SCHOOL OF COMPUTING AND INFORMATICS

SEMESTER 1 2024/2025

SOFTWARE ENGINEERING CCC2143

GROUP PROJECT ASSIGNMENT (20%)

PROJECT TITLE	**HopeHub: A Smart Platform for Poverty Alleviation and Community Empowerment**	
SDG NO	**1 . No Poverty**	
GROUP LEADER	**Maher Abdo Mahdi Nasser Algalab**	**AIU22102252**
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ITEMS	**MARKS**
REPORT - 48 **PRESENTATION - 12**	
TOTAL (60)	

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1.0 Introduction

1.1 Project description

In order to combat poverty, this initiative presents HopeHub, a digital platform that links those in need with opportunities, resources, and assistance. The platform has a number of important capabilities, including an Employment Finder to connect people with job openings, to assist users in developing useful skills. Additionally, HopeHub offers a Community Insights Dashboard for real-time updates and data-driven decision-making. HopeHub hopes to empower marginalized communities, increase their access to resources, and assist them in becoming self-sufficient over the long run by using these tools. Through the provision of workable and long-term solutions to combat poverty worldwide, the project advances SDG 1: No Poverty.

1.2 Problem Statement

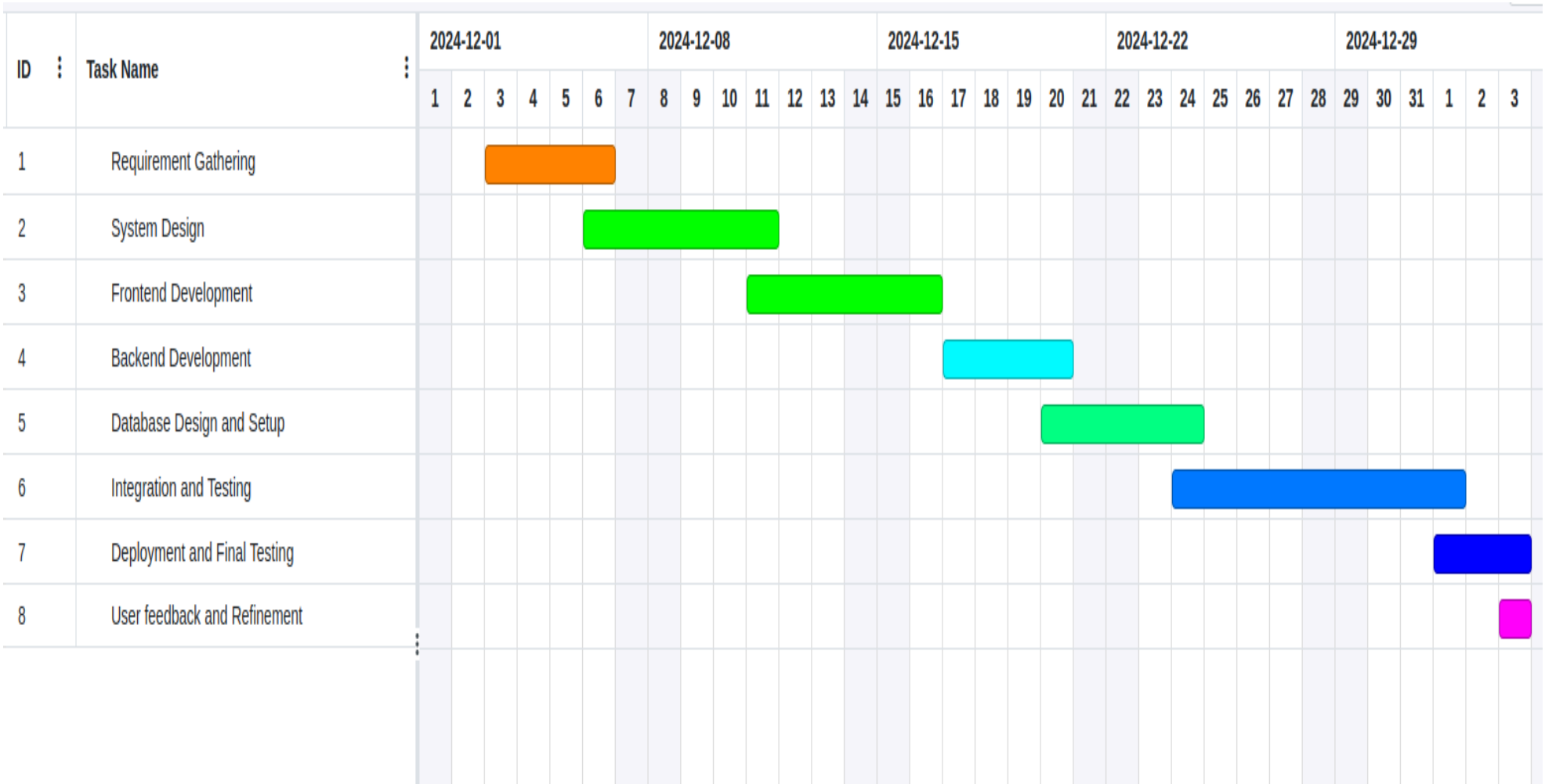
A large number of learners experience considerable difficulties in employment opportunities as well as practical resources for their chosen field. Some of the challenges include scattered information, inability to access well-structured websites, and finding it very difficult to go through many unverified job and resource sites. Such a situation results in loss of potential in growth and development within that period, especially to clients in the unserved or rural areas. To this end, our platform solves these challenges by organizing the job links and the resources into one system that can be customized based on the various users' interests and needs in relation to their careers.

