Master Team Project Fall 2023

Fulda Hochschule Digital Bibliotheca

Team 3 - Dev Dragons
Team Lead: Parsa Rashidikia - parsa.rashidikia@informatik.hs-fulda.de
Back-end Lead: Rahul Patil
Front-end Lead: MD Monoarul Islam
Github Master: Hauva Vali
Fullstack Developer: Amar Sharma
Fullstack Developer: Omar Ojarov

Milestone 2

23/11/2023

Revision 1

Table of Contents

Executive Summary	3
Personae and Main Use-cases	5
List of main data items and entities	7
Functional Requirements – prioritized	9
UI Mockups and Storyboards	10
List of Non Functional Requirements	27
Competitive Analysis	28
High level Architecture, Database Organization	29
High-level UML class diagrams	32
Key Risks	35
Project Management	36
Checklist	37
Teams and Roles	37

Executive Summary

In today's fast-paced digital world, the use of physical media is becoming less and less popular; universities are seeking innovative solutions to enhance communication, collaboration, and resource sharing within their academic communities. To address these needs, we are proud to introduce our FHDB (Fulda Hochschule Digital Bibliotheca), a cutting-edge platform that facilitates seamless buying, selling, and sharing of digital media, including videos, images, audio files, and documents, exclusively designed for faculty and students.

Problem Statement:

- Universities and their academic communities lack a centralized and user-friendly platform to efficiently exchange digital media.
- Existing solutions are scattered and fail to provide an integrated ecosystem for faculty and students to meet their multimedia needs.

Solution:

Our University Student Media Exchange Application offers a comprehensive solution to these challenges, delivering the following key features:

- User-Friendly Interface: An intuitive and easy-to-navigate interface ensures that both faculty and students can effortlessly buy, sell, and share digital media, promoting a seamless user experience.
- Digital Media Exchange: Users can upload, buy, and sell a wide variety of digital content, including videos, images, audio files, and documents. This feature streamlines the acquisition of educational materials and promotes knowledge sharing.
- Communication Tools: Our application facilitates real-time communication between users, allowing for collaboration, inquiries, and discussions, all within a secure and controlled environment.

- Reviews and Ratings: Users can post reviews and ratings for purchased media, creating a transparent and reliable system for evaluating the quality of content, creating a sense of community and trust.

Benefits:

- Enhances Academic Collaboration: Promotes interaction between faculty and students, leading to improved knowledge exchange.
- Streamlines Media Acquisition: Simplifies the process of buying and selling educational materials.
- Content Quality Assurance: Reviews and ratings help users identify high-quality resources and minimize the risk of acquiring subpar content.
- Centralized Ecosystem: Provides a single, integrated platform for all digital media needs within the university.

The Team:

We are a group of students in the Global Software Development Masters Degree programme in Fulda University of Applied Sciences with each of us having prior professional experience in the software engineering industry. With focus on the users' needs, we strive to deliver a robust, reliable, and easy-to-use product. Our goal is to promote academic collaboration in a digital environment.

Personae and Main Use Cases:

User Story 1: Media Creator

- Media creators can share or sell digital copies of study materials, quizzes past exams, and revision notes to help others prepare for exams, where students can monetize their well-prepared notes or access materials to aid others in their studies.
- The creator can post a link to online study sessions wherein they provide tutoring for a subject taught at the university
- Students can sell digital textbooks, e-books, and study materials specific to their courses.
- Students from various disciplines can collaborate on and sell digital storytelling projects, combining writing, art, music, and technology.
- Media creators can promote university events by uploading videos and pictures of previous events

User Story 2: The Media Seeker

- The Media Seeker can search for required textbooks based on the course, author, or title and then find a list of relevant items arranged so that the content with more upvotes will be displayed first. They can look for tutors or notes for any subject.
- The Media Seeker identifies a digital media item for sale, contacts the Media Creator, negotiates the terms of purchase, and only gains access to the full-resolution content after completing the transaction.
- The Media Seeker identifies a free digital media item, agrees to the terms set by the Media Creator, and downloads the material in full resolution directly from the platform.
- The Media Seeker can buy tickets for university events whose promotional content they find captivating related to campus activities.

User Story 3: The Creative Media Creator and Seeker

Searching for the Perfect Soundtrack

- The Media Seeker, working on a short film project, logs into the platform and uses the search feature to find suitable background music.
- They discover a Media Creator who has uploaded a captivating soundtrack and initiates contact through the platform's messaging system.
- The Media Seeker discusses the project's theme, mood, and specific requirements with the Media Creator to ensure a perfect match for their film.

Collaborative Decision and Further Collaboration

- Impressed with the music, the Media Seeker and Media Creator decided to collaborate further.
- They negotiate terms through the platform, agreeing on usage rights and other relevant details.
- The collaboration extends beyond the initial soundtrack, with the Media Seeker and Media Creator brainstorming ideas for additional sound effects and music cues to enhance the overall cinematic experience.
- The Media Seeker, satisfied with the collaboration, uploads the completed film to the platform.

User Story 4: The Administrator

- The Administrator monitors content regularly, identifies inappropriate items or user behavior, and takes necessary actions such as content removal or user suspension to maintain a positive and safe environment on the platform.
- The Administrator reviews the submission, ensures it adheres to platform guidelines, and approves it for listing

User Story 5: The Media Distributor

- The Student with thorough notes of a certain course shares their notes on the platform for fellow classmates and even faculty to use for free.
- Any authenticated user can have access to the free shared media.

List of main data items and entities

In this section, the types of users who will be implemented and their privileges will be discussed. Additionally, a general description of the data that will be attached to users and their posts will be laid out.

The data description is the same from Milestone 1 document but has some expanded definitions and modifications.

Below is a table that describes the website users and their privileges:

User type	Create Media	View Media	Modify Media	Deactivate media	Delete Media
Admin.	Y	Y	Y	Y	Y
Student	Y	Y	N	Y	Y
Public	N	N	N	N	N

- Administrators have full privileges on the website. They can create posts on the website and approve or disapprove any posts and users.
- Students can only view the posts that the administrator has approved.
- Students can deactivate their own media.
- All registered users can message each other via the website chat service.
- Unregistered users can only view posts from both sections.

Registered users have the following data attached to them:

- User ID.
- Phone Number.
- Role: To distinguish administrators and users.
- Email: The email has to end with “hs-fulda.de”. No email verification will take place.
- Date of Birth.
- Status: States whether the user is active or suspended by an administrator.
- Name.
- Family Name.

Media Posts have the following data attached to them (can be modified in the future):

- Post ID.
- Post Title.

- Post Description
- Media Type: Video/Audio/Image/Document.
- Owner ID.
- CreatedDate.
- Description.
- Is Active.
- File Path
- Demo File Path, should the user decide to add a demo version.
- Is Approved, whether approved by the administrator(s).
- Price.

Purchase, another entity in the system, includes the following properties:

- Purchase ID.
- Customer ID: Id of the buying user.
- Purchase Date.
- Media ID.
- Seller Delivered: depicts whether the product is delivered when using the contact method of purchase.

Messages:

- Message ID.
- Sender ID.
- Recipient ID.
- Content.
- Created Date.

Functional Requirements - prioritized

Priority 1:

- Administrator
    - Media Approval: The ability to approve or disapprove of the media.
    - User Management: The ability to ban users violating the policies.
- User
    - Registration: The ability to create an account.
    - Media Distribution: The ability to put media on sale.
    - Media Purchase: The ability to purchase media.
    - Profile Management: The ability to update their profile.
    - Content Management: The ability to deactivate owned media.
    - Access to purchased media.
    - Chat: Send messages regarding a product.
    - Download purchased media.
    - Search: Search for media

