptop MAC

100 €

nike shoes

25 €

Filter page

FuldaMarkt

All Categorie ⌄ | Search | 🔍

nike shoes

Details

Description

used condition size europe 45

$25

Posted on: **Mar 08, 2021**

Seller Details

Name: tester 1

Email: test1@hs-fulda.de

Chat with seller

Product detail page

FuldaMarkt

Logout | Sell an item | Chat **0** | Hi, bansi

| All Categorie ▾ | Search | 🔍 |

Chat

speaker (Waqas Hussain) 🟢 Hello	
nike shoes (tester 1) 🟢 ok	
speaker (tester 1) 🟢 hey bro	
Projector (Demo) 🟢 hello demo	
Laptop MAC (Demo) 🟢 bhai le lo, sale lagi hoi hai	
speaker (Demo) 🟢 please tell me what price suits you?	

You
good to know
10:53

You
what price is good for you?
10:53

tester 1
10 euros
10:53

tester 1
hey bro
12:16

Type your message | Send

Chat page

FuldaMarkt

Logout | Sell an item | Chat 0 | Hi, bansi

All Categorie ∨ | Search | 🔍

Sell an item

Please fill the following details

Category

Mobile Phones ∨

Title of the item

Enter Product or Service name

Description

Describe your product

Price (€)

Enter Product or Service Price

Select Images

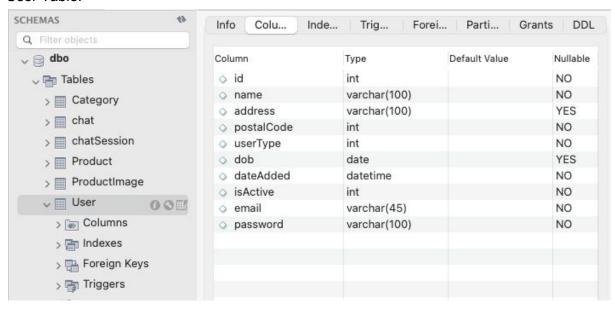Choose Files | No file chosen

Submit

Sell item page

Admin user panel

Admin product panel
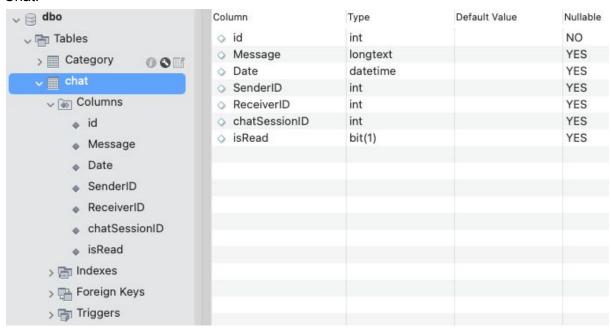
Admin add category panel

4. Database Organisation.
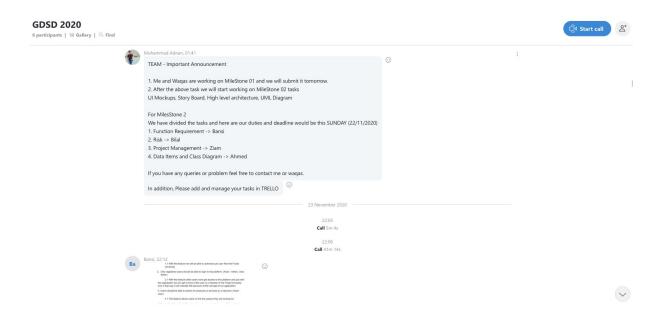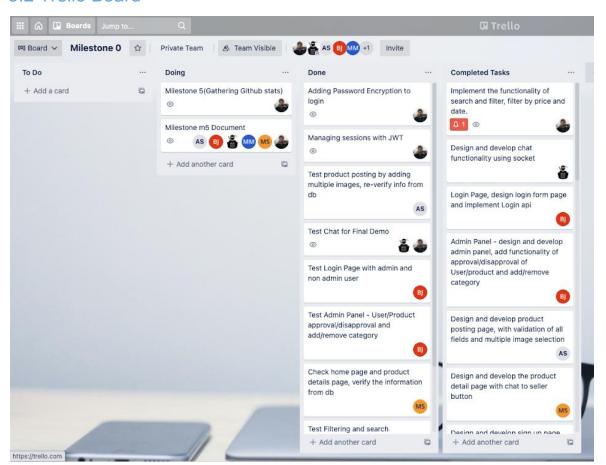
User Table:

Products Table:

Chat:

Column	Type	Default Value	Nullable
id	int		NO
Message	longtext		YES
Date	datetime		YES
SenderID	int		YES
ReceiverID	int		YES
chatSessionID	int		YES
isRead	bit(1)		YES

- dbo
  - Tables
    - Category
    - chat
      - Columns
        - id
        - Message
        - Date
        - SenderID
        - ReceiverID
        - chatSessionID
        - isRead
      - Indexes
      - Foreign Keys
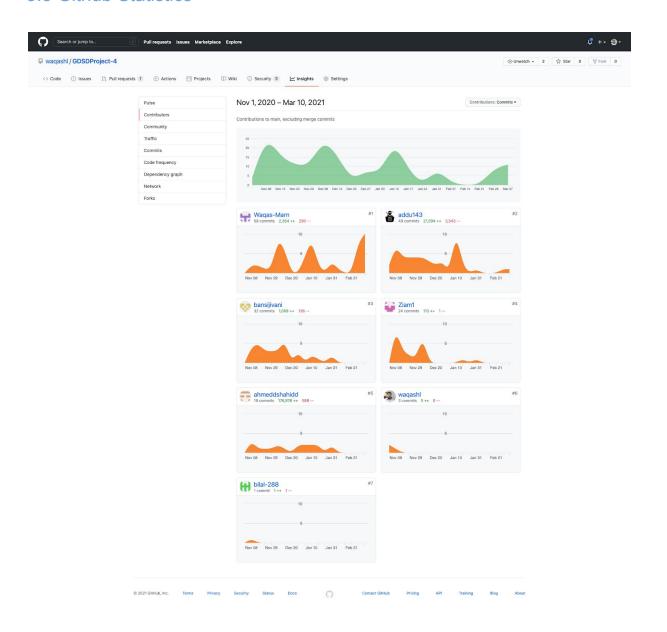   - Triggers

5. Project Management

5.1 Communication Channel (Skype)

5.2 Trello Board

5.3 Github Statistics

6. Team member self assessment and contributions

6.1 Muhammad Adnan(Team Lead)

a) Contributions to team project and teamwork

1. Worked as a Team Lead, Front-end lead and front-end developer.
2. Setup the Angular application, create application architecture.
3. Setting up of Angular Application, add required libraries e.g. bootstrap etc.
4. Created the responsive HTML template, Create components of all pagel.
5. Created the routing for all pages.
6. Worked on the Chat Module, Socket.io

b) Number of submissions made to GitHub team Dev. branch: 49

c) One brief paragraph on main challenges he/she encountered in team project
I was not familiar with NodeJS and Socket.io, so it was a bit challenging for me to
understand NodeJS and Socket.io in order to start working on the Chat module.
Moreover, managing inexperienced team members is a different experience, you need to
think differently and manage the work according to the skill-set of the team.

d) One brief paragraph on what would he/she do better next time based on what was
learned in the class about SE management and processes

Next time, As a team-lead of the project, I would like to held some training sessions prior to
do any development, so that team has a kick-start of a language, it's very convenient
for someone if he/she does not know about any language. In addition, to that I would like to
know more about the management processes and tools like gantt chart, trello etc.