1.3 Project Objectives

The primary objectives of the project are:

1. To develop a user-friendly platform that allows individuals to create accounts and explore two main functionalities: using and searching for the opportunities.
2. To offer nested lists of links to training programs, scholarship resources, and other related information categorized according to subject topics users may be interested in.
3. To help the users by providing them multiple links in which they get jobs categorized according to their fields so that they can easily search for jobs they want and apply for them.
4. Employment opportunities are as follows: Develop skills to meet the increasing employment demand and make resources available in order to meet the economic growth

2.0 System Project Planning - Gantt Chart



3.0 System Requirement Analysis

Indeed, a solid and clear system is the basis of the most successful project, and a project related to the definition of vacancies and employment of suitable candidates at the same time with the provision of PCs' access to them. These details specify the user needs, system needs and the chosen software development process model to give the reader a feel of what the system is or is not capable of, what kind of qualities the system has or lacks and what went into its development.

3.1 User Requirements

The primary goal of Hopehub is to meet the needs of two main user groups: job seekers and employers. That is why our system is equipped with options that address their requirements and, simultaneously, remain easy to use. Below are the detailed user requirements:

1. **User-Friendly Interface**

The system has a usable and easily understandable graphical user interface. Both employees and users are able to get accustomed to our website without needing professional assistance. The focus is on the functionality of the interface which provides understandable labels and logical structures, and is designed to respond to the variability of possible devices it may be viewed on.

2. **Account creation and management:**

The operations require that customers should be in a position to create an account through registration. After registration they should be able to login safely and be able to perform other individual functions such as viewing bookmarked jobs and profile management.

3. **Search Feature with Filters**

Hopehub includes a robust search functionality that allows users to filter job listings based on specific criteria, including:

Location: Allowing the users to look for jobs by a city or area.

Role: Enabling the candidates to search for the jobs that they would love to do (for example software developer, graphic designer)**.**

Industry: Assist users to search and sort jobs by industries including IT, teaching, nursing and so on.

4. **Employment Type:** Offering the choices to search for only full time, only part time, freelance or only remote jobs.

5. **Specific Look into the Different Categories of the Resources**

The system contains useful information, such as training programs, scholarship offers, and other career development material. These resources are grouped into types and then made available to users within their areas of focus.

6. **Bookmarking Functionality**

Users are allowed to bookmark certain jobs or resources for later use. This feature makes it possible that a user who was searching for a particular opportunity or material, saves it and automatically categorizes it under that classification of feature.

3.2 System Requirements: Functional and Non-Functional

3.2.1 Functional Requirements

1. **User Authentication and Authorization**

Those security requirements include the ability for the system to enforce secure registration, login, and logout. User-and their credentials are protected- also the authentication mechanisms that must facilitate access by only legitimate users.

2. **Job Search and Filters**

Job boards contain an enhanced option for a job search since users should be able to apply numerous filters at once. In other words, the outcomes need to be credible in relation to the chosen criteria.

3. **Resource Management**

The role of the admins is to upload, sort and arrange the resources for the audience. Such resources must be grouped in categories like training, scholarships, career information, and others, to afford users simple access to the information available.

Job Application Links

There is a hyperlink from every job listing that leads users to the specific application or the website, so as to enable the applicants to easily apply for the jobs.

3.2.2 Non-Functional Requirements

1. **Scalability**

The system is scalable to accommodate many users as well as a larger volume of data into the future. This is important to cater for a growing clientele and higher volumes of users, jobs and resources developed and posted online.

2. **Mobile Responsiveness**

Due to the growing ubiquity of mobile technologies especially with regard to portable devices such as smartphones and tablets, it should be possible to use any kind of display size (smartphones, tablets, and Pc's). This helps make the website easily accessible to users---especially people in transit.

3. **Security**

Privacy of the users is a critical consideration primarily to protect users' information such as, personal details and login details. The system has to adhere to the use of encryption to transmit and store information. Similarly, for instance, secure channels of communication, for example, https:, should have to be employed.

4. **Performance**

It is able to provide fast response to all points of user engagement with the platform, including searching, browsing pages and resources. User satisfaction is highly dependent on performance optimization for the application of the system.

5. **Reliability**

The system has good levels of reliability; it can ill afford to be ‘down’ for long periods and should remain ‘up’ for long periods. There is nothing you can do about it other than make sure you maintain your network and have good structures to maintain continuity of service.

3.3 Software Process Model Used

To support the development of this system, the Agile Development Model has been used. Agile is an easily adaptable approach that is used for iterative and collaborative work with constant delivery. This methodology is perfect for the project since requirements and features are constantly changing during the project development. Below are the key reasons for selecting Agile:

Responding to Changes: An Organization’s Ability to Adapt

The system should also be considered adaptable owing to a dynamic growth of user requirements and their feedback. Relative to the development process, Agile’s flexibility means that requirements can be easily changed in the course of development to meet the user’s wants.

Incremental Delivery

Agile breaks the project into a series of iterations; each iteration centers on creating a specific functional part of the system. This approach helps to keep the pace of concrete results recognized and achieved even at the stage of conceptual development.

Enhanced Collaboration

Agile encourages integration of team members, hence encouraging flow of communication within a team. It is important to have a clear understanding of goals across all the parties who are involved in any project.