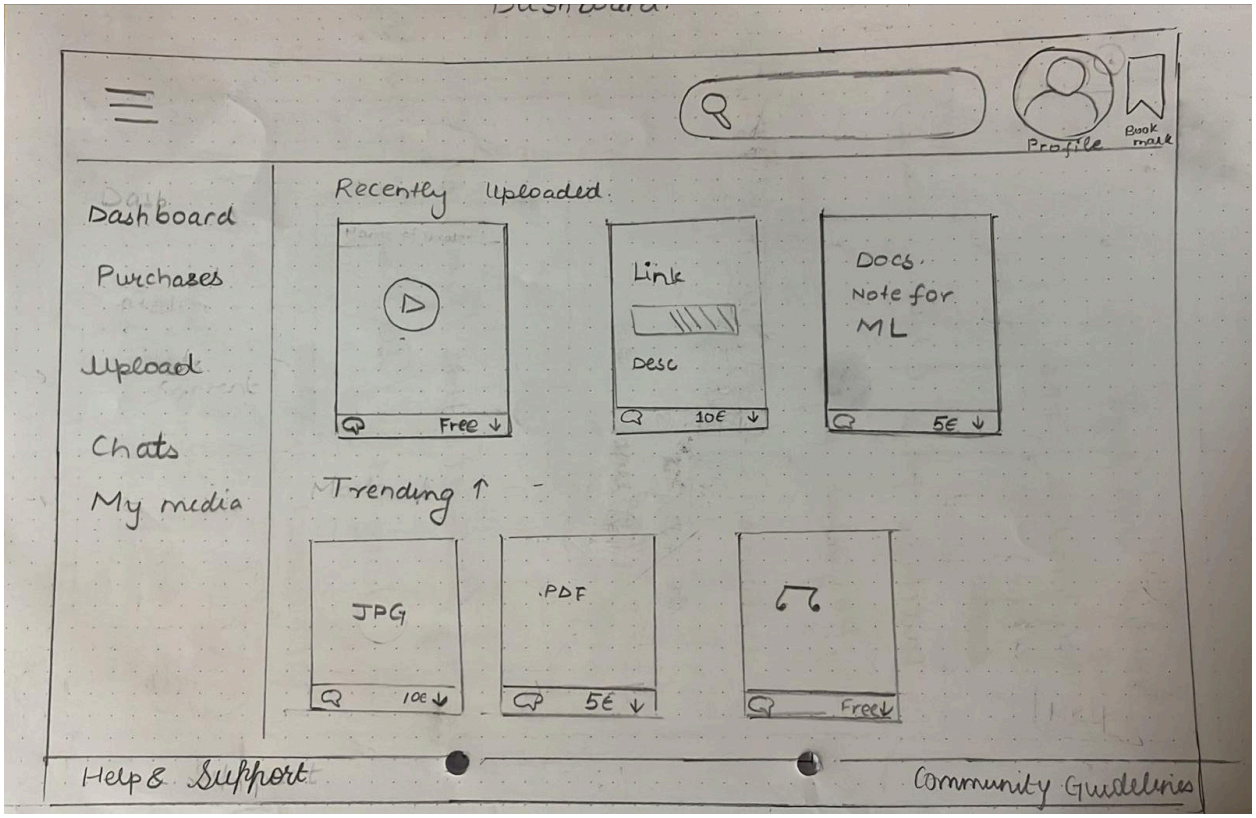
Priority 2: Issue resolution System

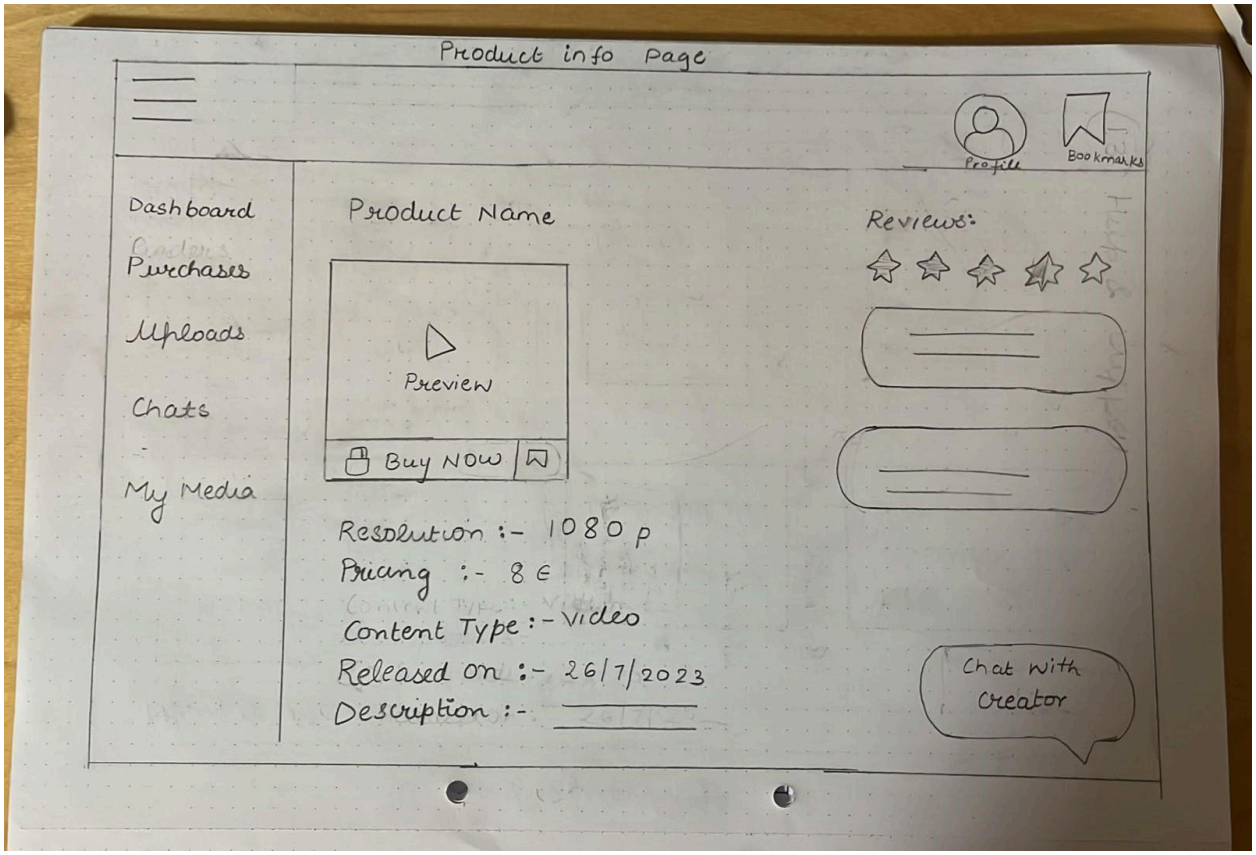
- User
    - Reporting: The ability to report issues.
    - Save media (as in social media).
    - Delivery Confirmation: Confirm the delivery of purchased media.
    - Reviewing: Post review on purchased media.
- Administrator
    - Report Management: The ability to see and resolve reported issues.

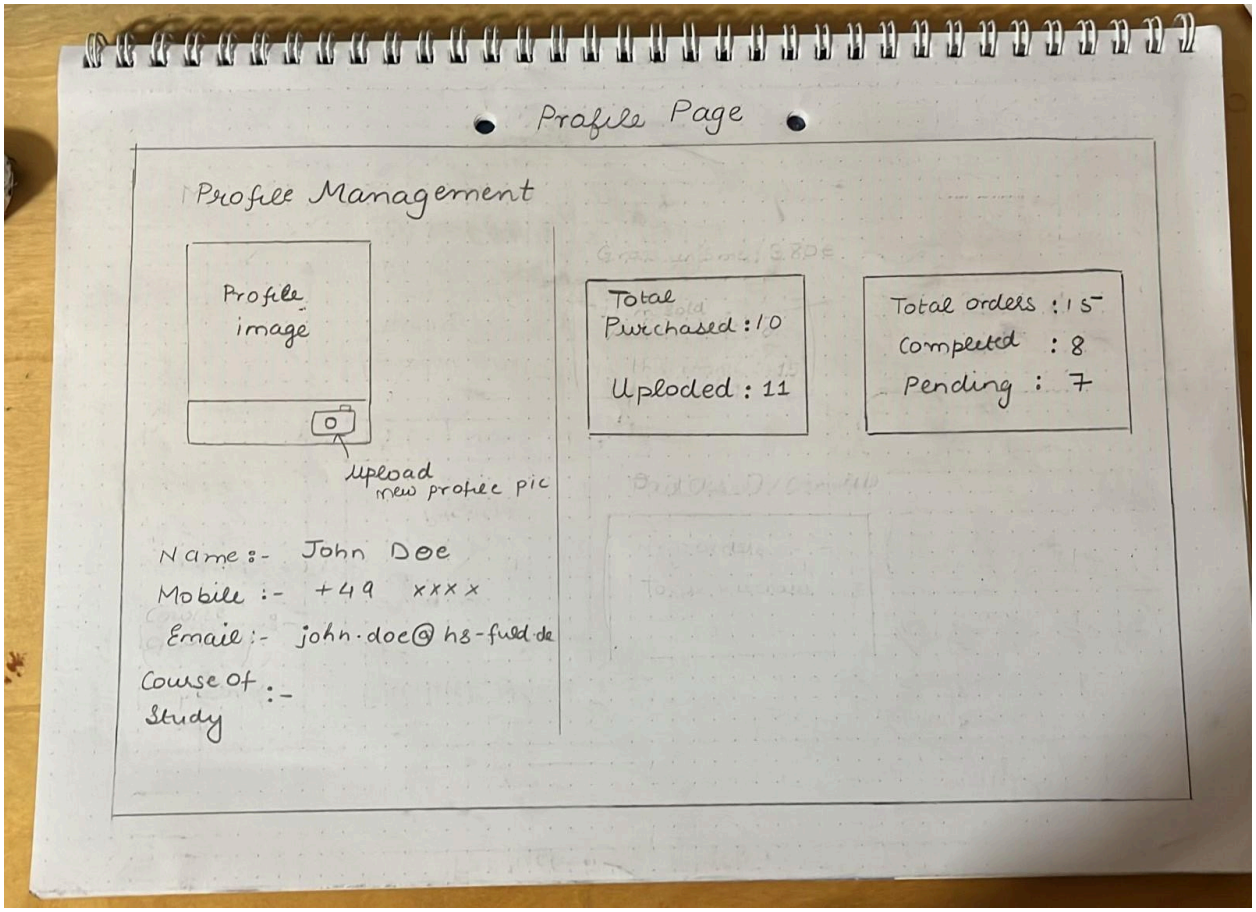
Priority 3: Image watermarking system

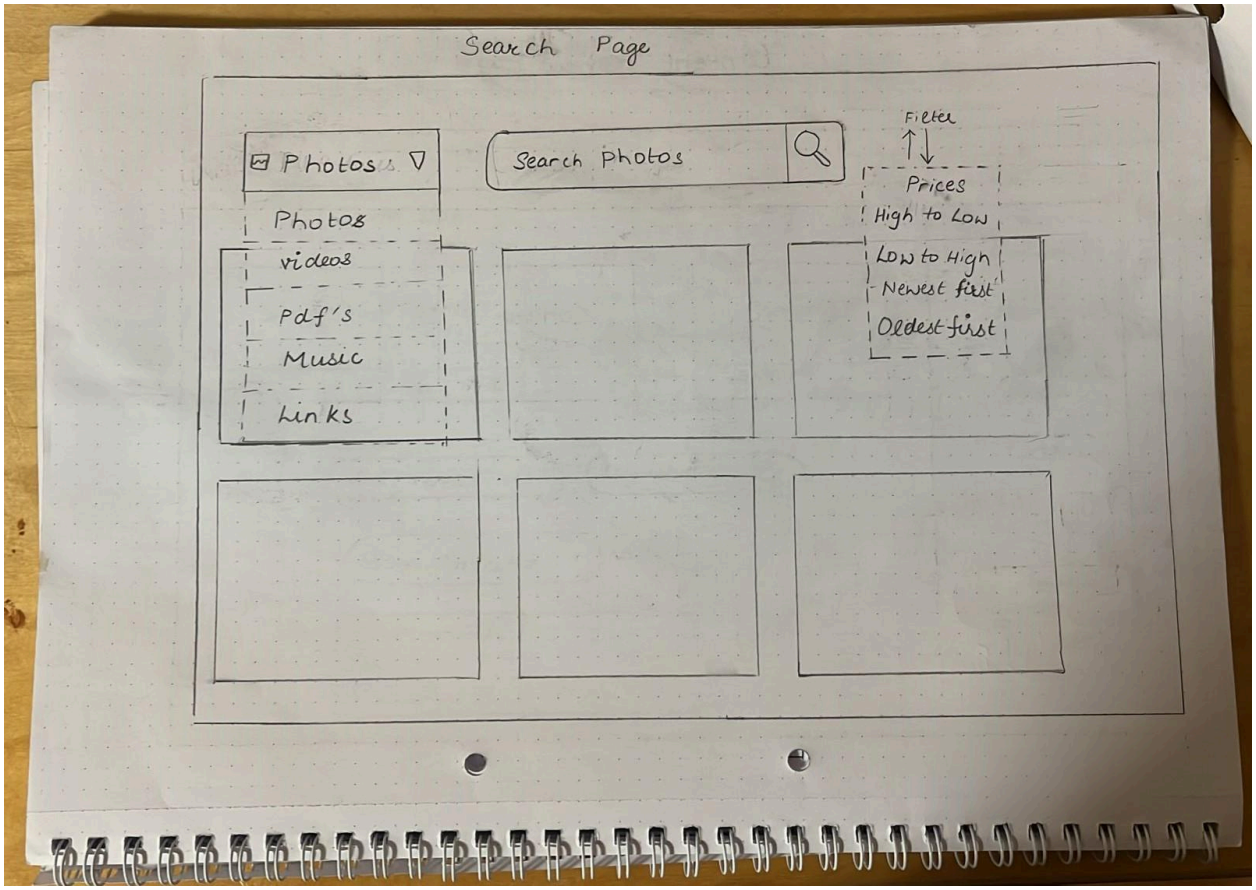
- System
    - Content Protection: Adding watermark to image-based media.

