2 Fast 2 Furious

Digital Library Archive

Software Engineering Project

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Semester: Fall 2024
Group Number: 2
Coordinator: Ify Ojiaku
Name of the Guide: Dr. Tushara Sadasivuni
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1.0 INTRODUCTION

1.1 Software Engineers' Information

Michelle Duong – Computer Science student at Georgia State University minoring in Cybersecurity. Experienced in Python and C++.

Ify Ojiaku – Computer science major and Game Design minor student at Georgia State University. Experienced with Java and C# for game programming within the Unity 3D game engine. Also experienced in the data science field, mainly with Python machine learning libraries such as TensorFlow, Pandas, Numpy, and more. Machine learning projects include Predicting Song Popularity Trends and Japanese Kanji Recognition.

William Zheng – Data Scientist with over six years of hands-on IT experience and a strong foundation in computer science. Currently pursuing a B.S. in Computer Science at Georgia State University, demonstrated proficiency in Python and essential data science tools like Jupyter Notebooks and Google Colab. Worked on projects such as an AI Legal Text Summarizer and a California Housing Dataset exploration, using advanced libraries like Transformers and Scikit-Learn.

Meissen Hsu – Student at Georgia State University majoring in Computer Science. Has experience in Python and Java. Some experience with C and Assembly. Created a game with Java

Brooke Harris – Computer Science senior at Georgia State University. Experience in Java, Python, HTML/CSS, SQL, and JavaScript; focused on human-computer interactions and User Experience & User Interface (UX/UI). Worked on projects such as Houseplant Yourself and Create Your Own Web Spider.

1.2 Planning and Scheduling

Name	Email Address	Task	Duration (hours)	Dependency	Due Date	Evaluation
Michelle Duong	himichelle2@gmail.com	Context Diagram Description	2	None	9/9/24	100%
Brooke Harris	bnharris1011@gmail.com	Problem Statement	2.5	None	9/7/24	100%
Meissen Hsu	meissen54321@gmail.com	Teamwork Basics & Editing	2	None	9/8/24	100%
Ify Ojiaku (coordinator)	ifojiaku@gmail.com	Formatting & Task Delegation	2	None	9/7/24	100%
William Zheng	willzhengcs@gmail.com	Diagram Creation & Activity Diagram Description	7	None	9/8/24	100%

1.3 Teamwork Basics

Ground Rules

1. **Work Norms:** Work will be distributed as evenly as possible by the coordinator, as well as deadlines for the work. In the case a member isn't fulfilling their part, the task will be assigned to another group member. There will also be group reviews for suggestions for work tasks. As long as a group member gets their part done before the deadline, most work habits may be tolerated.
2. **Facilitator Norms:** The role of facilitator will be rotated to each member throughout the semester. The facilitator will be responsible for communication, task delegation, and deadlines.
3. **Communication Norms:** Communication will be done mainly through Discord.
4. **Meeting Norms:** Team members should let others know ahead of time if they can't attend a future meeting. Missing multiple meetings may also result in being reported depending on the amount of work the member has done.

Member Availability Schedule

Michelle*: Saturday-Monday after 2:30 pm, Wednesday + Friday anytime*
Ify*: Monday-Thursday after 4:30 pm, Friday-Sunday anytime*
William*: Friday-Saturday anytime*
Brooke*: Monday+Wednesday+Thursday after 7:15 pm, Friday-Sunday anytime*
Meissen*: Friday-Monday anytime*

5. **Consideration Norms:** It would be preferred for members not to engage in other activities during meetings that could affect ongoing productivity. However, some actions may be considered fine if they aren't excessively disruptive or if they're necessary (E.G: eating a light snack, using the restroom, etc). It's suggested that all members try to contribute to discussions/work, or else poor work ethic may be reported. Any concerns or issues a member may hold will be properly addressed by the team to ensure everyone involved is accommodated.