Frequent Testing

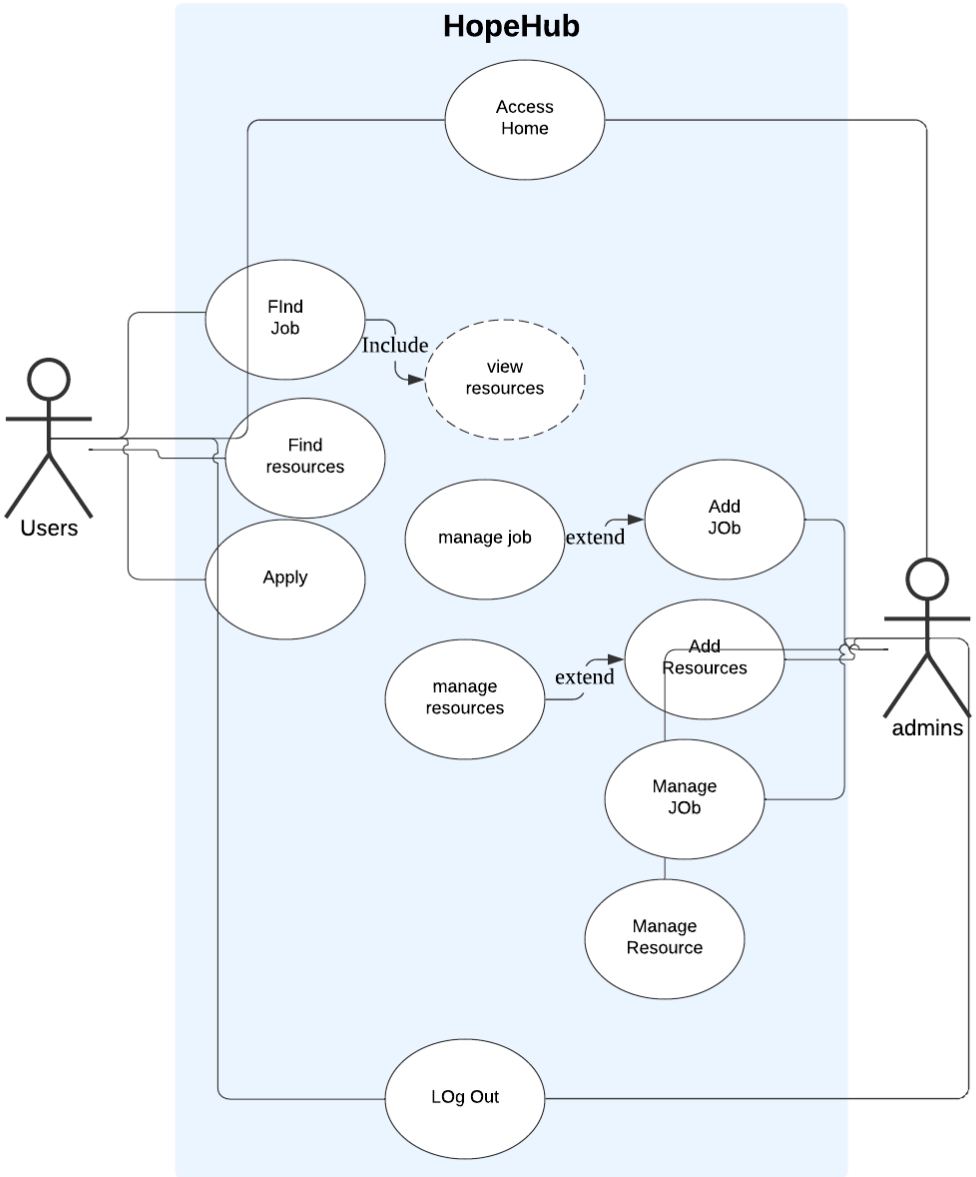
If we continue with the basic principles of Agile, testing is almost always at the end of each sprint. This helps to mitigate some problems of quality before they get worse and the system is finally delivered to the users.

User-Centric Design

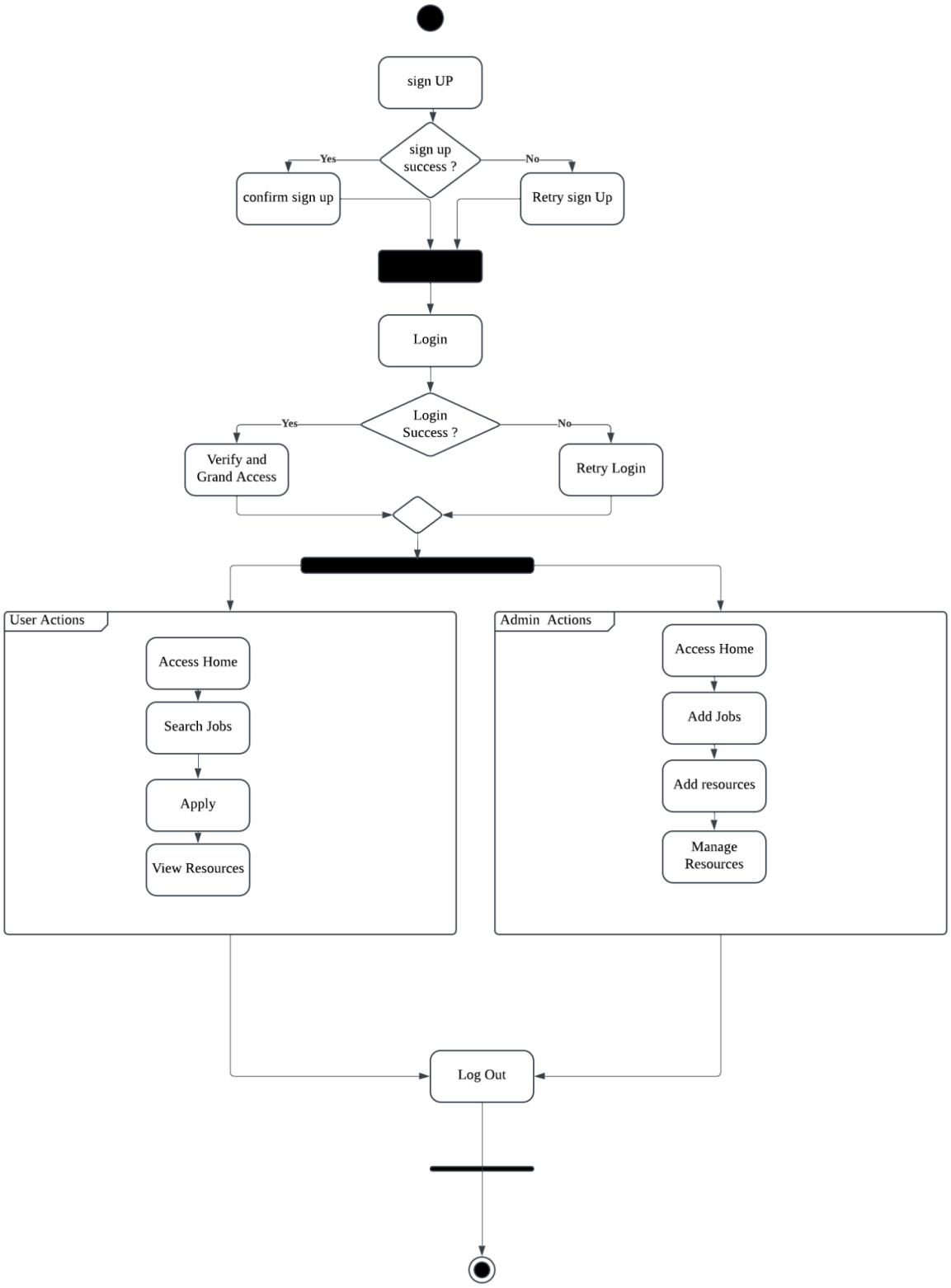
There is eminent flexibility of including users at every development phase of an Agile process. This makes it possible for the features of the system to fit the real needs of the consumers, making the system more efficient.

