

“Master AI Team Project Fall 2020”

Application Name: “DER MARKT”

TEAM NUMBER: 3

Leads:

Hitesh Shridhar (hitesh.shridhar@informatik.hs-fulda.de)
[Team Lead, GitHub Master, Documentation Master, Backend Developer]

Mohsin Kamal Akbar (mohsin-kamal.akbar@informatik.hs-fulda.de)
[Backend Lead]

Kamal Chhirang (kamal.chhirang@informatik.hs-fulda.de)
[Frontend Lead]

Parul Soni (parul.soni@informatik.hs-fulda.de)

Shazeem Ashar (shazeem.ashar@informatik.hs-fulda.de)

Fiaz Ashraf (fiaz.ashraf@informatik.hs-fulda.de)

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Executive Summary:

‘Der Markt’ is a platform for buying and selling all kinds of products online. Users can upload ads regarding the product they are willing to sell. The e-commerce sector is booming nowadays and in situations like the COVID-19, the online shopping trend has surged, and people prefer to buy and sell online rather than visiting the market. Although ‘Der Markt’ is a bit like any other online buying and selling platform where users can post ads and establish a communication between the seller and the buyer, we do offer a few new features to attract our customers making us a bit different from our competitors.

Pictures play a vital role in telling whether a product is worth your money or not. On ‘Der Markt’, **there are absolutely zero ads without a photo**. Each listed product will have a **minimum of 2 pictures** so that the buyer can at least have a good idea about the product that they are about to buy. This can also help in avoiding various kinds of scams. Also, the uploaded images on the ad will be verified by our admins to check whether the ad is from a serious seller or not. Specifications such as dimensions or color for each product have to be mentioned on the ad by the seller. Alongside the pictures, these (specifications) are the second most important information we require on every ad on the website. The buyers, on the other hand, can contact the sellers and finalize a deal. Since our customers are very important to us, we offer various giveaways. Each buyer/seller gets beneficiary points, on their respective account, every time he/she buys or sells something using our platform. The amount of points depends on the total price of the item being sold or bought on the website. Our customers can earn these points and spend them on giveaways from ‘Der Markt’. Users can choose from many different kinds of categories such as Electronics, Automotive, Clothes, Books etc to refine their search so they get the products that are most relevant to the search criteria. Additionally, users can look for products within a specified area (city). The city in which the item is being sold will be mentioned in the ad. Since ‘Der Markt’ acts as a **bridge between the seller and buyer**, therefore, a chat functionality has also been planned out where a buyer and seller can communicate with each other privately. This functionality will be integrated into the website so no communication will be carried out over the email. This also ensures that there is some sort of proof in case of a loss or scam, ‘Der Markt’ can take a look at the chats and decide whether the mistake was done by the seller or the buyer and then one of the parties will have to compensate for the other. From the UI design perspective, we went for a very minimalistic and modern looking UI design. UI/UX design is highly inspired by the material design language which makes every element on the screen look very pleasing to the eye. This helps the users feel more comfortable with using the website and ensures the overall design of the user interface to be more user-friendly i.e. easy to navigate.

Use Cases and Users:

Use Case 1: (Seller)

A person got recently promoted in his/her job and must move to another place. But the person has this Antique trunk which is quite expensive and cannot be carried. Due to corona the person cannot visit the antique handle and does not want to throw the trunk away. The Person gets to know about ‘Der Markt’ website, where he/she can upload the picture of the trunk and post an

ad. The person enters the site, enters his/her profile as a seller, uploads at least 2 pictures of the trunk also mentioning some details about it (example its cost and its age), uploads the ad, and waits for a buyer to contact him/her regarding it.

Use Case 2: (Buyer)

Suppose a user wants to buy a bicycle not being sure about New or Old. User checks the website “Der Markt” and looks for both the options by checking for “Bicycle” in the search bar. If the new bicycle is under the user's budget, the deal can be confirmed for a new one, otherwise the user can have a look at the used bicycle. Users can further narrow down the search to her/his city as well. The user can select the Bicycle and then contact the seller further, if there are any concerns.

Use Case 3: (Seller)

A couple got pregnant and want to make some room for the baby and its stuff. They bought the house recently along with the furniture and decorations. They do not afford to throw away all the stuff and are also in need of some money. A friend of theirs tells them about ‘Der Markt’, and also informs them about the benefit of maximum profit rate, as the sellers can bid on the stuff and it would not only lie in one person's hand to decide the worth of the stuff they want to sell. The couple visits the site, creates a seller profile, where they agree on some security policies, uploads the stuff they want to sell online and chooses ‘bidding’ option, for maximum profit (by choosing minimum bidding amount and bidding expires on), and submit the ad.

Use Case 4: (Buyer)

Due to the Corona Pandemic, there are a lot of people who have lost their jobs. A girl has lost her job and found another one, which is away from her native place. She decides to shift to that place, but now needs a lot of new furniture for her new place. As she is new to the city, her friend asks her to check out ‘Der Markt’. She argues about how she should trust the site, and her friend tells her about the scam prevention techniques of ‘Der Markt’ site, which would help her to buy easy and safe. To check the authorisation of the seller, she first searches for a ‘seller’, selling furniture, and has a look if he/she has been verified by the admin or not. The verification makes the buyer trust the seller.