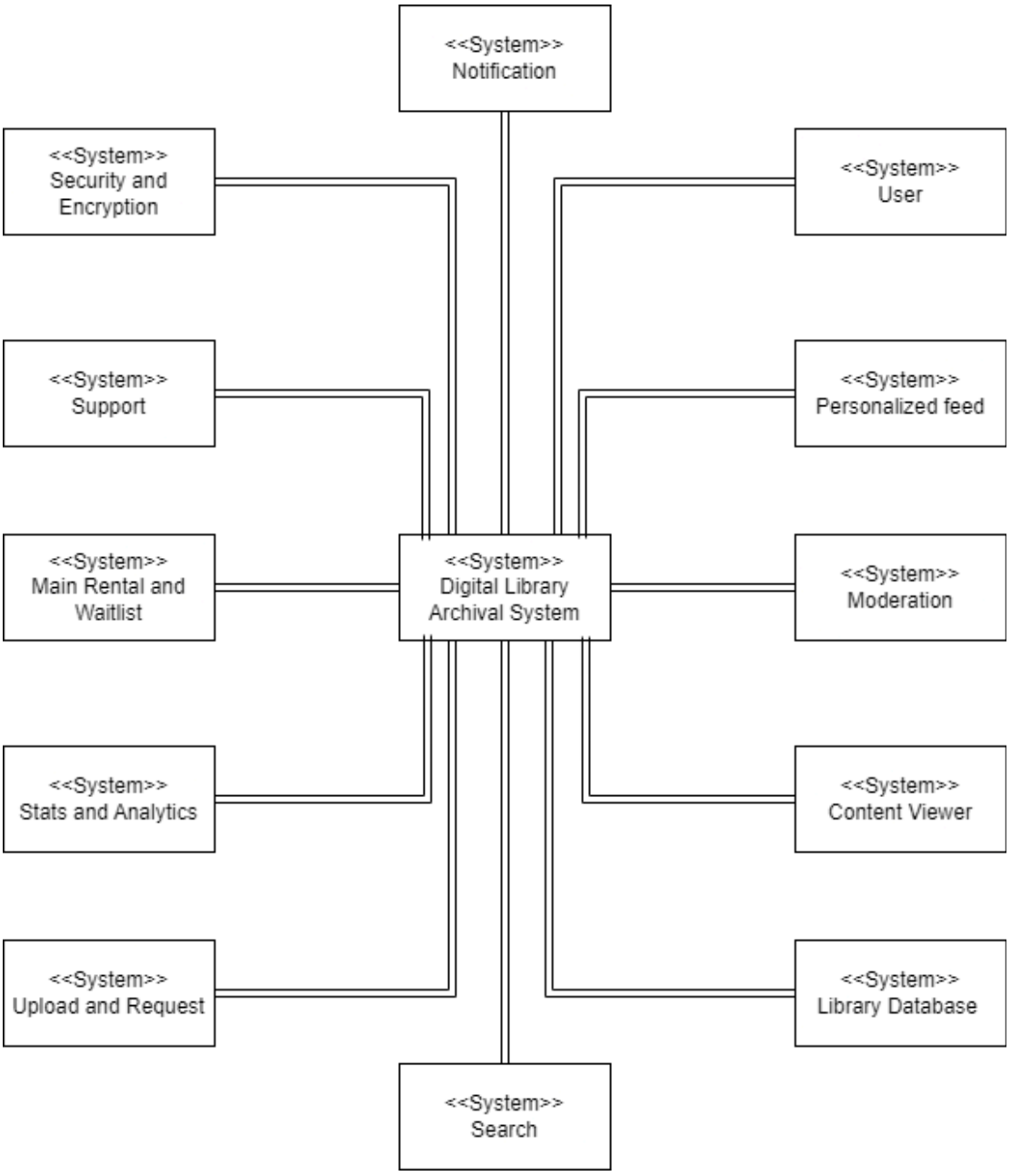
   Refer to the Teamworks Basic document for help handling other difficulties.

1.4 Problem Statement

This project is an online archival database system that hosts multiple forms of media - textbooks, images, videos, books, etc - for users to access and rent. The goal is for our service to be a tool for people who do not have traditional access to materials they need for school, work, or personal use. Users can borrow content using a secure and encrypted rental system with loan limits. Unlike competitors Internet Archive or OpenLibrary, our service also contains avenues for users to curate their profiles with ratings and reviews of content within our library they have accessed, and connect with other users on the platform with common interest. Users are also able to request certain content to be archived. Client login will be the user/borrower login, and the admin handles archive proposals and moderation. The interesting part of this project will be developing a proper encryption system for file downloads as well as creating a reliable rental system that only provides access for the allotted duration.