4.0 System Model

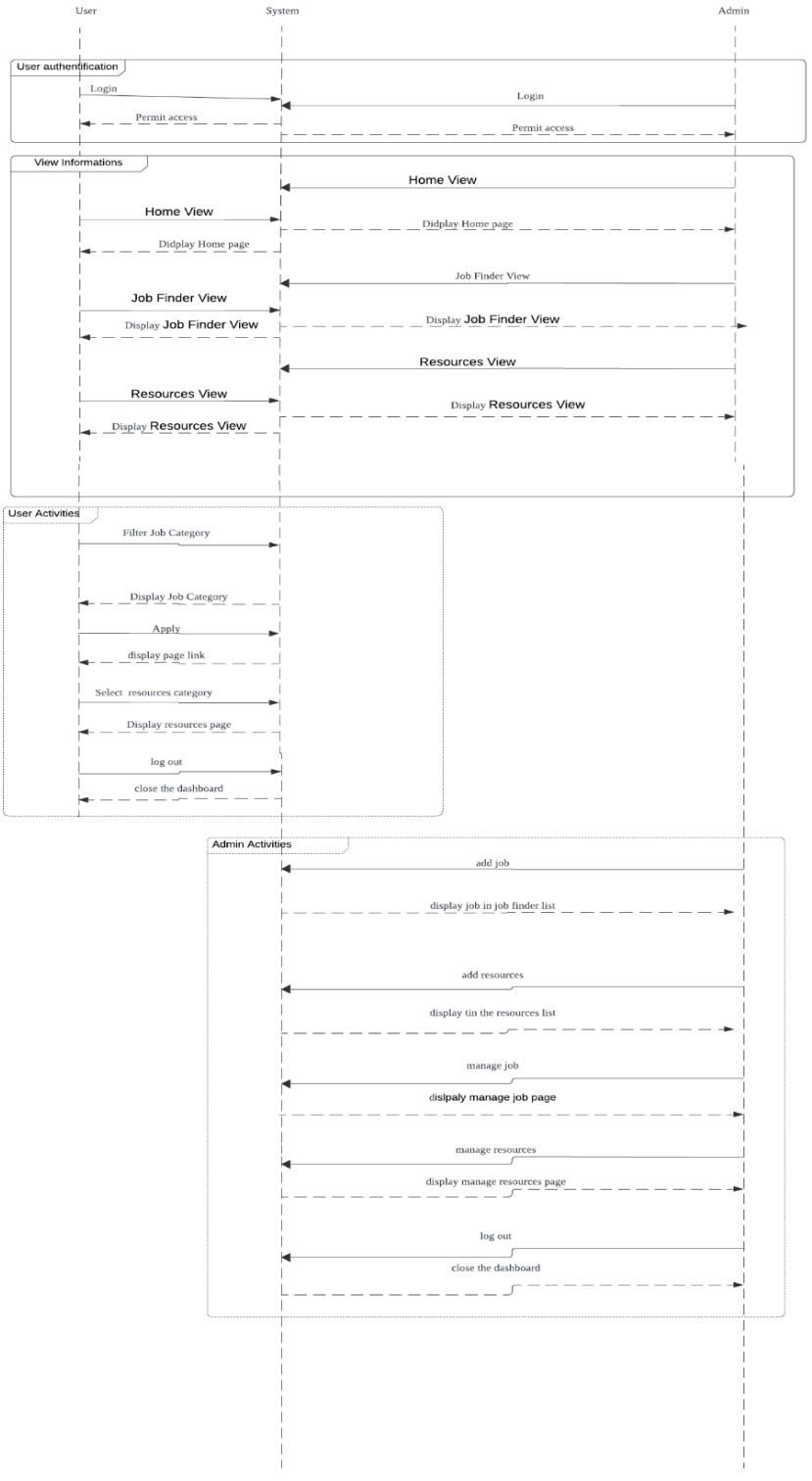
4.1 Use case diagram



Activity Diagram



4.3 Sequence diagram


User
System
Admin
User authentification
Login
Login
Permit access
Permit access
View Informations
Home View
Home View
Didplay Home page
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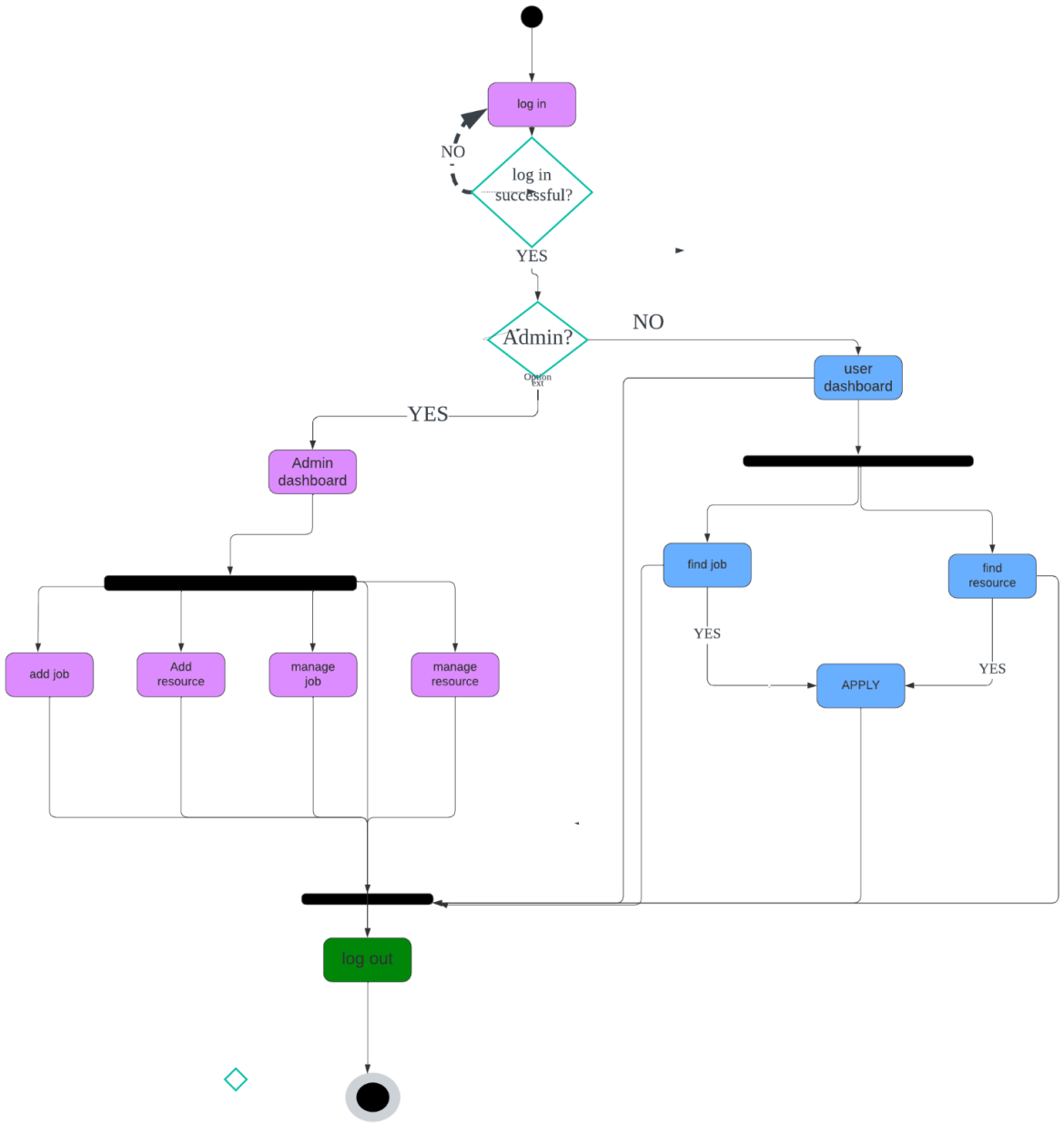
Job Finder View
Job Finder View
Display Job Finder View
Display Job Finder View
Resources View
Resources View
Display Resources View
Display Resources View
User Activities
Filter Job Category
Display Job Category
Apply
display page link
Select resources category
Display resources page
log out
close the dashboard
Admin Activities
add job
display job in job finder list
add resources
display tin the resources list
manage job
dislpaly manage job page
manage resources
display manage resources page
log out
close the dashboard

4.4 State Diagram



5.0 System Architecture Design

HopeHub's architecture is made to efficiently serve its goals of reducing poverty and empowering communities. Its architecture is scalable and modular, integrating multiple components to provide smooth operation and user experience. The essential components of the system architecture are listed below.

5.1 Client Layer

This layer consists of the user interfaces through which individuals interact with HopeHub. It includes:

Web application: Available to a wider audience through browsers.

Mobile Application: Designed to be accessible when on the go, this app is optimized for iOS and Android smartphones.

Admin Dashboard: A specific interface designed to help administrators manage data, people, and resources.

Users can bookmark job postings or other resources for later use thanks to this feature.In order to serve consumers who are traveling or live in remote places, mobile responsiveness makes sure the platform works flawlessly on smartphones and tablets.

5.2 Application Layer

The application layer handles the system’s core functionality, including:

The module for authentication and authorization makes sure that administrators and users have safe access.

The Employment Finder Module uses AI-based algorithms to match job seekers with available positions.

E-learning Module: Offers structured courses for skill improvement.

The Aid and Resource Distribution System keeps track of and plans the logistics of donations.

Microfunding Portal: Provides automated tracking and allocation of funds to small businesses.

Real-time data is visualized on the Community Insights Dashboard to help with decision-making.

To increase the effectiveness of job searches, the search feature with filters provides strong filtering by location, role, industry, and employment type.

Links to Job Applications: For convenience, these links offer direct connections to application platforms.