6.2 Muhammad Waqas Hussain Lakhani

a) Contributions to team project and teamwork

1. Worked as a Backend Lead and DBA in the project.
2. Setup AWS S3 and EC2
3. Setting up of NodeJS Server so that everyone can work on it.
4. Worked on product Searching in Angular app
5. Worked on Product routes, encryption of passwords, get image route, session handling, category routes in server.

b) Number of submissions made to GitHub: 61

c) One brief paragraph on main challenges he/she encountered in team project

During the project, it was very difficult to get the work from junior developers. Everyone had a different experience in the past and was not familiar with git and web app development. It took time for everyone to adjust with the pace but in the end core requirements were met in the given time.

d) One brief paragraph on what would he/she do better next time based on what was learned in the class about SE management and processes

For the next time, i would be happy if we can arrange a session with the team to get familiar with the basics of git and web development first before starting the project. This would help the team in better understanding of core requirements of the project.

6.3 Bansi Mukeshbhai Jivani

a) Contributions to team project and teamwork
1. Worked as a Frontend Developer and Documentation lead in the project.
2. Setting up a Github environment on a personal machine in order to work in a group.
3. Worked on the login component in the Angular app(frontend and backend).
4. Worked on the admin panel (add admin role, block user, approve product, disapprove product, add categories) in Angular app(frontend and backend).
5. Worked on all Milestone(1-5) documents and finalized it.

b) Number of submissions made to GitHub team Dev. branch: 32

c) One brief paragraph on main challenges he/she encountered in team project

I was new to the angular technology that took me time to learn. But with the help of our team lead and other members I managed to learn it quickly. As I didn't have it I found it a bit difficult in integrating the components and all but that helped me get an idea how we have to work in real life.

d) One brief paragraph on what would he/she do better next time based on what was learned in the class about SE management and processes

Due to the online semester it was a little bit hard to co-ordinate and also we could not share our knowledge as good as we can do it on campus. Sometimes for a few things it would be also very helpful if we could discuss our doubts with the tutor or professor which was not the case this semester.

6.4 Ahmed Shahid

a) His/her contributions to team project and teamwork
I worked as a backend developer in this team project. I also worked on product posting page front and back end both. Mentor and help other team members in setting up the environment, helped them to understand the architecture of the web app code and make their understandings regarding different tools used in the whole project.

b) Number of submissions he/she made to GitHub team Dev. branch
I have made all around 19 github commits.

c) One brief paragraph on main challenges he/she encountered in team project
The main challenges I have faced is being in my home country. I have faced a lot of issues regarding time difference in group meetings. The other thing I have faced is that I was new to web technology, so it was difficult for me to understand the workflow initially.

d) One brief paragraph on what would he/she do better next time based on what was learned in the class about SE management and processes
Next time I will try to grib technology first, rather than start working on a project and learn on a parallel basis. I also suggest that other than the core functionalities, each and every member should also implement some functionalities by themselves which should be helpful for self learning.

6.5 Muhammad Bilal Mehdi

a) Contributions in the Group 4 Worked as a Frontend developer in project
1. Worked as a junior Front-end developer.
2. Setup the Angular environment in my laptop and resolve dependencies. I also add required libraries which are required for the developing of application.
3. Work with Mr. Adnan on the design of the application, also increase the responsiveness of all the application.
4. Worked on the Footer frontend and Register User frontend and also backend of Register user backend.

b) Made the changes in the design at least 30 times.

c) In the past I have experience in the PHP web development. Now we used trending frontend framework Angular which was quite new for the whole team. It was little bit difficult to resolve the errors. Because in the team no one had hand on experience on it.

d) For the next time, I would suggest you to develop at least two projects in the semester. One should be in group and other one is individual. For the Group project it should be recommended to use core programming of any language and for the individual project, it should be mandatory to use the framework of that language. By this way everyone will able to get the knowledge of core and framework of that language.

6.6 Muhammad Ziam Saddique

A) Contributed as a frontend developer. Responsible for developing product details page and fetching data from database, including product description, pictures, price etc.

B) Made 24 changes.

C) Since I was new to the web application development, it would be a lot more better to sit together and learn the new things. The only challenge in the whole project was to cope up with the pace of experienced mates though they were very helpful throughout the project.

D) For the next time, it would be better to take a little survey to test the expertise of group members and based on the results, pairs withing the groups should be made in a way that an expert front-end person pairs with the beginner and same with the back-end team.