1.5 System Requirements

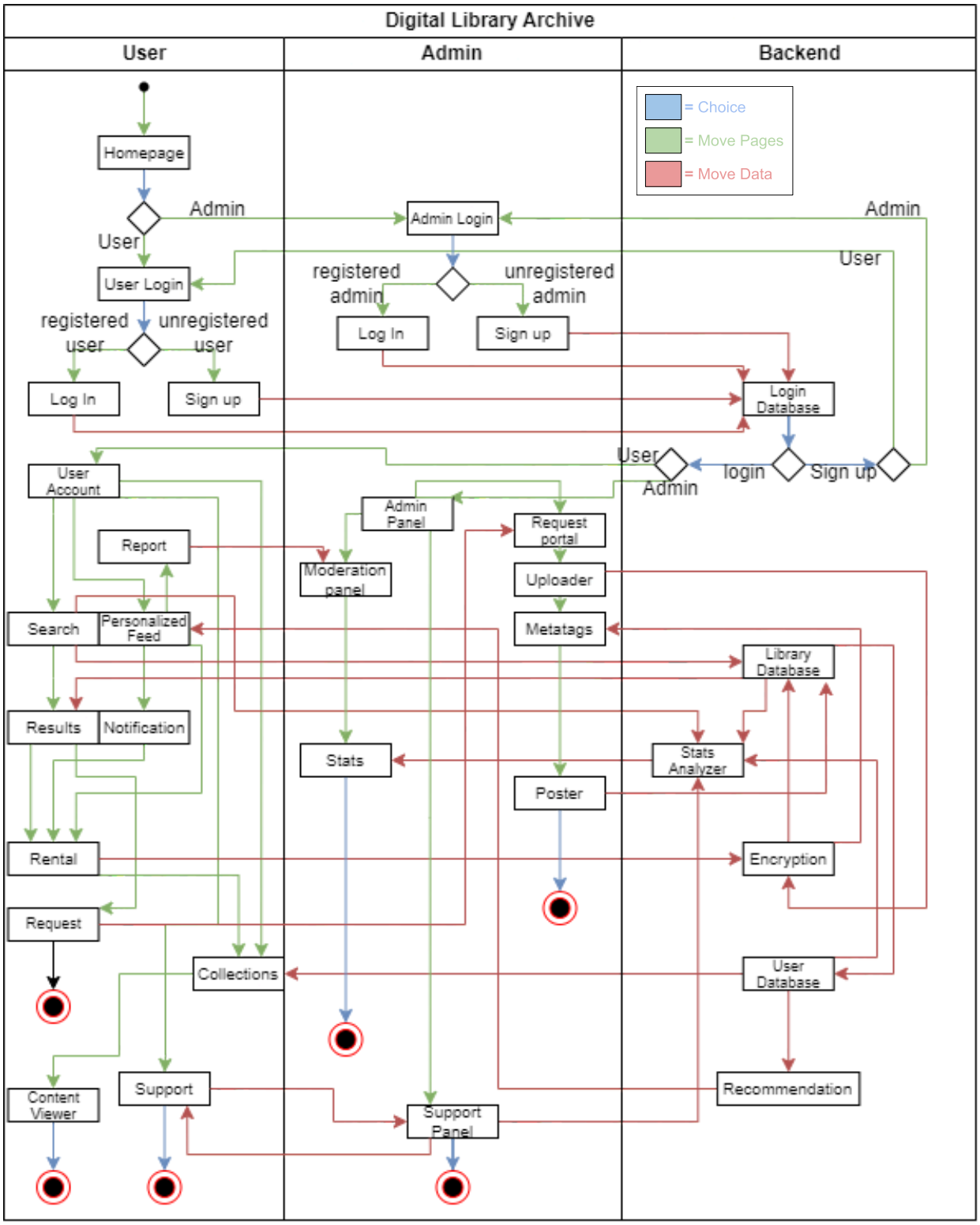
1.5.1 Context Diagram



Implementation Details

1. **User Account –** Users can log in or register to the website to access certain features. Information such as their email address, username, password, and preferences will be required at registration. They must agree to the terms and conditions to complete registration. Users can log in with either their email address or username. Users can customize their profiles for viewing (profile picture, chosen display name, birthday, and an "about me" description). Users can create lists of media for personal organizational purposes. User activity (media they rent, lists they create, reviews they leave) will be displayed on their user account. Users can also follow other users on the website.
2. **Personalized Feed –** New additions to the catalog will be displayed as well as the top most popular media rented for the month. The algorithm that analyzes the user's most rented genres will recommend selections for the user. Activity updates from accounts the user follows will also appear in the feed.
3. **Moderation –** Admins can log into the admin panel to see the website's statistics, flagged content, reports, and support tickets. Admins are granted permission to regulate user content by deleting inappropriate reviews and comments. Admins can also ban users for violating terms and conditions.
4. **Content Viewer –** A system that allows users to view content on the website.
5. **Library Database –** Stores textbooks, articles, text files, images, and video. Keeps track of metadata, availability of content, how many times any and each piece of content was rented, how long they have rented for, etc. This categorizes each content based on tags listed below.
6. **Search –** Search engine within the website where users can find content either by name or by content type, year it was published, publisher, rating, popularity, and genre. Users can select multiple tags to narrow down their search if needed.
7. **Upload and Request –** Users can request content to be published on the website through a submission form with the inclusion of uploads if they can or choose to provide it.
8. **Stats and Analytics –** Analyzes user data based on their library usage history and search history to give insight on trends throughout the website. These statistics and analytics are reported in the admin panel for moderation use.
9. **Main Rental and Wishlist –** System that keeps track of the rental of content. It determines how long the period the content may be accessed before it must be returned. This system also contains the user's wishlist for content they are seeking that has not been made available yet on the website.
10. **Support –** Users can request help by contacting support if any issues arise. These can vary from bugs to reporting other users for misconduct. The support is a submission form that creates a ticket for the admins to review.