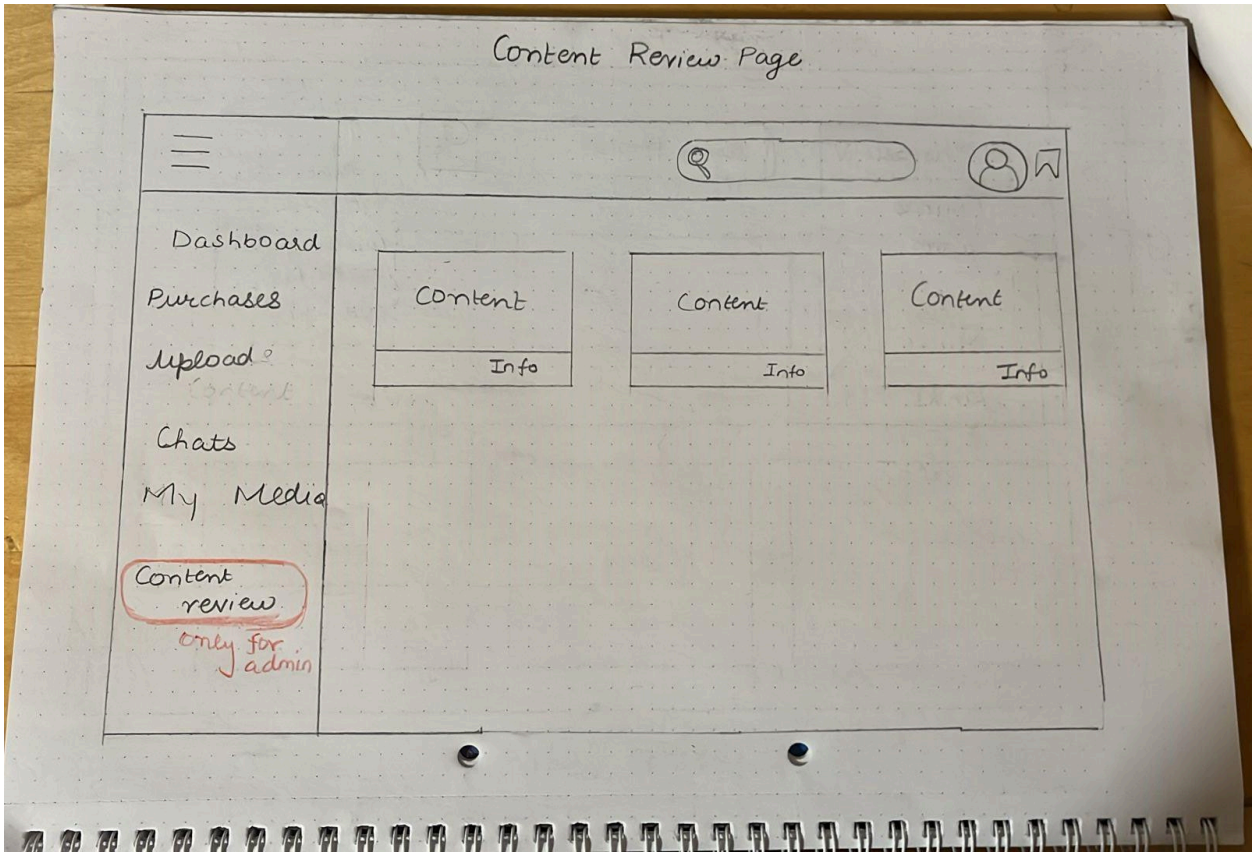
UI Mockups and Storyboards

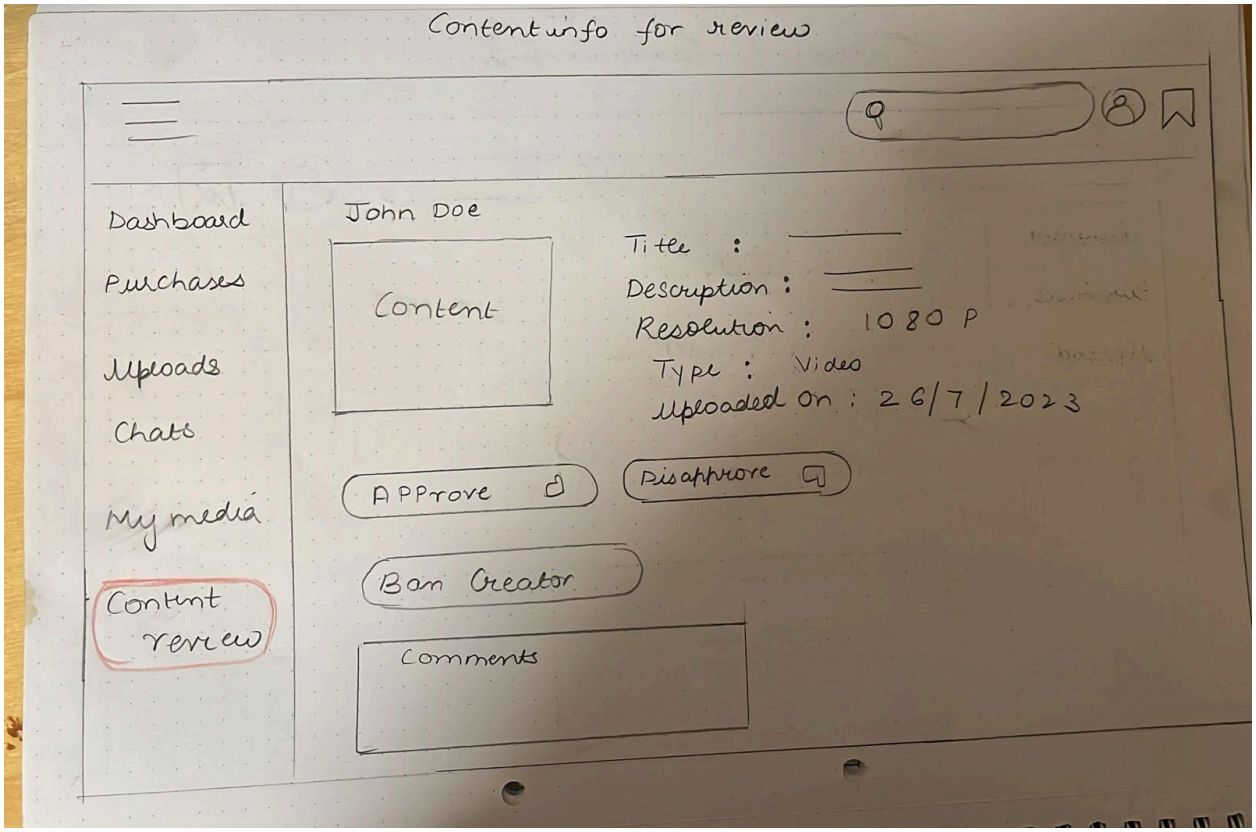

Profile
Book mark
Dashboard
Purchases
Upload
Chats
My media
Recently Uploaded
Link
Desc
Docs. Note for ML
Free
10€
5€
Trending
JPG
PDF
10€
5€
Free
Help & Support
Community Guidelines

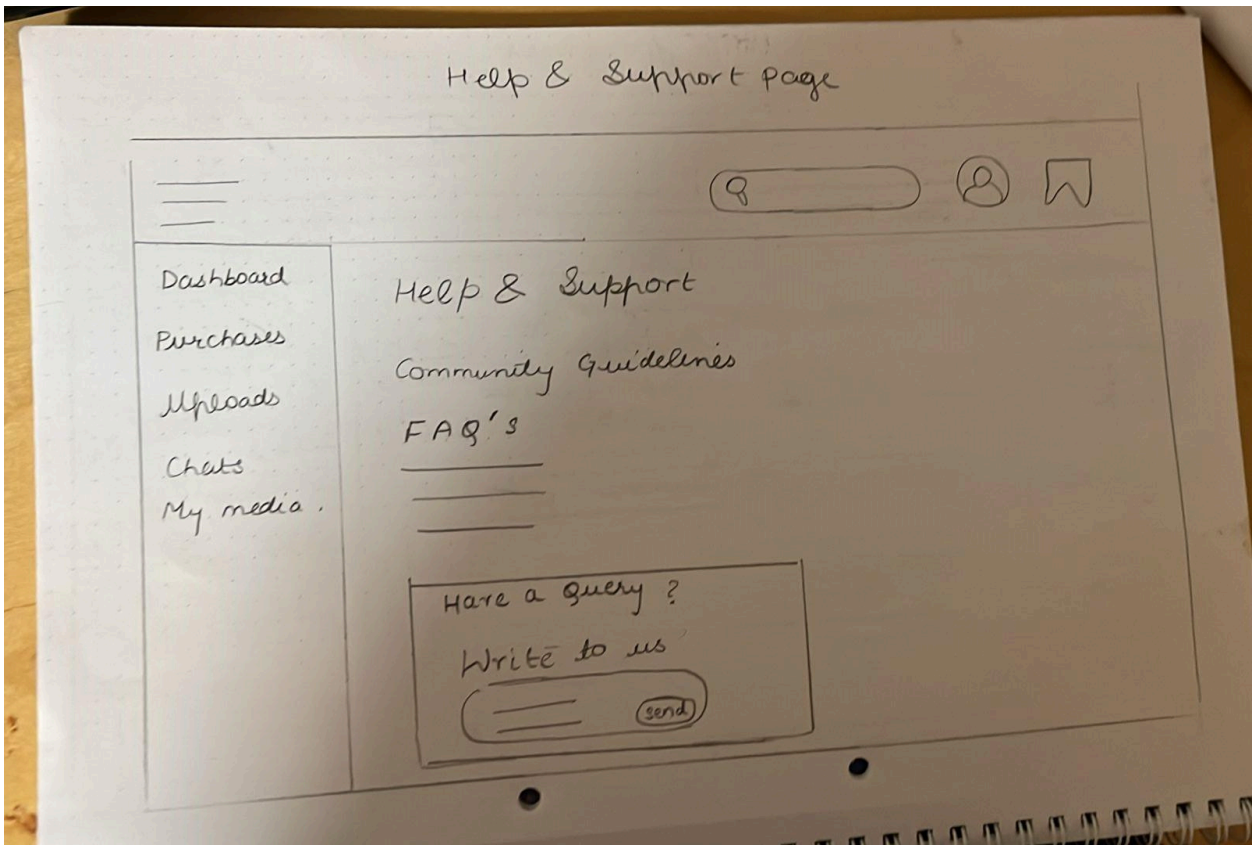

Product info page
Profile
Bookmarks
Dashboard
Purchases
Uploads
Chats
My Media
Product Name
Preview
Buy NOW
Reviews:
Resolution :- 1080 p
Pricing :- 8 €
Content Type :- Video
Released on :- 26/7/2023
Description :-
Chat with Creator

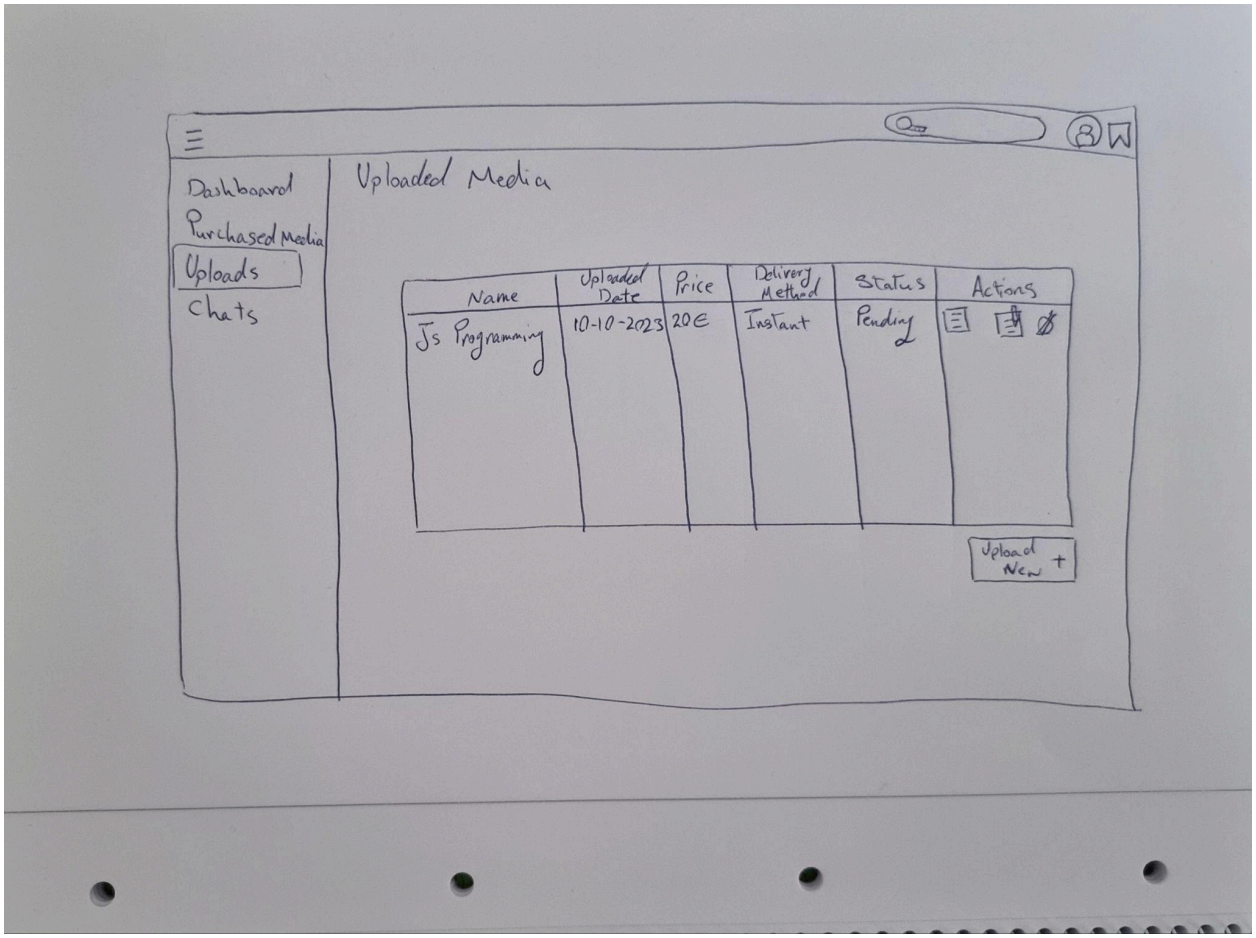

Profile Page
Profile Management
Profile image
Upload new profile pic
Name :- John Doe
Mobile :- +49 xxxx
Email :- john.doe@hs-fuld.de
Course of Study :-
Total Purchased : 10
Uploded : 11
Total orders : 15
Completed : 8
Pending : 7