Use Case 5: (Buyer)

A person wants to buy a leather sofa and wants to know some special guidelines by the seller. He selects the leather sofa, tries to read through its description, but cannot find anything related to how the owner had maintained the sofa so well. As the sofa is of much worth and he wants to keep it as maintained as the former owner had, he plans on contacting the owner using the chat possibility provided by the software. He logs into his buyer profile, searches for the leather sofa he is so interested in, then presses onto the chat icon on the side.

Users:

There will be three main kinds of users:

1. Seller:

Name: Robert

Age: 30 years

Robert is a Teacher at University in Germany. He lives alone in an apartment here far away from his family. But as the study is going online due to this pandemic situation of Covid, he also has to work remotely by staying at home. It seems that this work from home situation will be prolonged to next two or three semesters maybe. So, Robert decides to terminate the apartment agreement and go back to his family. But it was not as easy for him as I just described. He started packing but there was a problem, he had a very expensive leather couch which was very difficult to take with him. Now he was very worried and was searching for a solution. He talked to his colleague about the couch and he suggested selling out his couch on a very reasonable price at the website 'Der Markt'. He liked his idea and uploaded some photos of the couch with some description and the demand price. Now he is feeling free that he does not have to worry about that and he will get a good price for his couch.

2. Buyer:

Name: Julia

Age: 28

Julia is a housewife and she always tries to manage his house in a good manner. She likes to have new furniture and to decorate her home with antique items. She found a free space in the living room and she decided to buy a couch for this place. So, she started searching for this but she found that leather couches are very expensive and they are out of her range. One day her friend came to her place and she told her about the 'Der Markt' website to buy a couch in very good condition and very good price. She also clears her doubts about risks at the site like trust issues or some kind of frauds because she was already a user of this website so describe each and every thing to her. Then Julia searched for the website and found a couch uploaded by Robert. She was surprised by the quality of the couch in the photos and the price. She found it very reasonable. She contacted Robert and they did a deal. She was much sure after talking to Robert that the person on the other side is purely genuine and all the data he uploaded is the correct data. She was very happy to buy a couch for her living room in some minutes without visiting markets and moreover it was at a very good price and of very good quality.

3. Admin:

Admin controls and manages all the activities within the websites for example seller's uploads, buyer's orders and the admin have also access to the contact details of both the seller and buyer. He also checks the originality of the stuff uploaded by the users. So, the admin supervised the deal between Robert and Julia and managed all the activities. At the end both of users achieved their goals in very less time by staying at home and by using the website 'Der Markt'.

Data Items & Entities:

Main entities used in the project:

1. **Users:** The persons who use our website. There will be two subtypes of users, namely:
 - a. **Admin:** User with the highest privilege in the system. The user with admin rights can approve, decline and delete ad posts.
 - b. **General Users:** Buyer and Seller are the general users and are only allowed to post ads and send messages to one another. General users have a lower amount of privileges compared to admin users.
2. **Ads:** The ads are the core feature of this whole application. The ads will have the following information in them:
 - a. **Ad ID number:** Unique identification number to differentiate between ads.
 - b. **Pictures:** The photos in the ad.
 - c. **Description:** Additional information by the seller written down to convey any additional information about the product.
 - d. **Specifications:** Attributes of the product such as color, dimensions, etc.
3. **Beneficiary Points:** These points are earned by buying and selling stuff on the website.
4. **Product Categories:** Each product will fall in a general category and the category of the product will have to be mentioned, for example, electronics, cars, furniture, etc.
 - a. **Product Sub-Category:** Subdivision of the larger “General Categories”.
5. **Messages:** Simple text messages shared between seller and buyer.
6. **Profile:** Complete information about the general users. The following type of information can exist in a profile:
 - a. **Contact:** Email or phone number of the user.
 - b. **Name:** Name of user.

Functional Requirements:

The website will have some functional requirements which are described below:

1. Accounts creation (Admin, Seller, Buyer)

Admin:

All users need to create an account on the website to login. For example, there must be an admin account from where the admin can control the admin panel and can manage all the activities after login.

Seller: Seller needs to login by his account on the website to add products which he wants to sell out.

Buyer: Buyer also needs to login into the website to see products listed for sale.

2. Add product

Seller will add the product with some pictures, description and the price as well, which will be viewable to admin and all the buyers registered on the website.

3. Buy product

Users will be able to buy available products on the website uploaded by the seller. Buyer can view the details about the product and can purchase the item which he wants. Admin panel will manage all these activities.

4. Contact seller

Buyers will be able to contact the seller for bidding and the final deal. The admin will also have access to the contact details as well.

Non-Functional Requirements:

1. Performance Requirements

- Any page of the website should not take more than 10 seconds to load.
- The system may be throttled or slowed down on heavy loads to ensure service for everybody. By throttling we mean that certain functionality may be unavailable during heavy server load.
- A buyer gets a result in 5-10 seconds after selecting features and preferences.