Resource Categorization: Sorts career information, scholarships, and e-learning resources into easily navigable groups.

5.3 Data Layer

This layer is responsible for storing and managing data:

Database Management System: User information, course materials, job postings, and transaction logs are stored in centralized databases (like MySQL or MongoDB).

Data Analytics Engine: Produces reports and insights for the Community Insights Dashboard by processing data.

Scalability and Security: Provides encrypted data transport and storage to safeguard user privacy while accommodating expanding user bases.

5.4 Integration Layer

This layer connects the application to external services and APIs

Third-Party APIs: Connect e-learning platforms, employment portals, and payment channels.

Communication APIs: Facilitates user engagement through SMS, email, and push notifications.

5.5 Infrastructure Layer

This layer supports the system's deployment and operations:

Cloud hosting, such as AWS and Google Cloud, guarantees scalability and high availability.

Users in various locations can get content more quickly thanks to the Content Delivery Network (CDN).

Distribute traffic using load balancers to avoid server overload.

High uptime is maintained via reliability mechanisms to guarantee constant service availability.

5.6 System Workflow

The system workflow ensures smooth interaction among modules:

1. Users use the device of their choice to access the platform.

2. Authentication confirms the identity of the user.

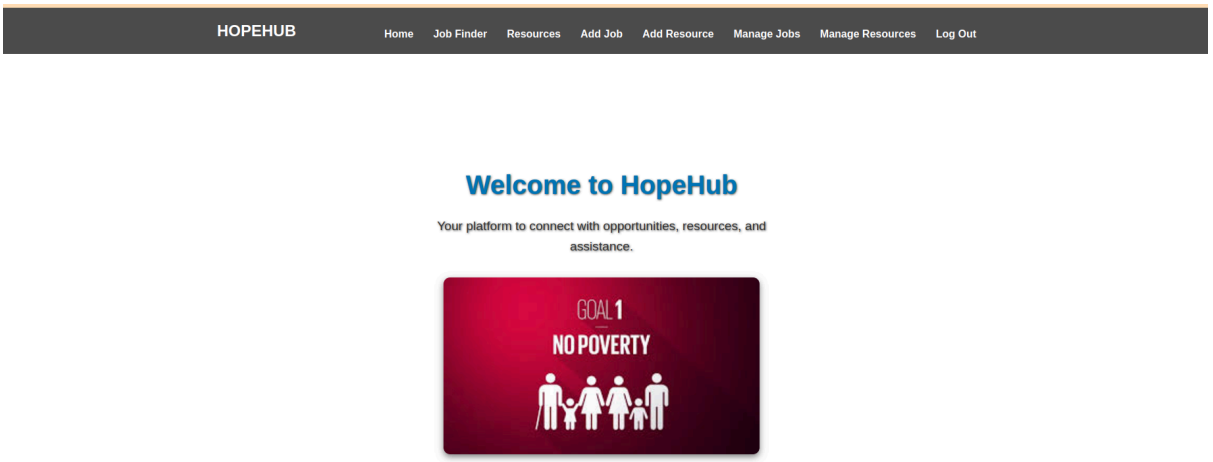
3. The application layer provides pertinent functionalities based on user roles (e.g., donor, job seeker).

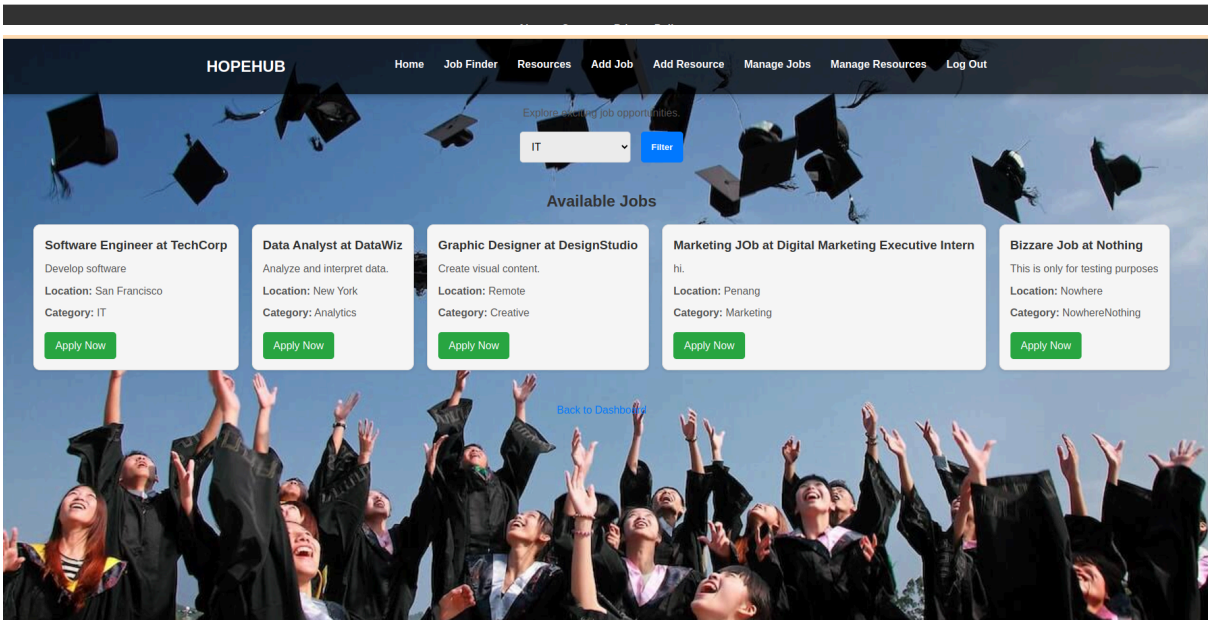
4. The database and analytics engine are used to retrieve and process data.