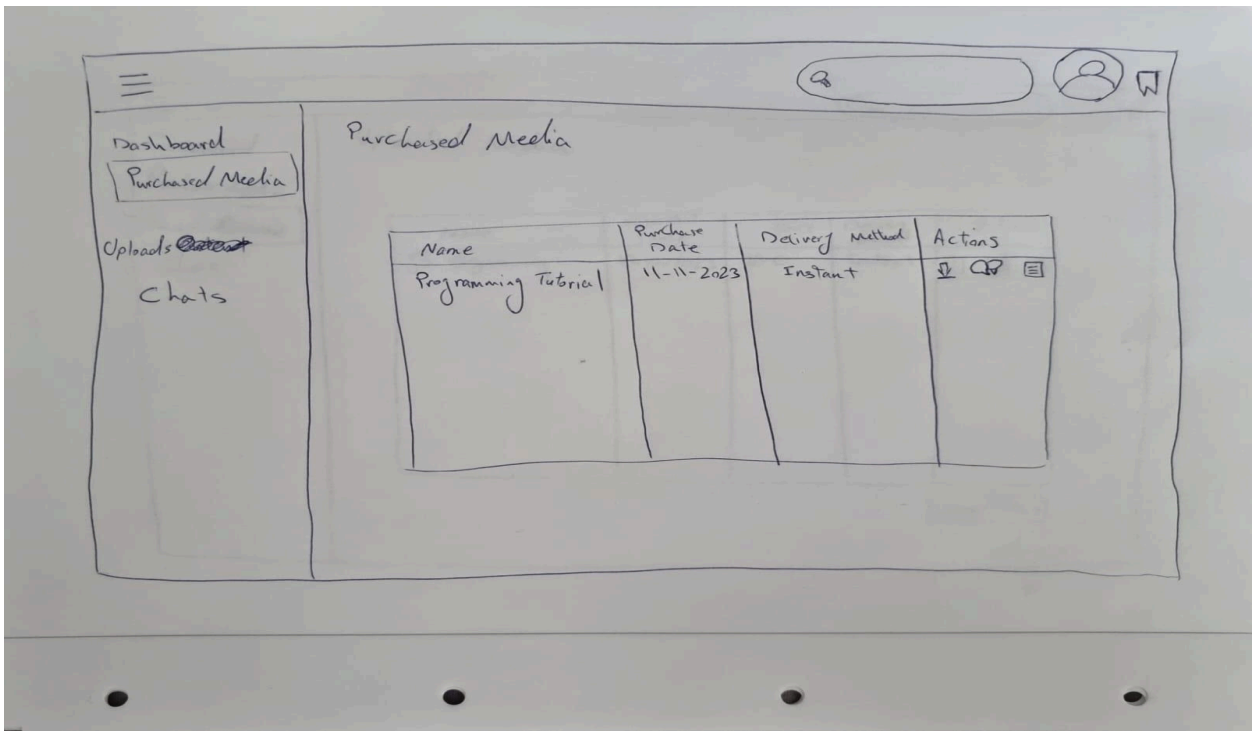

Search Page
Photos
Search photos
Filter
Prices
High to Low
Low to High
Newest first
Oldest first
Photos
videos
Pdf's
Music
Links

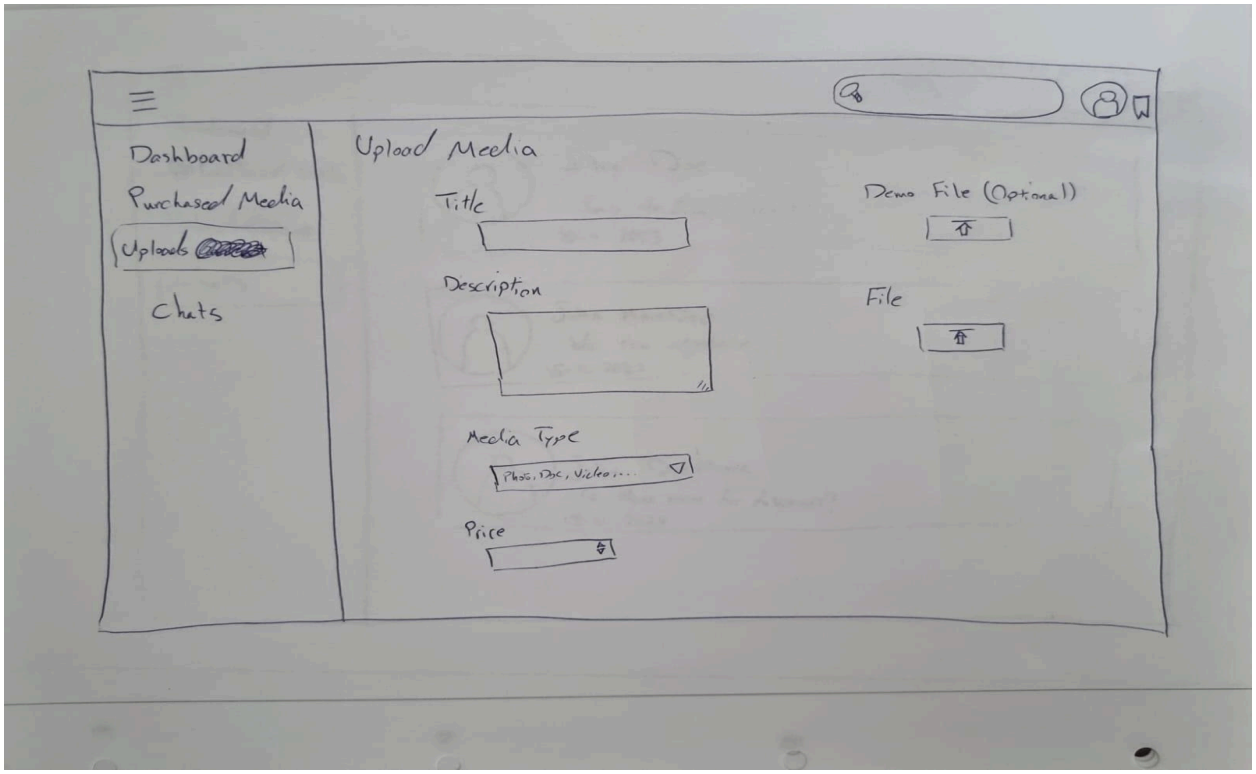

Content Review Page
Dashboard
Purchases
Upload
Chats
My Media
Content review
only for admin
Content
Info
Content
Info
Content
Info

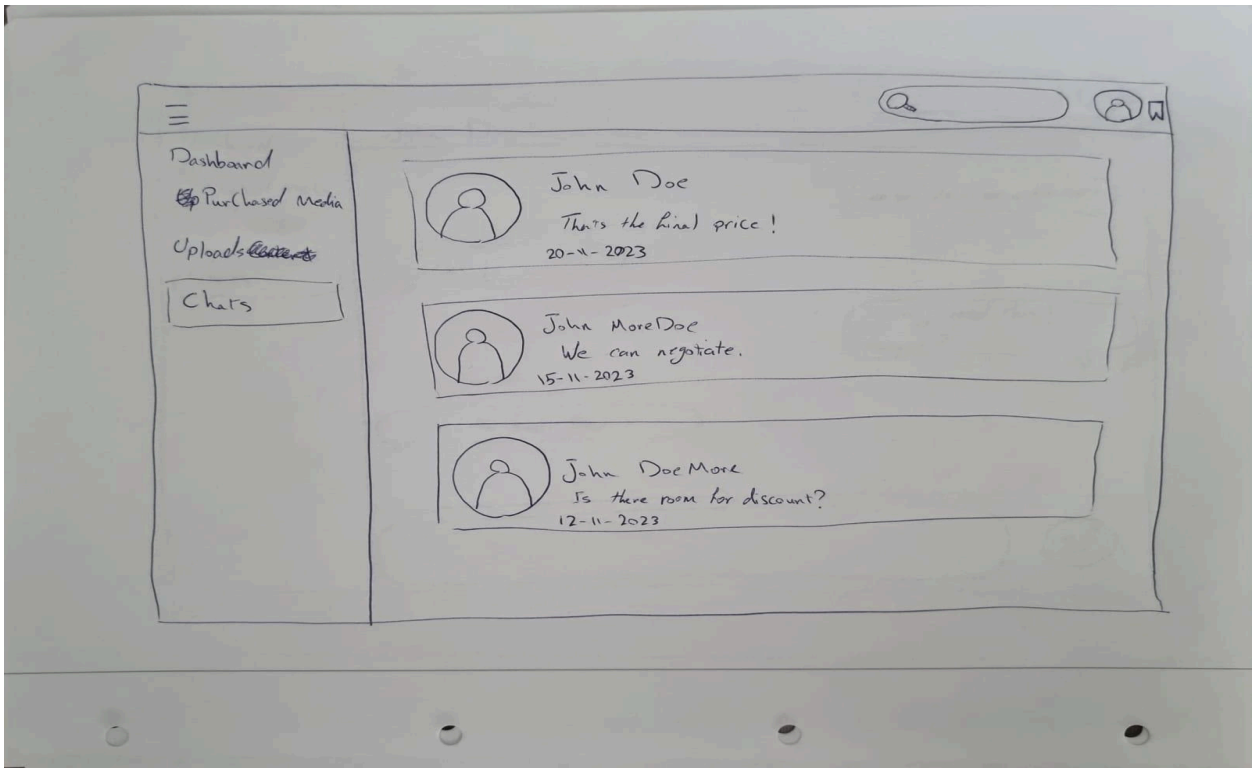

Content info for review
Dashboard
Purchases
Uploads
Chats
My media
Content review
John Doe
Content
Title :
Description :
Resolution : 1080 P
Type : Video
Uploaded on : 26/7/2023
APProve
Disapprove
Ban Creator
Comments

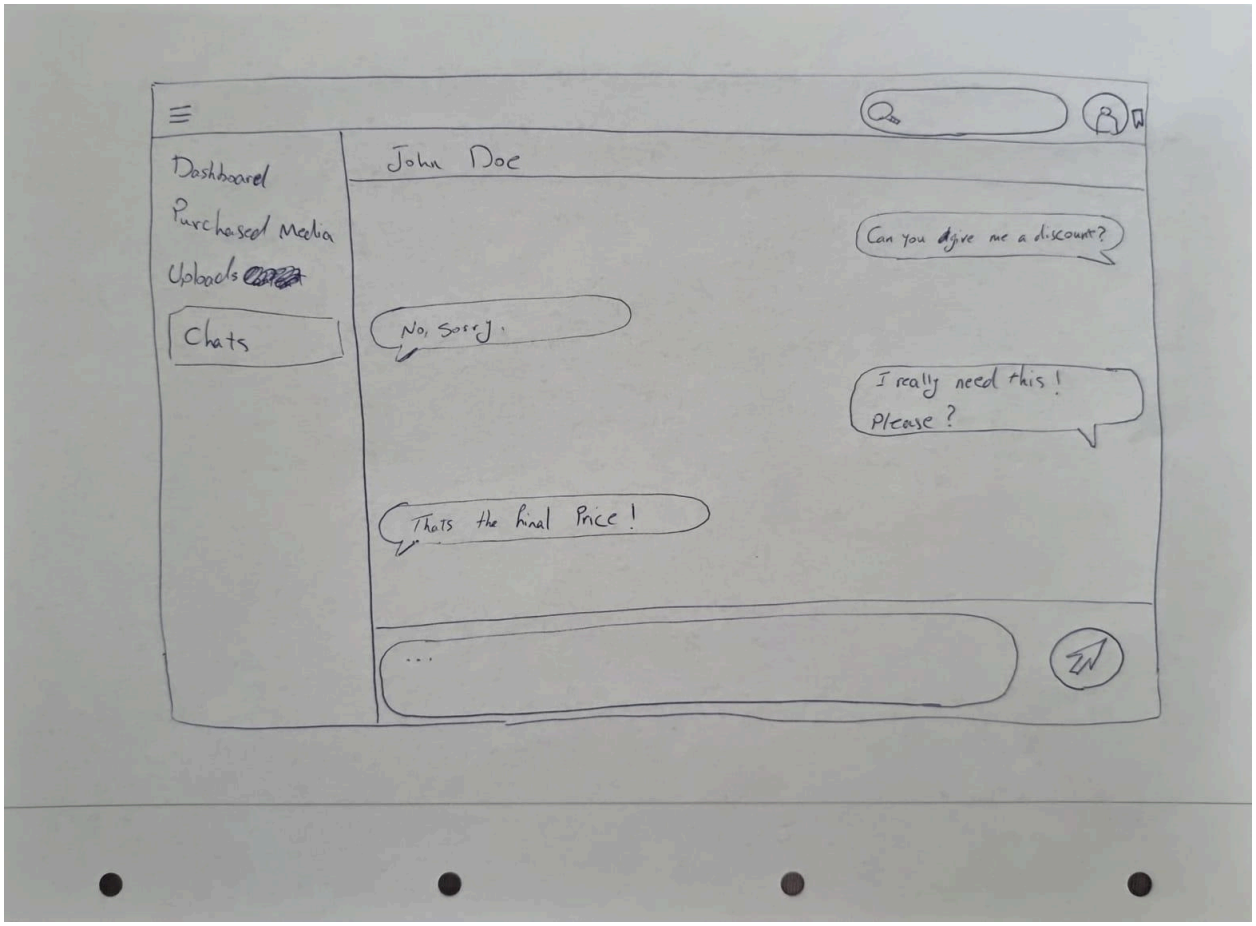

Help & Support page
Dashboard
Purchases
Uploads
Chats
My media
Help & Support
Community Guidelines
FAQ's
Have a query ?
Write to us
send


