Fulda University of Applied Sciences
GDSD Course, Fall 2019
Class Team Project: High-Level Description
HSF-Marketplace: A WWW site for Buy/Sell for students of Hochschule Fulda
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Executive summary:

In a market already saturated with n number of the e-commerce sites, it is a challenging task for any new competitor to stand a chance, but our team wanted to face this challenge and hence we put together a vision of how we could make our place amongst the giants and stand out as a unique product.

Our product **"HSF-Marketplace"** is an e-commerce site targeting the students of Hochschule Fulda. Being a focussed product it is extremely easy for us to align ourselves with the expectations of our targeted audience by closely observing their shopping patterns.

In our product, every user can be both the buyer and the seller hence giving everybody the freedom to not just use our product as a tool for purchasing something, but also the ability to host their own products. This enables us to empower the students to not just sell something they have used and want to sell out for a sum, but we enable them to start their own small scale businesses which can help them achieve much-required financial stability in their student life.

We are developing our e-commerce platform with ease of use in mind. Our platform will be able to cater to both the laymen and the advanced users. With our approach to building the platform with user-centered development, we will be able to deliver the key options in the most intuitive manner.

As the user can be either a buyer or seller, our platform will provide a well-detailed dashboard for tracking their past activities. The sellers will be able to keep track of what they sold, to whom they sold, how well their product was reviewed. They can also use the dashboard to give permanent or time-limited discounts. The buyers will also have a well-detailed dashboard giving them information about their deliveries, their past purchases and also provide recommendations on the basis of their past activities, the buyer will also have a unique option of generating requests, through which they will be able to request for items that are not available on our platform. The request will be open to all the sellers and can be made available by them if they can.

Our platform has four unique features. We are implementing a reward system which gives the users virtual credits the more they shop, after earning a certain amount of credits, the seller will be able to get a discount on the products. Our platform will also have some social aspects, which leads us to the second unique feature, that allows the user to shop together with their friends, the user will have a friend list and whatever they plan to buy can be shared to their friends and the friends can write share their opinions about the product and hence helping to decide whether or not to buy an item. We will also be integrating some smart features, like reminding the user about the product which they have left in the cart for too long, is now getting a discount. And also, a feature for the convenience for the people who just want to create a wishlist of products without even registering in our system.

This platform can become a reality only with the help of a well-coordinated team of software developers and platform experts, fortunately for us, we have the developers with at least more than 2 years of experience in the industry in all the different fields. Jobayer Mojumder our frontend lead developer has developed e-commerce sites in his past projects, our database manager Kumkum Rajput has worked in the industry for the same for over 5 years, M. Usman Aslam has front end experience and is working as a freelance developer , our team lead Dan has a couple of years experience as a full stack developer, on the backend Asmita Upreti has worked for over 1 year in iOS development and is currently working as a mobile software developer and Nikhil Yadav who is also working on the backend has experience of PHP for 1 year and working currently on the same as a software developer.

Persona and main user cases

Our application will have three key personas involved.

Buyer:

The first persona in our project is the **buyer.** A buyer can be any person, in our case is limited only to SFSU students, who can access the application, have a registered account and who is looking to buy something from the list of items offered on the website. In order to access our platform and buy items, a buyer must hold a registered account on the platform.

Buyer's privileges are:

- accessing our platform using his registered account
- navigate through the web site
- contact sellers
- add items to shop list
- has to access only to his own shop list.

Seller:

Our second persona is **Seller.** A seller can be any person, who can access the application, have a registered account and who are looking to post an item on our platform to be sold. A seller, before posting the item on our platform, must log in with his registered account, send an approval request, and after the item is approved by the administration, it is displayed on the web, and wait to get contacted by somebody who wants to buy that specific item.

Seller's privileges are:

- Accessing our platform
- Navigate through the web site
- Add items on the web to be sold
- Have access to his list of items from the web (sell items list)

Admin:

Our third persona is **Admin**(Administrator). An administrator is a specially trained person, with certain skills in the IT industry, who operate and administrate the whole system. His account is special and different from others giving him the ability to decide what items are allowed on the web, have most privileges, access to the whole system and all actions can be monitored by an administrator. Every single item must be approved by Admin before it goes on the web.