11. **Security and Encryption –** Encrypts data to ensure files are safe. Secures personal user information such as their email address and password, drafted reviews, private lists, and submissions. Keeps new content hidden before its launch within the website.
12. **Notification –** System that creates notifications sent to the user's account when a completed request made by the user is uploaded, when the user gains a follower, when the user receives comments and likes on reviews, etc.

1.5.2 Activity Diagram



1. **User Level:**

- Users start at the Homepage and have two main paths: User Login or Admin Login.
- After logging in or signing up, users access their accounts. From the account, users can:
    - Search the library, which goes into:
        - The results page, which goes into the:
            - Requests page, if the item you want is not available, you can wishlist it or request it
            - Rental page, if the the item you want is available, this can go to:
                - Collections, after you make a successful rental
    - Access personalized feeds, which can go into:
        - Notifications page
    - View their collections, which go into the:
        - Content viewer
    - Use a support system
- There's significant data flow between user actions and the backend, particularly for search, personalization, and content access.

2. **Admin Level:**

- Admins have a separate login process.
- Once logged in, admins can access the admin panel, which can access:
    - A Support Panel
    - A moderation panel, which goes into:
        - Stats Viewer
    - Request Portal, which goes into:
        - The Uploader, which goes into:
            - Meta Tags, which go into:
                - The Poster
- Admins interact with several backend components:
    - Request portal

    - Uploader
    - Metadata management
    - Poster management

- There's substantial data exchange between admin tools and backend databases.

- **Backend Level:**
- Houses core databases and processing systems:
    - Login database
    - Library database
    - User database
    - Encryption system
    - Stats analyzer
    - Recommendation system

- The backend interacts extensively with both user and admin levels, processing requests, storing and retrieving data, and providing necessary information for various functions.

- **Key Flows:**
- User-Backend:
    - Authentication
    - Content retrieval and display
    - Search processing
    - Personalization
    - Rental management

- Admin-Backend:
    - Content management
    - User management
    - System monitoring and statistics

- Backend-Backend:
    - Data processing between different databases
    - Encryption of sensitive information
    - Statistical analysis and recommendation generation

References

- UML Unified Modeling Language. (n.d.) *What is an Activity Diagram?* Visual Paradigm. https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-activity-diagram/