Dashboard
Purchased Media
Uploads
Chats
Uploaded Media
Name
Uploaded Date
Price
Delivery Method
Status
Actions
Js Programming
10-10-2023
20€
Instant
Pending
Upload New +

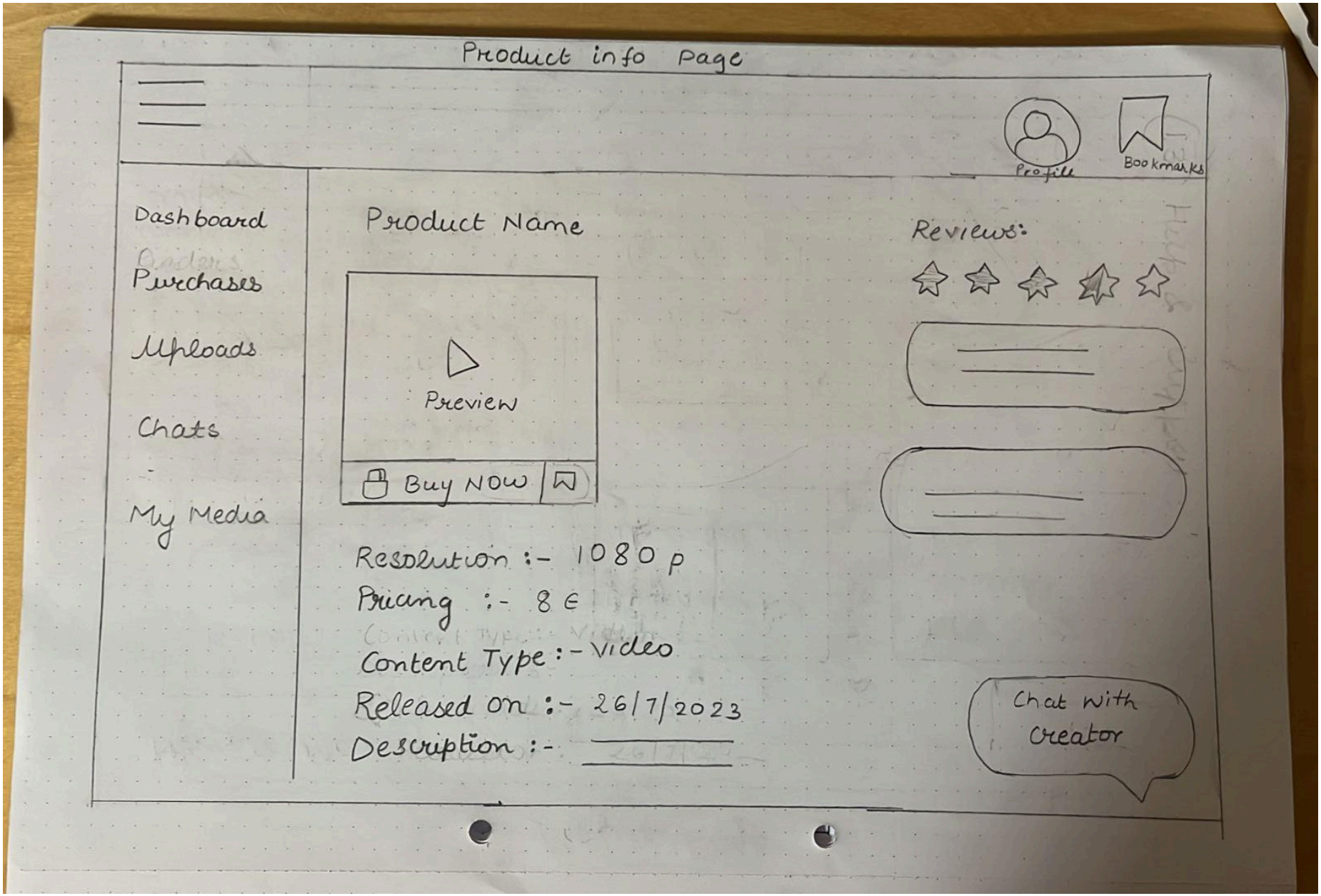

Dashboard
Purchased Media
Uploads
Chats
Purchased Media
Name
Purchase Date
Delivery Method
Actions
Programming Tutorial
11-11-2023
Instant


Dashboard
Purchased Media
Uploads
Chats
Upload Media
Title
Demo File (Optional)
Description
File
Media Type
Photo, Doc, Video, ...
Price


Dashboard
Purchased Media
Uploads
Chats
John Doe
That's the final price!
20-4-2023
John MoreDoe
We can negotiate.
15-11-2023
John DoeMore
Is there room for discount?
12-11-2023

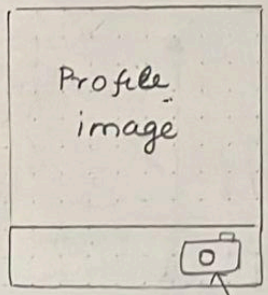

Dashboard
Purchased Media
Uploads
Chats
John Doe
Can you give me a discount?
No, sorry.
I really need this!
Please?
Thats the final Price!
...