Admin's privileges are:

- Approving or denying items from sellers
- Access database of registered users
- Access database of items
- Remove user
- Ban user
- Give fidelity point to active users base on different criteria (new feature)

Unregistered user:

Our last persona is an unregistered user. Unregistered user can be any person who accessed our web site, and who is not required to have a registered account. It has no privileges except adding items to his wish list, which can be accessed after an account is registered

User Cases:

- As a user, I want to be able to log in into the system
- As a user, I want to be able to see all available items
- As a user, I want to be able to buy any available items
- As a user, I want to be able to contact the seller of the item
- As a user, I want to be able to register and item to be sold
- As a user, I want to be able to see my registered items
- As an admin, I want to be able to register as admin
- As an admin, I want to be able to see all users
- As an admin, I want to be able to approve or reject item to be posted on site
- As an admin, I want to be able to see all items
- As an admin, I want to be able to ban or delete users

As an admin, I want to give fidelity/rank point to users based on their activity and some more criteria

Data Description

The database consists of the following tables-

1. Table_SuperUser: Admin information is added to the database with a unique ID. Along with other necessary columns, this table has a Role column that identifies a particular admin user.
   SUserID,
   SFirstName,
   SLastName,
   Password,
   Email,
   Role,
   Privilege

2. Table_Users: User information is added to the database with a unique ID. This has columns as-
   UserID,
   FirstName,
   LastName,
   Password,
   Email,
   City,
   State,
   Zip,
   VerifiedEmail,
   VerificationCode,
   UserIP,
   UserPhone,
   Country,
   Address

3. Table_Product: Complete product information is stored in this table.
   ProductID,
   ProductSKU,

Product Name,
ProductCost,
ProductCategory,
ProductCategoryID,
Image,
Thumbnail,
Description,
ProductStock

4. Table_Orders: Customer ordered products, status, and delivery information are stored in this table.
   OrderID,
   Amount,
   OrderShipAddress,
   OrderCity,
   OrderState,
   OrderZip,
   OrderCountry,
   OrderEmail,
   OrderShippeddate,
   OrderTrackingNo

Apart from this, according to our "unique" idea, the group can decide what else we can have. Eg-
Table_BuyingHistory- which can have the following information
Products/category shopped,
Price range,
Average monthly shopping,
Order intervals etc

Table_AbandonedProducts - Shoppers don't add products to the cart by accident. There are many reasons why some products are left for later and sometimes never purchased. Some prominent ones are:
The product exceeds the budget, and the shopper is waiting for the price to fall. The shopper wants to look at other similar options before purchasing. The need for the product is not urgent.
A quick glance at an abandoned cart with demographics and buying behaviour in mind will be enough to figure out what ought to be done to trigger a sale. Some options could be:
Offering a discount on a particular
Notifying shoppers about awaiting product

Table_Wishlist
It can be a goldmine of insights for us. Studying the wishlist will tell us about shopper aspirations and potential purchases. Shoppers can be notified whenever something in their wishlist does following-:
Decline in price
Special offers
Product upgrades
While hosting special sales, wishlist data can be highly valuable. So, we can make the effort to analyze wishlist data and plan surprises for registered users.

Table_PageInsights
Some website pages are more critical than others from a sales perspective, and it's important to know how they are performing individually.

Page performance
Traffic sources
Improvement areas

Bounce rate
By gathering a diverse set of page data, we will be able to make amazing changes to improve our visitor experience.

Table_UserProfiling
Below data figures influence product expansion as well as marketing approach:
Gender
Age
Martial status
Income group
This helps in generating reports based on user data.

Table_SiteSearch
Search is a popular channel of product discovery on e-commerce platforms. Search queries made by registered users can tell:
What they are looking for?
What type of keywords did they use?
How many times search results in purchases?
Valuable data can also be collected from searches ran by unregistered users. Popular online stores use the site data to pitch similar products to shoppers using a dedicated section.

Functional Requirements

Buyer and seller: In order to buy and sell products buyers and sellers will be able to create an account with their email address in order to get the membership. Once they verify their email address they can start buying or selling. Otherwise, their access will be limited.

Central Admin Panel: Every user of this site will be monitored by an admin through the central admin panel. Users can be banned and unbanned in case found involvement in fraudulent activity. Ads can be created and controlled from here.

Admin panel for the seller: Every seller will get his admin panel for managing the products. He can publish and unpublish any product when necessary. He will see a log of sold products here.