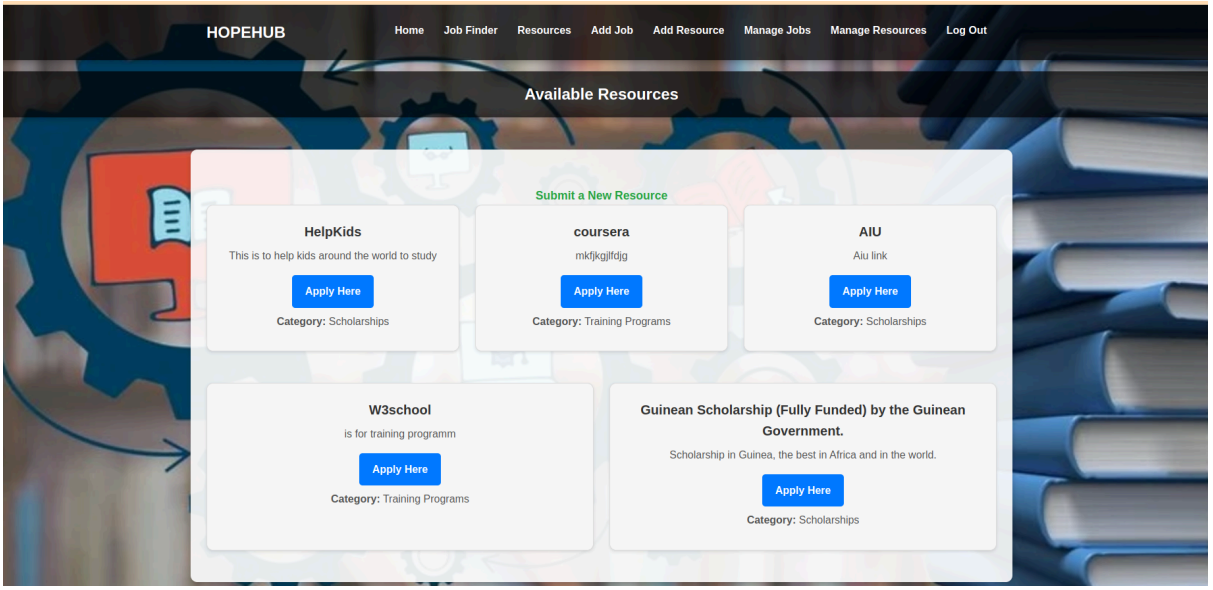
5. Interfaces that are easy to use are used to present the results.

This architecture guarantees HopeHub's continued efficiency, scalability, and user-centricity—all of which are consistent with its mission to employ technology to fight poverty.

6.0 Implementation of prototype System







HOPEHUB
Home
Job Finder
Resources
Add Job
Add Resource
Manage Jobs
Manage Resources
Log Out

MANAGE JOBS

Add New Job

TITLE	COMPANY	LOCATION	ACTIONS
Software Engineer	TechCorp	San Francisco	Edit | Delete
Data Analyst	DataWiz	New York	Edit | Delete
Graphic Designer	DesignStudio	Remote	Edit | Delete
Marketing JOb	Digital Marketing Executive Intern	Penang	Edit | Delete
Bizzare Job	Nothing	Nowhere	Edit | Delete

7.0 System Testing Strategy

In order to achieve the platform's goals of reducing poverty and empowering communities, HopeHub's system testing approach makes sure that all features and functionalities work flawlessly. Several stages, methods, and instruments are used in the testing process to verify and enhance the platform's usability, security, and performance**.**

7.1 Testing Levels

Unit testing verifies that distinct modules, such as the Aid Distribution System, E-Learning Modules, and Employment Finder, operate on their own.

Integration testing verifies how modules work together, such as how the Community Insights Dashboard and the Aid Distribution System are connected.

System testing: Verifies that every part of the platform functions as a whole.

Stakeholders are involved in acceptance testing to ensure the platform satisfies user requirements and expectations.

7.2 Testing Techniques

The goal of black-box testing is to verify features that are visible to users without looking at internal code.

White-Box Testing: Verifies proper logic and data flow by analyzing internal procedures.

Automated testing: Performs performance tests and repetitive activities using tools like JMeter and Selenium.

Manual Testing: Examines usability problems using actual situations**.**

7.3 Key Test Scenarios

Employment Finder: Precise job suggestions according to user profiles.

E-learning Modules: Usability and accurate monitoring of progress.

Aid Distribution System: Precise resource tracking and distribution.

Transaction processing via the Microfunding Portal is safe and dependable.

Dashboard for Community Insights: Visualization of data in real time

7.4 Performance and Security

To make sure the system can withstand heavy usage, run load and stress testing.

Verify user authentication, data encryption, and system vulnerabilities by conducting security tests.

7.5 Documentation and Monitoring

All test results, including identified issues and resolutions, are recorded. Regular monitoring ensures the platform meets quality standards before deployment.

8.0 Challenges and Opportunities

Challenges:

The development and implementation of HopeHub indeed come with various challenges. Some of the major challenges that have been noticed in this project are as follows:

Data Collection and Verification:

In particular, there is the problem of collating accurate, dependable data relating to job listing, training programs, and scholarship opportunities. Determining the credibility of outside resources and the task of preventing the proliferation of misleading information makes this task very complex.

Technical Constraints:

The development of a scalable, mobile-responsive platform will require great attention to software architecture and design. Further technical challenges include enhancing performance for lower-spec smartphones across the wide array of devices.

User Adoption and Usage:

Low digital literacy, disparate languages, or a lack of access to the internet might turn these drawbacks into barriers for underprivileged village people to adapt and actively use them.