Product info Page



Profile Page

Profile Management



Name :- John Doe

Mobile :- +49 xxxx

Email :- john.doe@hs-fuld.de

Course of Study :-

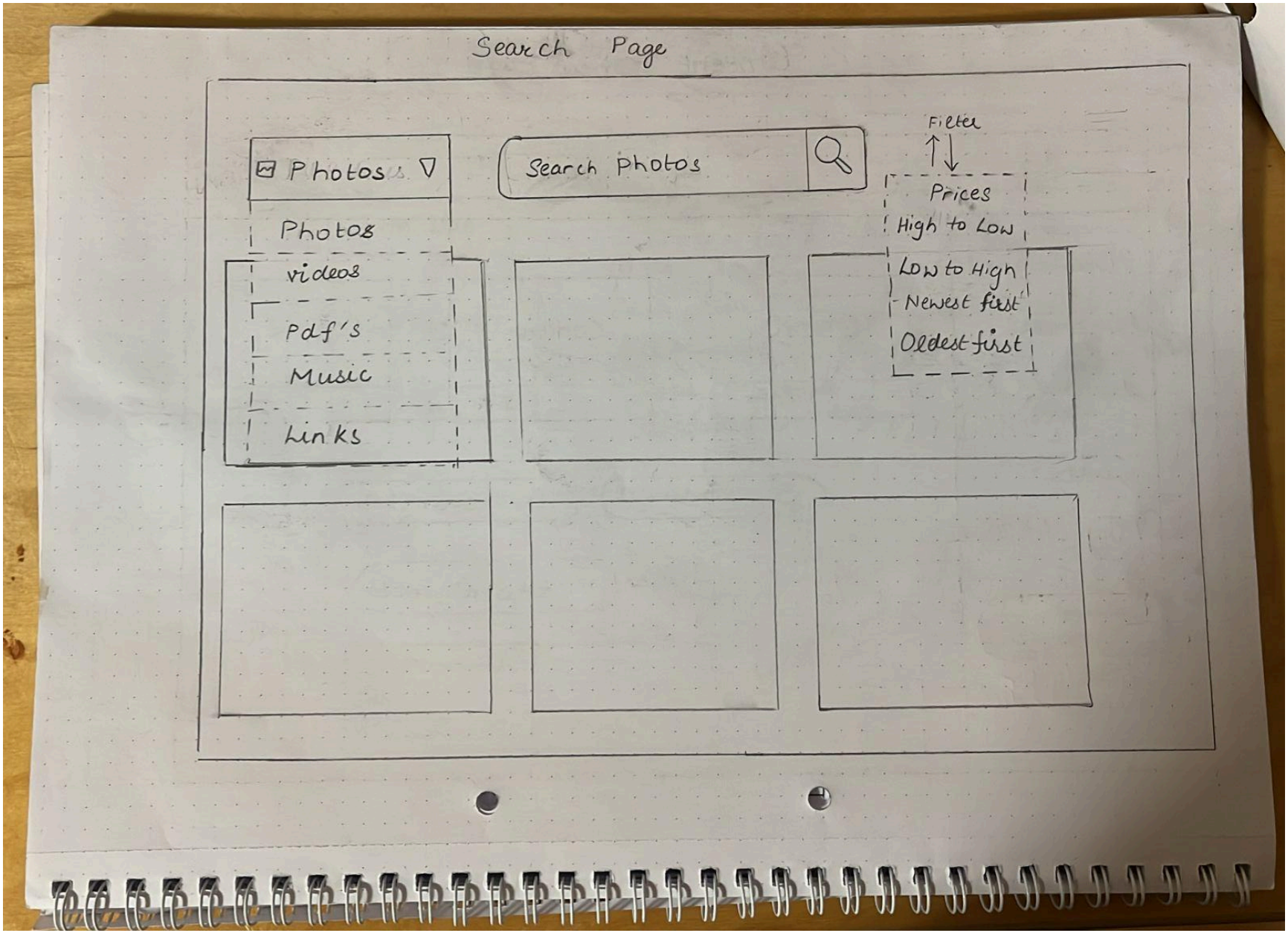
Total Purchased : 10

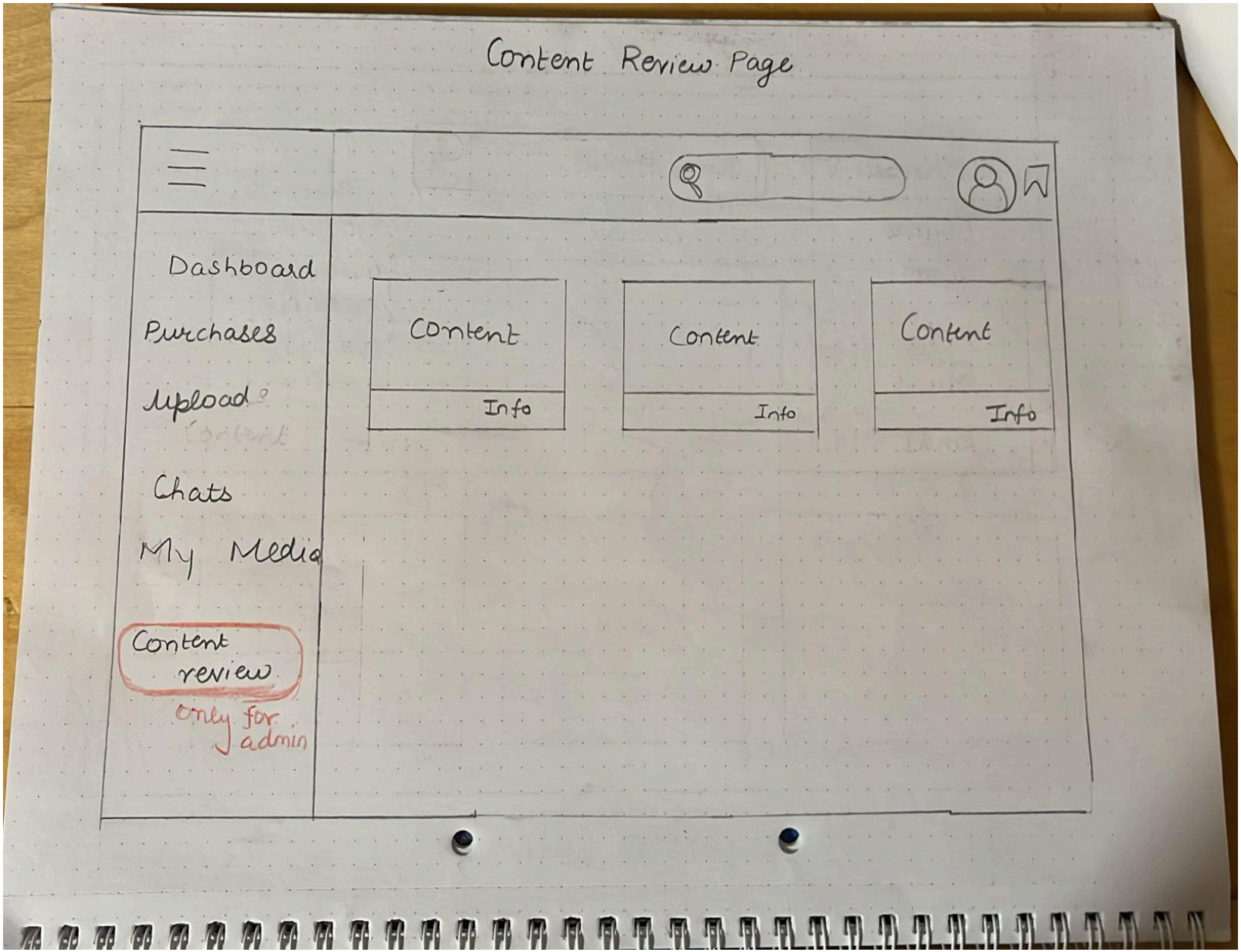
Uploded : 11

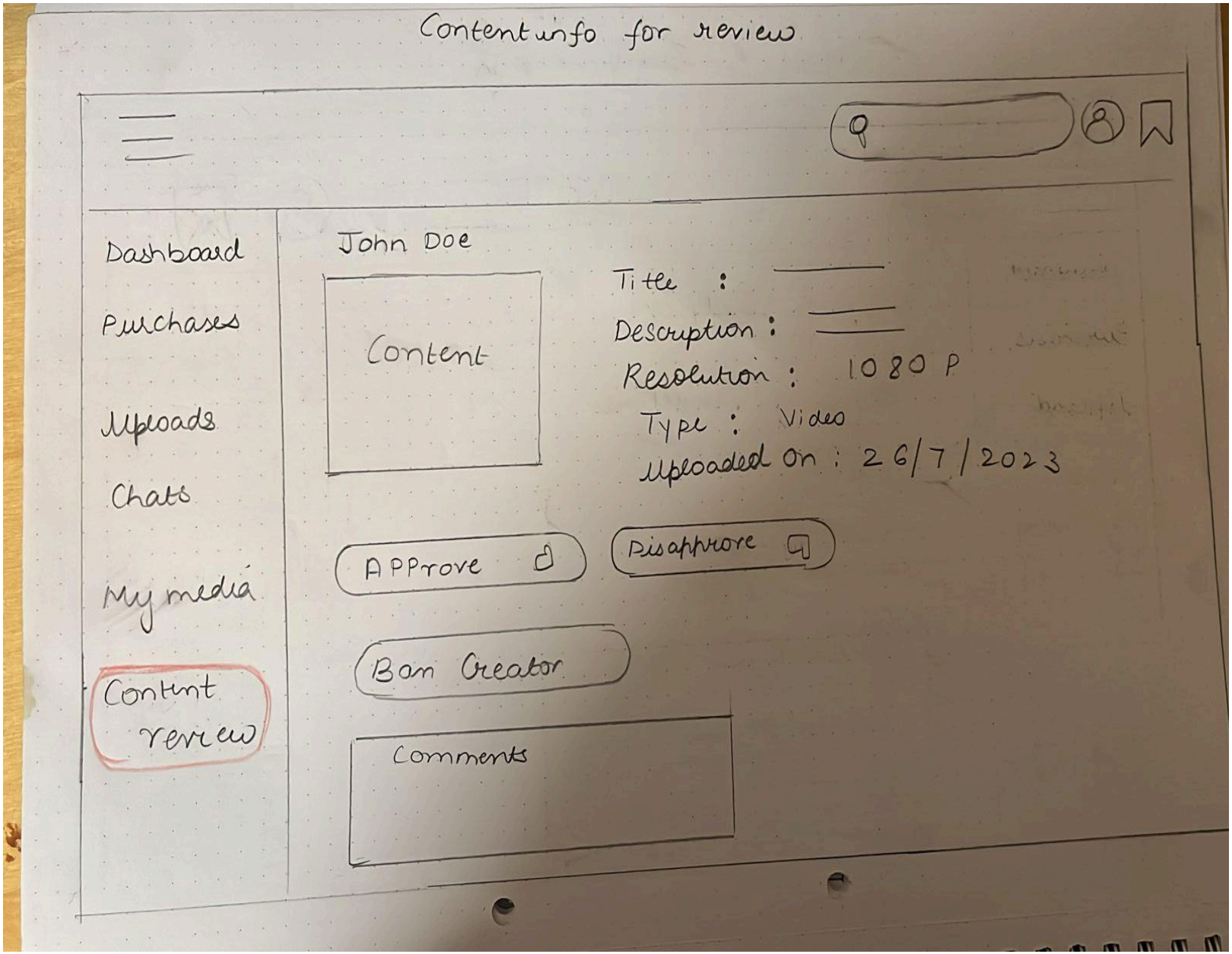
Total orders : 15

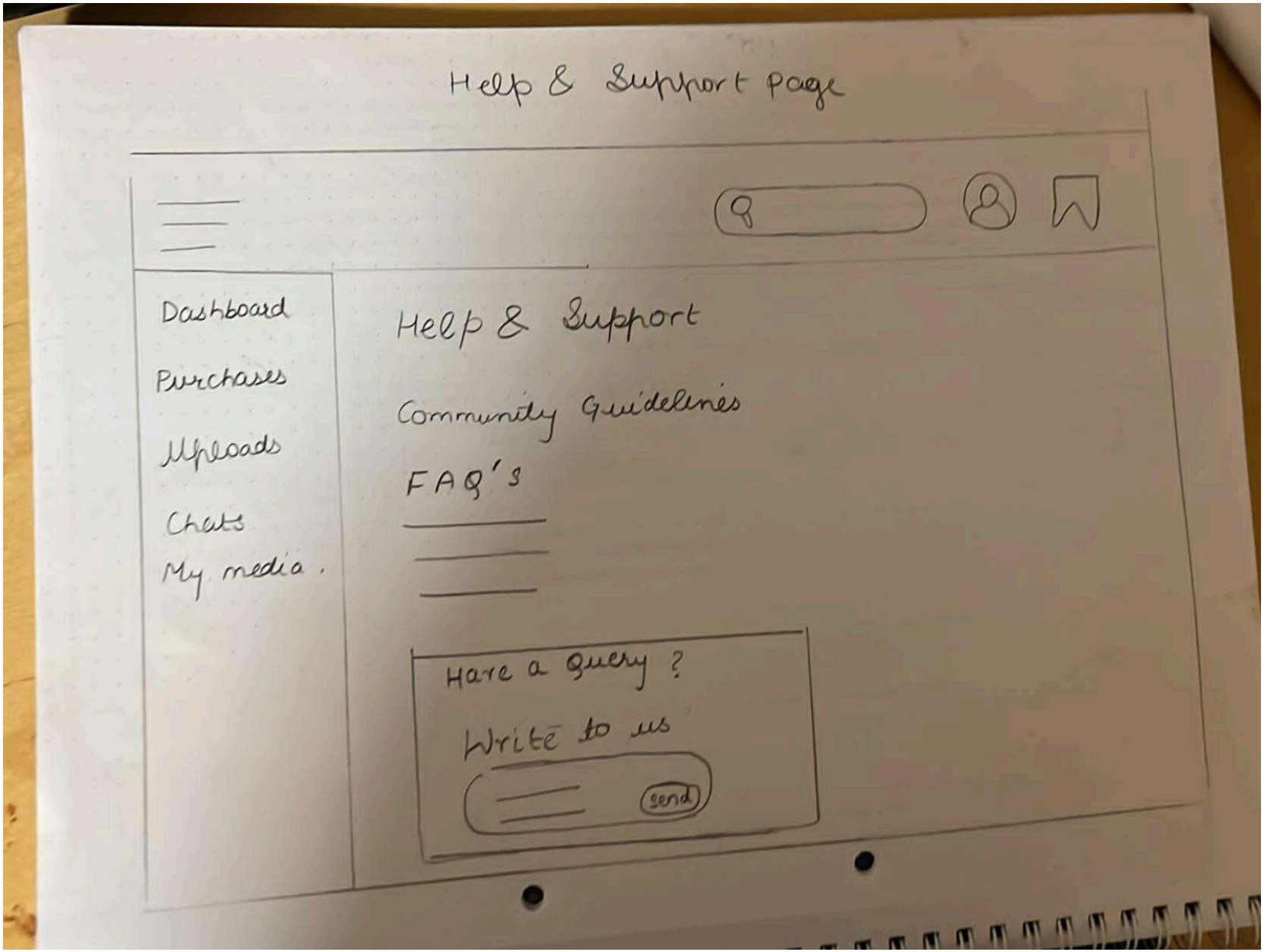
Completed : 8

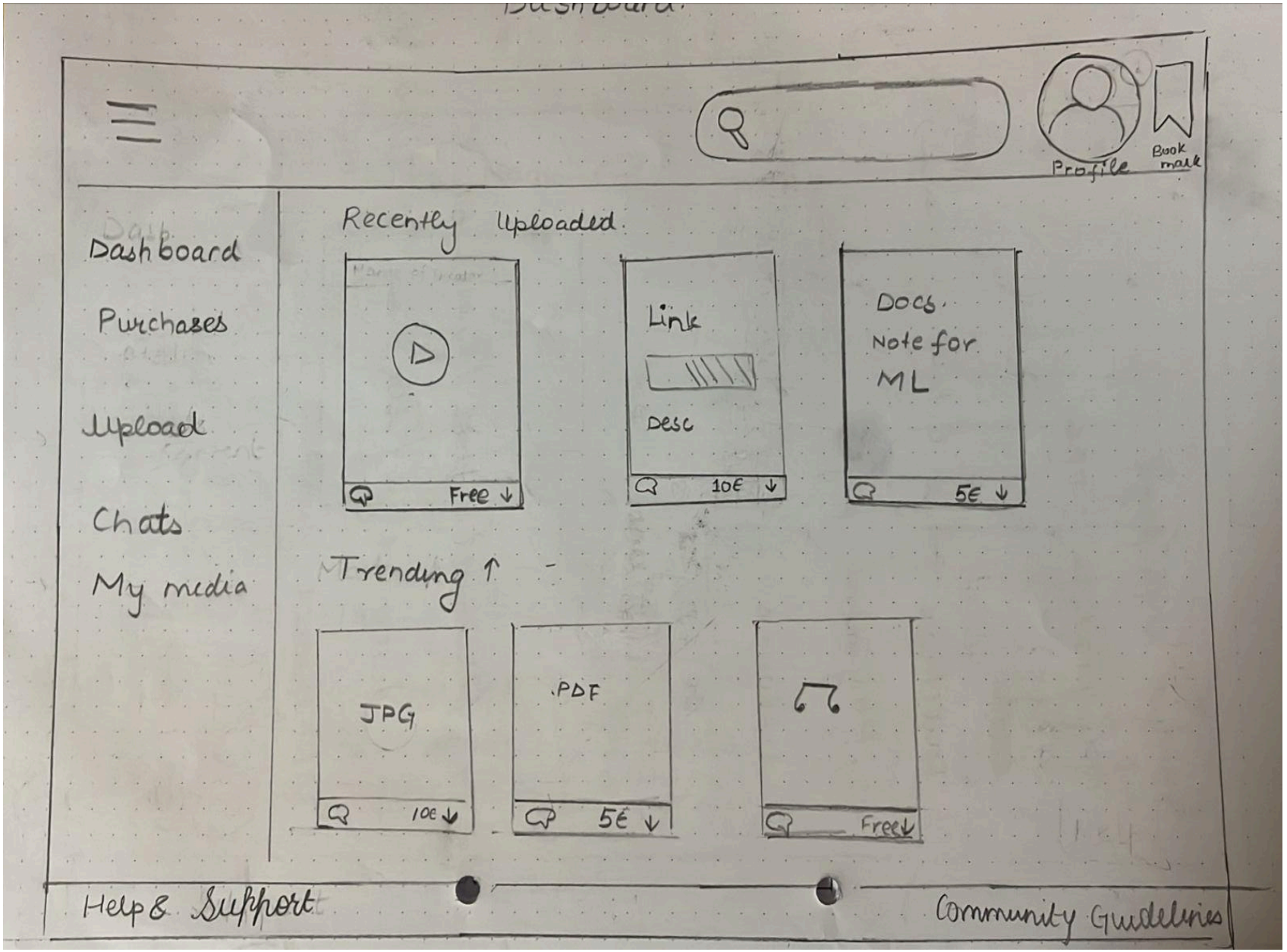
Pending : 7

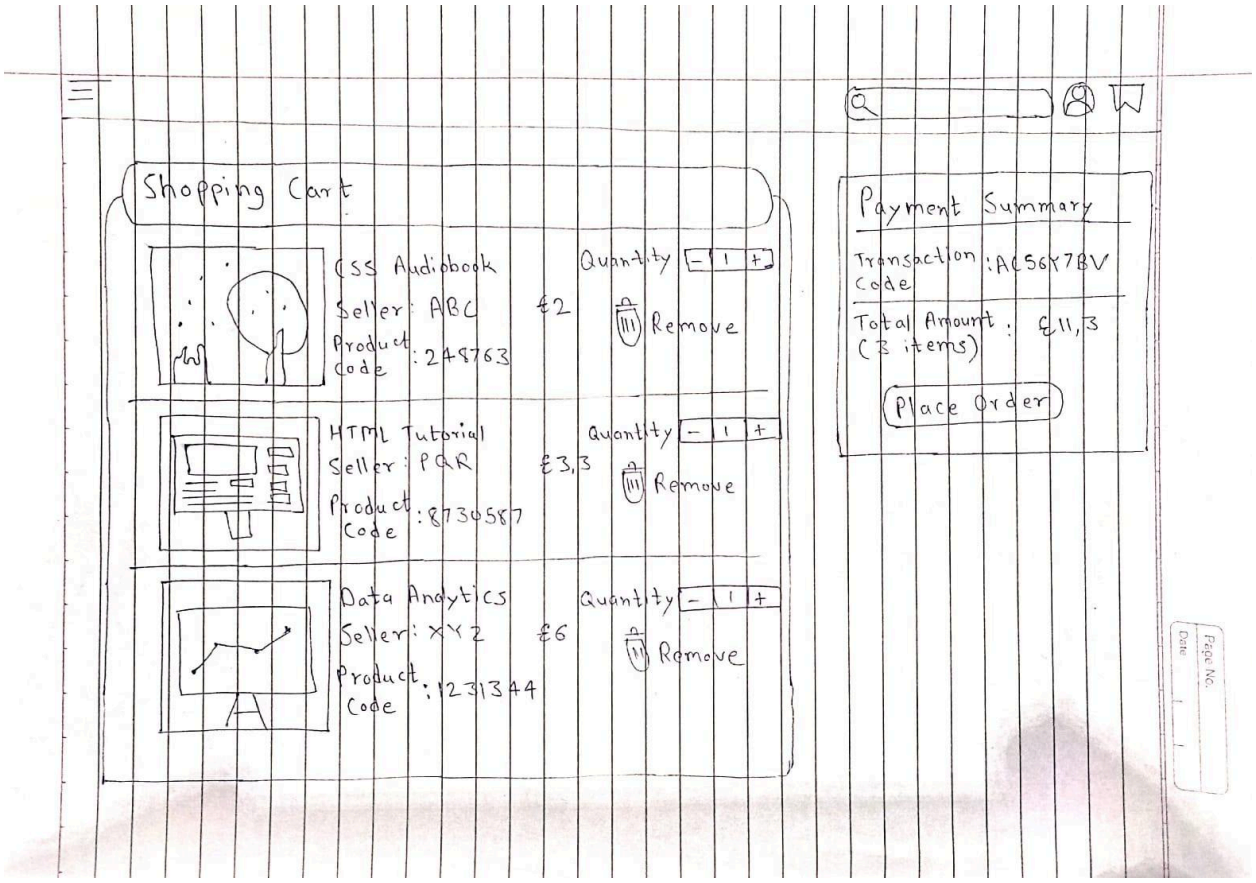

Search Page
Photos
Search Photos
Filter
Prices
High to Low
Low to High
Newest first
Oldest first
Photos
videos
Pdf's
Music
Links


Content Review Page
Dashboard
Purchases
Upload Content
Chats
My Media
Content review
only for admin
Content
Info
Content
Info
Content
Info


Content info for review
Dashboard
Purchases
Uploads
Chats
My media
Content review
John Doe
Content
Title :
Description :
Resolution : 1080 P
Type : Video
Uploaded on : 26/7/2023
APProve
Disapprove
Ban Creator
Comments


Help & Support page
Dashboard
Purchases
Uploads
Chats
My media.
Help & Support
Community Guidelines
FAQ's
Have a query ?
Write to us
send


Profile
Book mark
Dashboard
Purchases
Upload
Chats
My media
Recently Uploaded.
Free
Link
Desc
10€
Docs.
Note for ML
5€
Trending
JPG
10€
.PDF
5€
Free
Help & Support
Community Guidelines


Shopping Cart
CSS Audiobook
Seller: ABC
Product Code: 248763
£2
Quantity - 1 +
Remove
HTML Tutorial
Seller: PQR
Product Code: 8730587
£3,3
Quantity - 1 +
Remove
Data Analytics
Seller: XYZ
Product Code: 123344
£6
Quantity - 1 +
Remove
Payment Summary
Transaction Code: AC56Y7BV
Total Amount (3 items): £11,3
Place Order

List of non-functional requirements

1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in Milestone 0. Application delivery shall be from chosen cloud server

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

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

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

5. Full resolution free media shall be downloadable directly, and full resolution media for selling shall be obtained after contacting the seller/owner.

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

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

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

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

10. Application should follow established architecture patterns.

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

12. No email clients shall be allowed.

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

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

15. Application shall be media rich (images, video etc.). Media formats shall be standard as used in the market today

Competitive Analysis

Features	Buying/Selling	Supports Watermark	Supports Documents Upload	Reviews/Comments	Save Posts
FHDB	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Shutterstock	Yes	Yes	No	No	Yes
Freepik	Yes	Yes	No	No	Yes
Instagram	No	No	No	Yes	Yes
X	No	No	No	Yes	Yes
Pinterest	No	No	No	Yes	Yes
Dribble	Yes	No	No	Yes	Yes