2. Usability

- The user interface of the system should be very user-friendly.
- It should not take more than 120 seconds for a new user to register for an account.
- It should not take more than 90 seconds for a registered user to place an order.

3. Scalability Requirements

- The system should be able to scale up to 500 concurrent users (if needed in the future) by installing additional hardware components.

4. Reliability/Availability Requirements

- There is a need for the system to be online 24 hours a day, 7 days a week. There is no room for prolonged downtime, especially when the project goes international, and the traffic load will be regulated by time zones.

5. Security Requirements

- The users' functions must be clearly specified. Administrator, Seller and Buyer are these roles. If they want to do more than just read / view website material, each person that goes to the system's website will be required to register.
- A secure server is required to ensure that the credit card and other information of the customer remain confidential.

- Passwords and user accounts must be correctly implemented due to the various roles. It should be difficult to gain access to the site in an illegal manner.
- When a buyer types or inserts an incorrect username or password in the login page, the system displays an error message.

6. Maintainability

- The system should be designed in such a way that improvements, whether for bug fixes or to implement new features, can be made easily.
- The system should be convenient enough to ensure that someone else can do it with a manual and a few hours of training.

7. Portability

- The system should be portable to various operating environments.
- The system must be portable enough to be moved over to a new server with minimal downtime.

8. Integrity

- The system should be able to protect and preserve transactions.

9. Manageability

- The system should be developed in such a way that it can be easily reused, deployed and tested.

Analysis:

Feature name	Amazon.com	Alibaba.com	eBay.com	Walmart.com	Der Markt
Uploading Picture Necessary	Yes, it is necessary to upload images on Amazon.	Yes, it is necessary to upload images on Alibaba.	No, it is not necessary to upload images on eBay	Yes, it is necessary to upload images on Walmart	Yes, it is necessary to upload images on Der Markt and they also get verified by Admin.
Point/Reward system	No points or rewards for buyers or sellers.	No points or rewards for buyers or sellers.	No points or rewards for buyers or sellers.	No points or rewards for buyers or sellers.	Both sellers and buyers will get rewarded.
Filter by City	No option to filter products available in a	No option to filter products available in a	Users can filter by city	No option to filter products available in a	Users can filter by city.

	specific city. Need to check it for individual products by pin code.	specific city. Need to check it for individual products by pin code.	using Pin code.	specific city. Need to check it for individual products by pin code.	
Chat Functionality	Users cannot chat with seller	Users cannot chat with seller	Users can contact seller	Users can contact Walmart support but no direct support about a specific product.	Users can chat with the seller.
Difficulty to start selling on the website	Users need to create a separate seller account to start selling.	Users need to create a separate seller account to start selling.	Users can sell easily.	Users can only request to start selling on Walmart. They need to create a separate account and get approved.	Users can sell on Der Markt easily.
Payment method	Payment is controlled by Amazon, users can pay online on Amazon.com or offline (Cash on delivery) to the delivery person.	Payment is controlled by Amazon, users can pay online on Alibaba.com or offline (Cash on delivery) to the delivery person.	Payment is controlled by Amazon, users can pay online on Ebay.com or offline (Cash on delivery) to the delivery person.	Payment is controlled by Amazon, users can pay online on Walmart.com or offline (Cash on delivery) to the delivery person.	Users need to contact the seller to find about the payment method. Der Markt does not control the payment method.

All the products need to have at least two verified images on “Der Markt”, while E-bay do not have this feature. There is no reward or point system on any of the competition websites, this feature is completely unique. No website other than ebay provides a feature to filter by city. Users can directly contact sellers on “Der Markt” and “E-bay”, others do not have this feature. It is very easy to start selling compared to other websites except “E-bay”. Our website does not control the payment method, users and sellers get the flexibility to select it themselves, it is both an advantage and disadvantage.

High Level System Architecture:

- **Hosting:** Netlify
- **Back-end Library:** Node.js
- **Back-end Language:** JavaScript ES6
- **Front-end Library:** Bootstrap
- **Front-end Language:** JavaScript, HTML5, CSS3
- **Code Editor:** Visual Studio Code
- **Target Web browsers:** Google Chrome, Firefox, Safari
- **Database:** MySQL

Team & Roles:

Name	Role
Hitesh Shirdhar	Team Lead, GitHub master, Document master, Backend developer.
Mohsin Kamal Akbar	Backend lead
Shazeem Ashar	Backend developer
Fiaz Ashraf	Front-End Developer
Kamal Chhirang	Front-End Lead
Parul Soni	Front-End Developer

Checklist:

Task	Status
So far, all team members are engaged and attending WebEx sessions when required	OK
Team found a time slot to meet outside of the class	OK
Backend, Frontend leads, and GitHub master chosen	OK
Team decided and agreed together on using the listed SW tools and deployment server	OK
Team ready and able to use the chosen back	OK

and frontend frameworks and those who need to learn are working on learning and practicing	
Team lead ensured that all team members read the final M1 and agree/understand it before submission	OK
GitHub organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)	OK