Profile page for the buyer: A buyer can change his shipping address as well as other personal details anytime from his profile page. A log of bought products will be there.

Product search: In the homepage products will be organized in different categories. Users will be able to search the product through a search box. Filters can be applied to refine search results.

Product details: Once the user enters the product details page he will be able to see a detailed description, price, and reviews of this product.

Related product suggestion: Under every product details there will be a suggestion of related products. Mostly it will show some other products of the same category.

Product review/rating: A buyer will only be able to rate a product from the product details page if he already bought it. It will be also visible to anyone without membership.

Shopping cart: Products can be added to the shopping cart one after one. Once done then the user will proceed to checkout.

Cash-on-delivery: No payment method other than “Cash-on-delivery” will be available while checking out. Once the product is delivered to the buyer, the seller will take the money and mark the order as delivered.

Buyer/Seller messaging: Before making a purchase the buyer can send a personal message to the buyer directly. They may discuss something that is not clearly stated in the product description.

Guest browsing: Any visitor will be able to search for a product, see product details and read reviews without registering in the site. But if he wishes to make an order he must be registered first.

List of non-functional requirements:

1. The 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).
2. The application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers.
3. Selected application functions must render well on mobile devices.
4. Data shall be stored in the team's chosen database technology on the team's deployment server.
5. No more than 50 concurrent users shall be accessing the application at any time
6. Privacy of users shall be protected and all privacy policies will be appropriately communicated to the users.
7. The language used shall be English.
8. The application shall be very easy to use and intuitive.
9. Google analytics shall be added.
10. No email clients shall be allowed.
11. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.
12. Site security: basic best practices shall be applied (as covered in the class)
13. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development
14. The website shall prominently display the following exact text on all pages "SFSU / Fulda Software Engineering Project, Fall 2019. For Demonstration Only" at the top of the WWW page. (Important so as to not confuse this with a real application).

Competitive analysis:

Along with the increasing trend of online shopping, the web application which provides customers with this facility is increasing too. E-commerce business is booming with the increasing awareness of customers regarding online shopping. Thus, thousands of such e-commerce applications can be found on the internet. Our project "HSF-Marketplace" is also a buying and selling application and to make it withstand the competition on the web, we are analyzing our competitors. To do so we found three successful applications that are already on the web which is very successful there are Amazon, Alibaba, and Mediamarkt.

Features	**Amazon**	**MediaMarkt**	**Alibaba**	**HSF-Marketplace**
Product Suggestion	✓	✓	✓	✓
Search History	✓	✓	✓	✓
Product Review	✓	✓	✓	✓
Product wishlist without registration	x	x	x	✓

Shop Together	x	x	x	✓
Shopping Reward	x	x	x	✓
Abandoned product discount	x	x	x	✓

The above table shows the list of planned features which makes our application stand out among the competitors. To date not so many e-commerce application has implemented is the abandoned product discount feature which provides discount notification for such product which has been forgotten in the cart for a long time when it gets discounted. Likewise, in our application, the buyers would be able to create a wishlist of items without registering in the system. The feature which makes our application standout is shop together and shopping rewards. Shop Together allows buyers to share the product which he/she wants to buy with their friends on the same platform and the shopping reward feature rewards the buyer on each purchase which can be used to get a discount after achieving a certain amount of reward.

System Architecture and Technologies

Server	Amazon Web Services
Memory(RAM)	8GB
Operating system	Linux-Amazon Version 2.9
Database	MySQL 5.7.23
Webserver	Amazon EC2
Backend Language	PHP Version 7
Frontend Frameworks	jQuery 3.4.1, BootStrap 4

Team Members and their roles:

Member	**Role**
Dan Jalba	Team Lead
Jobayer Mojumder	Git Master
Kumkum Rajput	Database Engineer
M. Usman Alam	Front End
Asmita Upreti	Back End
Nikhil Yadav	Back End

Checklist:

Task	Status
Team found a time slot to meet outside of the class	DONE
Github master chosen	DONE
Team decided and agreed together on using the listed Software tools and deployment server	DONE
Team ready and able to use the backend and frontend frameworks	DONE
Team lead ensured that all team members read the final M1 document and agree/understand before submission	DONE
Github organized as discussed in class	DONE