FHDB not only brings the features of a digital media marketplace, but also the interactions of modern social media platforms, namely: Saving Posts, Commenting and Star reviews, as well as the ability to directly share the link of a media.We went through alot of digital media platforms but none of it offered a complete set of features which we believe are important, while Shutterstock and Freepik has a wide range of stock images, sounds, gifs, vector it lacked support for documents upload along with all the other apps.

High level Architecture, Database Organization

1. DB organization

1.1. User

- **Id**: Unique identifier for a user
- **EmailAddress**: Email address of the user
- **Name**: First name of the user
- **FamilyName**: Last name of the user
- **Role**: Role of the user (Media Creator/Consumer or Admin)
- **PhoneNumber**: Contact number of the user
- **DateOfBirth**: Birthdate of the user
- **Status**: Status of the user account
- **CreatedDate**: Date when the user account was created

1.2. Message

- **Id**: Unique identifier for a message
- **SenderId**: Id of the user sending the message
- **RecipientId**: Id of the user receiving the message
- **Content**: Text content of the message
- **CreatedDate**: Date when the message was created
- **SeenByRecipient**: Indicator if the message has been seen by the recipient

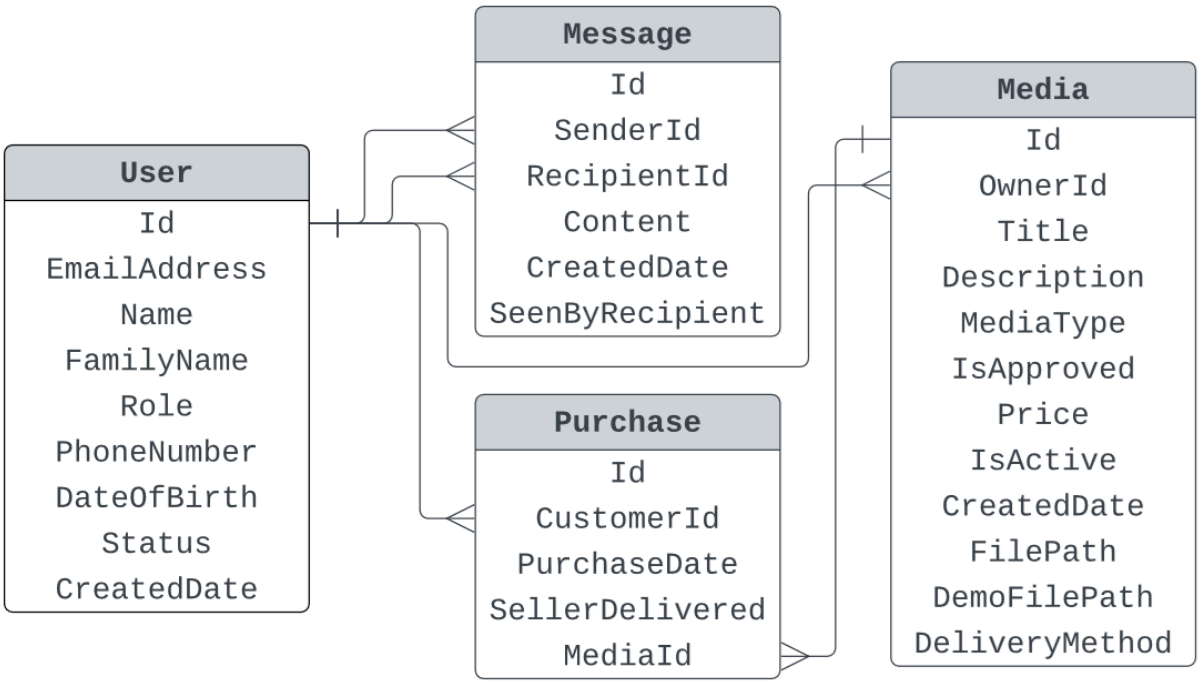
1.3. Media

- **Id**: Unique identifier for a media item
- **OwnerId**: Id of the owner/user associated with the media
- **Title**: Title of the media
- **Description**: Description of the media
- **MediaType**: Type of media (e.g., image, video, audio, document)
- **IsApproved**: Approval status of the media by Admin
- **Price**: Price of the media (if applicable)

- **IsActive**: Status indicating if the media is active
- **CreatedDate**: Date when the media was created
- **FilePath**: Path to the media file
- **DemoFilePath**: Path to a demo or preview file
- **DeliveryMethod**: Method of delivery for the media

1.4. Purchase

- **Id**: Unique identifier for a purchase transaction
- **CustomerId**: Id of the customer making the purchase
- **PurchaseDate**: Date when the purchase was made
- **SellerDelivered**: Indicator if the seller has delivered the purchased item
- **MediaId**: Id of the media item associated with the purchase



2. Media storage

We've opted for Firebase as our Media Storage solution due to its seamless integration, scalability, and robust set of features. Firebase provides a reliable cloud storage infrastructure that aligns perfectly with our application's needs, allowing for effortless uploading, downloading, and management of media files. Its scalability ensures that as our user base and content grow, we can effortlessly accommodate increased storage demands without compromising performance. Moreover, Firebase's built-in security measures offer peace of mind, ensuring that our media files are protected from unauthorized access. With its real-time capabilities and straightforward integration via SDKs and APIs, Firebase emerged as the ideal choice, enabling us to focus on delivering a stellar user experience while efficiently handling our media storage requirements.

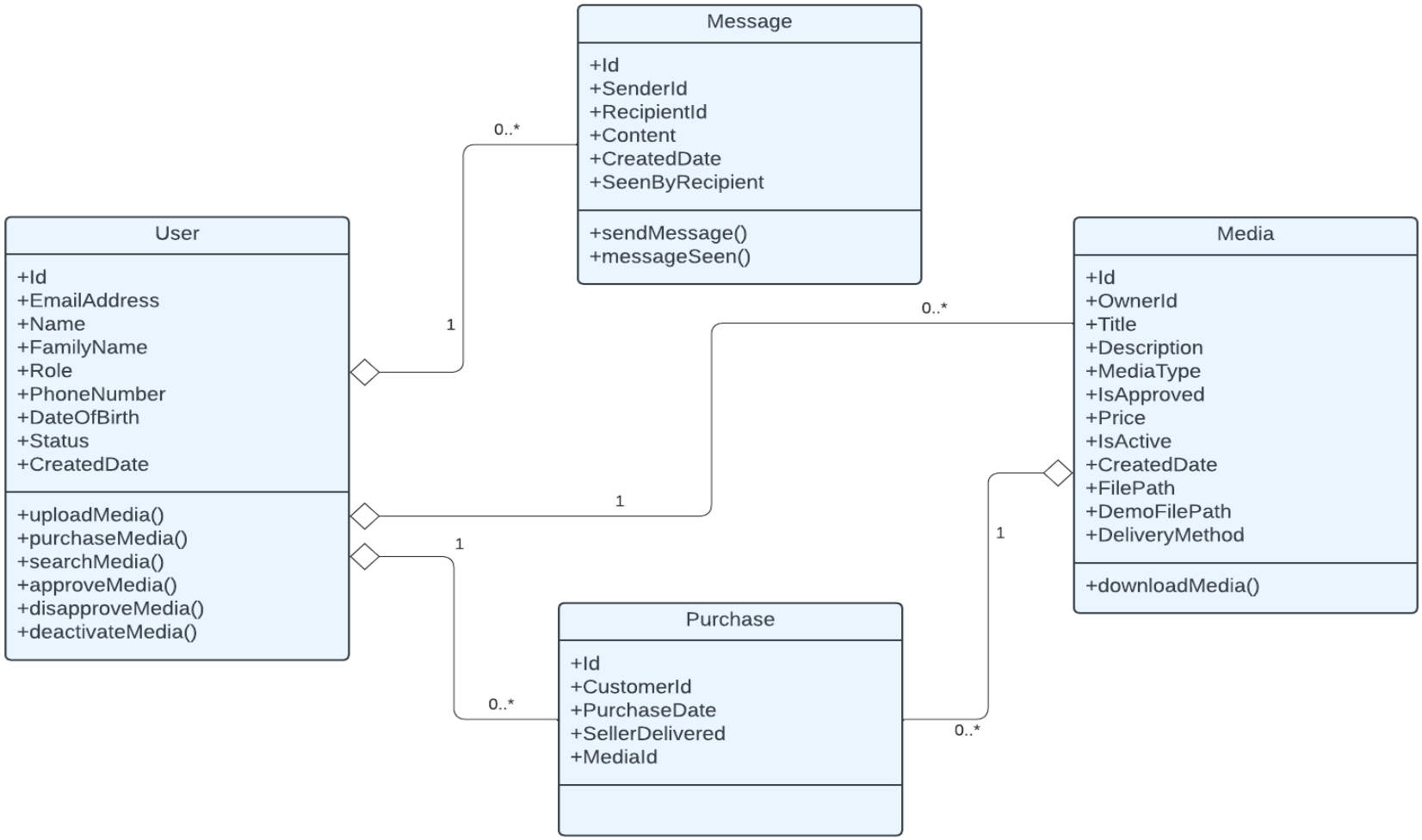
4.3. Search/filter architecture and implementation

We will be implementing a Keyword search Method. Users can input keywords or phrases related to the media they are looking for, and the system matches those keywords with the Title, Description, or any other relevant fields.

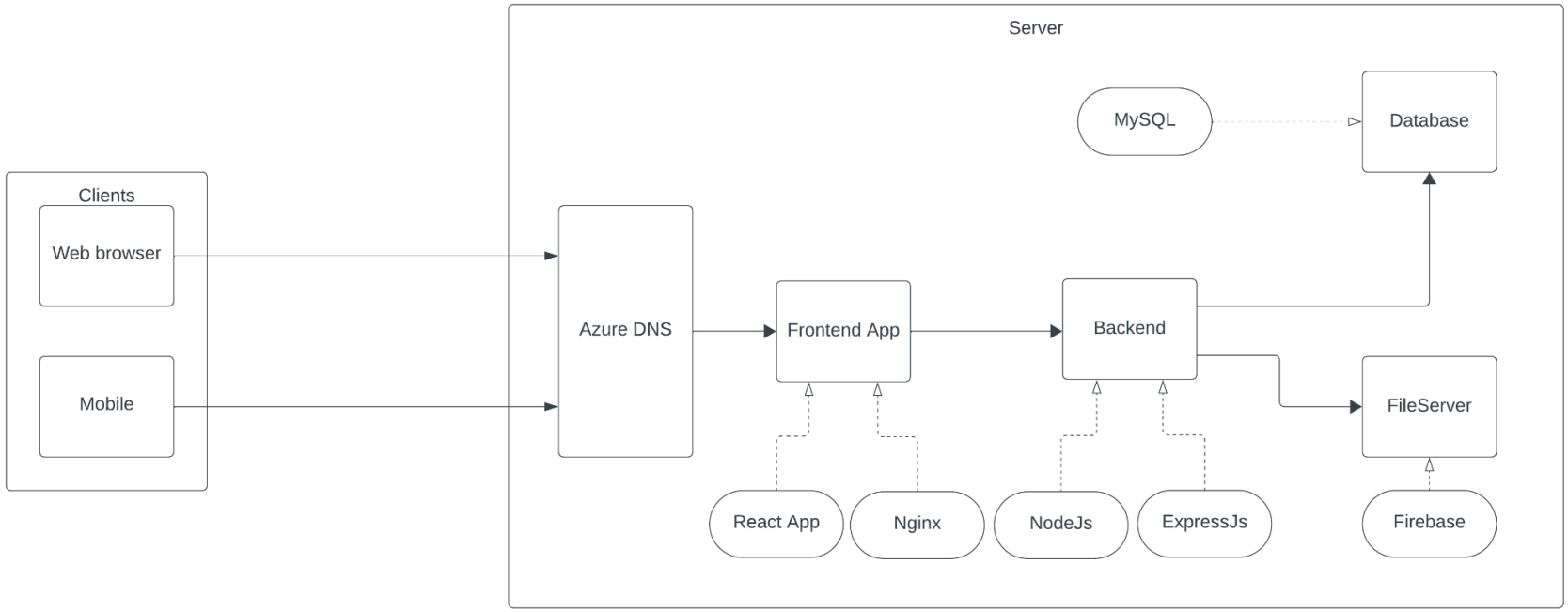
Users can filter media by type, including images, videos, audios, or documents, refining their search to preferred formats. Additionally, a price range search assists in decision-making, aiding users in discovering media within their budget. Users can also filter search results by categories, upload date, popularity, etc.

High Level UML Diagrams

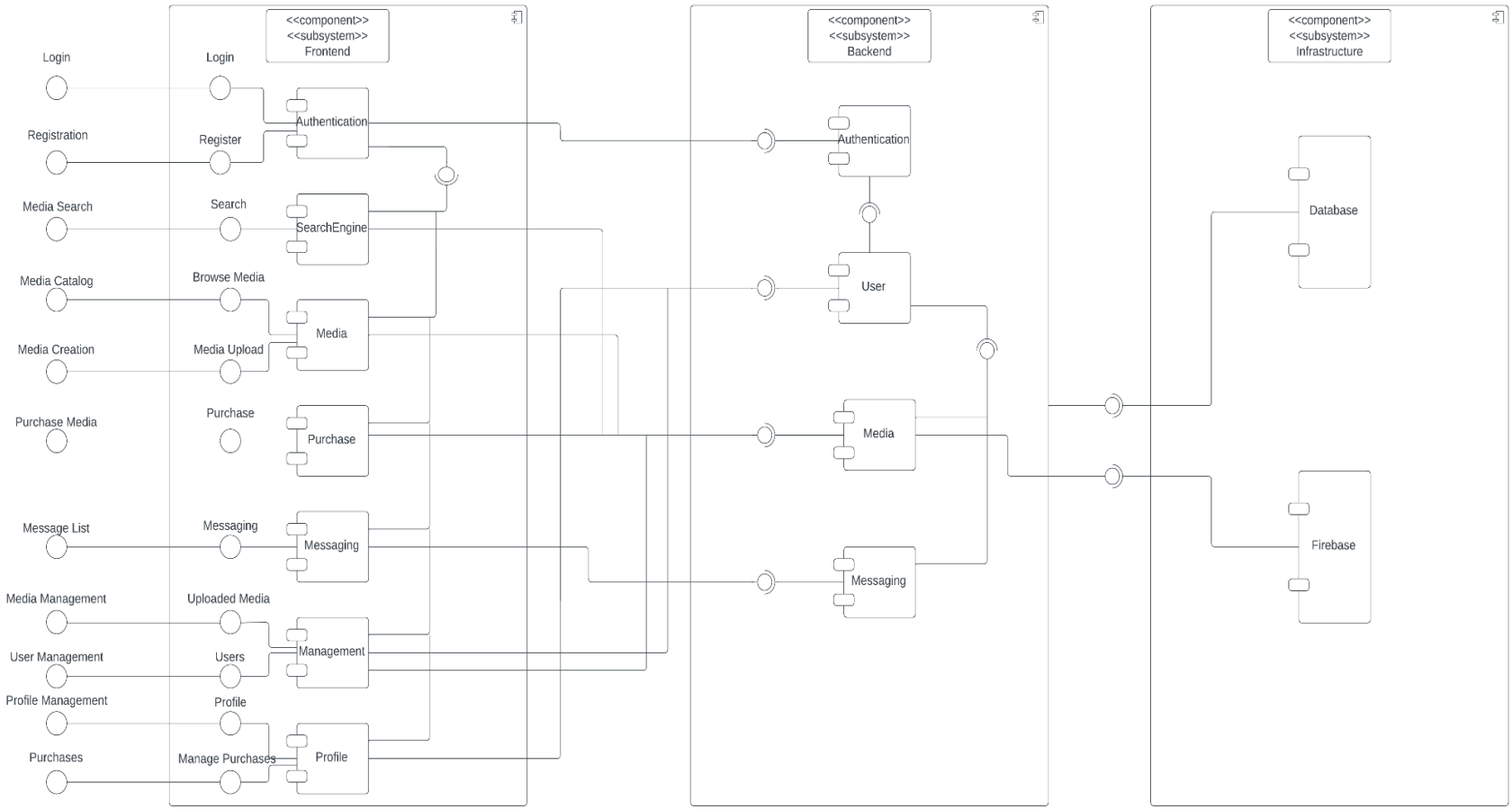
1. Class Diagram



2. Deployment Diagram



3. Component Diagram



Key Risks

1. Skills Risks:

We as the students have software development experience on different software platform in our bachelor's programs and/or internships. However, when committing to a specific solution for this project, there's a risk that our collective skills may not cover all aspects adequately. Team members will acquire necessary skills, including programming languages and frameworks, through online sessions and knowledge sharing among team members.

2. Schedule risks:

Faulty project estimations can occur if project tasks and release schedules are not thoroughly analyzed. Schedule risks, stemming from incorrect deadline estimations and inadequate tracking of resources, may lead to project failure. To address this, we will use planning documents in team meetings such as specifications and divided into parts of it and project plans, and conduct detailed task analysis to identify and manage critical paths and dependencies.

3. Technical risks:

The use of outdated frameworks/plugins or dependencies requiring constant updates may pose technical risks, impacting functionality and performance. To mitigate this, we will employ up-to date frameworks, tools, and plugins, following official documentation for maintenance and Consistency.

4. Teamwork risk:

Since team members are sharing most of the responsibilities to deliver outcomes, some individuals may need to do additional work to make up for those not fully contributing their share of efforts. This may lead to some negative perception that can make the team less effective. We should be clearly mentioning the task responsibilities and accountability for individual contributions to the group effort.

5. Legal/content risks

In the advanced technologies, crediting the authors or developers of APIs, plugins, or software snippets are crucial to avoid copyright allegations and claims. To address this, we will engage with open-source communities whenever possible, providing proper credits and acknowledgments as
needed.

Project Management

To ensure the successful development of our project and enhance overall project coherence, our team recognizes the necessity of utilizing a project management tool. Numerous options with diverse features and customizable functionalities are available in the market for effective project management. In our initial stages, we adopted Jira as our centralized platform for communication, file sharing, task monitoring, assignment, and various other team activities. Currently, Jira is facilitating seamless operations for the entire team.

However, as a contingency plan, should we encounter any issues or encounter limitations with Jira, we have designated Discord as our alternative. Discord offers a user-friendly experience, making it easy to organize meetings and quickly monitor project tasks. This strategic approach ensures flexibility and adaptability in our project management processes.

Team and roles

Our team consists of six talented software engineers. Based on two meetings that we had during the first two weeks, we got to know each other more and know our expertise, and decide which roles should be assigned to whom.

Here is a summary of the team members and their tasks during this project:

Team member	Email	Github Username	Role In Team
Rahul Patil	rahul-rohidas.patil@informatik.hs-fulda.de	RahulRohidasPatil	Backend Lead
MD Monorul Islam	md-monoanul.islam@informatik.hs-fulda.de	Monoarul2	Frontend Lead
Hauva Vali	hauva.vali@informatik.hs-fulda.de	hauvavali	Git Master
Amar Sharma	amar-kiram.sharma@informatik.hs-fulda.de	plasma31	Fullstack Developer
Parsa Rashidikia	parsa.rashidikia@informatik.hs-fulda.de	Parso0A	Team Leader

Checklist

Task	Status
Team found a time slot to meet (online) outside of the class.	Done
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	Done