Security and Privacy Issues:

The system shall treat sensitive information about the users themselves, the personal information of users, and information related to job applications very carefully, keeping a strict security policy. Ensuring data encryption, secure communication, and observation of data protection legislation is an ongoing challenge that will require continued attention.

Sustainability and Funding:

It needs to be sustainable through sponsorships, partnerships, or any other means that would keep it running with funding that is sustainable after the launch. Other major challenges include operational cost management and scaling up for future growth in users.

Diverse User Needs:

From job seekers to employers to donors, if there is anybody in between, the features will definitely need to be highly customizable, and the interfacing should therefore balance simplicity and functionality to be able to suit varied requirements.

Opportunities:

Notwithstanding the above challenges, this project, HopeHub, represents significant opportunities to contribute towards a significant social impact:

Inclusion of Less-privileged Communities:

Through providing a focal point for jobs, resources, and training opportunities, HopeHub empowers rural or underserved communities and assists in reducing the digital divide and economic inequality.

Skill Upliftment:

E-learning modules and training programs develop employable skills relevant to the emerging job market, hence promoting economic growth and a reduction in unemployment rates.

Scalable Social Impact:

The modular, scalable design of HopeHub allows it to scale into new regions for feature and service addition, ensuring long-term social and economic benefit.

Collaborative Ecosystem:

The platform is designed to act as an ecosystem, bringing job seekers, employers, educators, and donors onto a single platform. In this way, such an ecosystem brings together collaborations and avenues of funding and resource-sharing.

Data-driven Insights:

HopeHub uses analytics and dashboards to bring out insights with respect to labor market trends, user behavior, and the effectiveness of resources for data-driven decision-making by its stakeholders.

Alignment to SDG Goals:

It directly contributes to attaining Sustainable Development Goal 1, "No Poverty"; thus, it finds itself in a better position to attract both governmental and nongovernmental organizations into investment in impactful initiatives.

Technological Innovation:

HopeHub uses cutting-edge features like AI-based job matching and real-time analytics to place itself as an innovative solution in the fight against poverty and empowering a community.

9.0 Roles and Responsibilities:

1. Group Leader: Maher Abdo Mahdi Nasser Algalab

Role: Project Manager

I. Ensure the overall follow-through of the project to deliver, on time, the milestones set within the schedule.
II. Coordinate all group members to ensure the communication and collaboration of the task.
III. The scope, including timeline and resources, should be managed.
IV. Act as the contact point in any external communication or presentation to the stakeholders.
V. Risk monitoring and troubleshooting in case of issues arising during project development.

2. Amadou Oury Diallo

Role: Back-end Developer and Database Manager

I. Design the architecture of the back end of the platform.
II. Designing the API securely and scalably and maintaining it regarding authentication of users, job postings, and resources.
III. Administration of the database: Storage of proper data and fetching data.
IV. Optimizing the performance of the backend so it could bear the high traffic load.
V. Various securities are going to be implemented so as to safeguard and encrypt the data wherever necessary

3. Md Shakib Mostafa

Role : Front-end Developer

I. Design the UI of Web and Mobile platform
II. Making the platform easy to use, responsive, and accessible for users from any device.
III. Front-end development with the integration of APIs from the backend team in regard to data visualization dynamically.
IV. Test and debug UI elements for smooth functionality.
V. Integrate user feedback into designing and improving usability.

4. Reem Bekdash

Position: Content Manager and Quality Assurance Specialist

I. Curate and manage the content on the platform, which includes but is not limited to job listings, training programs, and resources.
II. Ensure the data supplied through this platform is valid and relevant.
III. Create the standardization and the regulations that will allow content to be classified and tagged.
IV. Conduct usability testing; give feedback regarding performance and interface design of the system.
V. Data privacy and access compliance

5. Entire Team

Group-Wide Responsibilities:

Research and Data Collection: Collaborate on accessing dependable information related to job opportunities, training resources, and other information.

Testing: Carry out testing phases to identify and fix bugs and performance issues of the system. Documentation: Document, through this project, requirements, design specifications, and implementation details. Presentation: Prepare and present project presentations to the stakeholders regarding projects undertaken, achievements, challenges, and future plans. Continuous Improvement: Improve the system received through feedback to adapt iteratively to ever-changing user needs.

Conclusion

One of the most urgent issues facing the world today is poverty, and the HopeHub initiative shows how technology may help. HopeHub helps people and communities become self-sufficient by incorporating tools including microfunding, e-learning modules, job matching, and resource distribution. Because of its modular architecture, which guarantees scalability, security, and user accessibility, the system may be tailored to a variety of situations and demands.By making it easier to access opportunities and resources, HopeHub hopes to have a major social impact and eventually help achieve the Sustainable Development Goal of ending poverty. In order to accommodate a wide range of user needs, the platform incorporates essential features, including resource categorization, bookmarking, and powerful search filters. The Agile methodology and frequent testing during development guarantee ongoing enhancements based on user input.

The difficulties faced during the development process have produced insightful discoveries that have opened the door for further developments and ongoing progress. HopeHub is a step toward a society where everyone has the resources to create a better future, not just a platform.

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11.0 Appendix - Source Code

https://github.com/amadououry886/Softwareproject.git

HopeHub.pdf

ORIGINALITY REPORT

4%	3%	1%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Albukhary International University Student Paper	1%
2	Submitted to University of Glasgow Student Paper	1%
3	Minseong Kim, Sooyong Park, Vijayan Sugumaran, Hwasil Yang. "Managing requirements conflicts in software product lines: A goal and scenario based approach", Data & Knowledge Engineering, 2007 Publication	<1%
4	Submitted to Asia Pacific University College of Technology and Innovation (UCTI) Student Paper	<1%
5	catalog.iyte.edu.tr Internet Source	<1%
6	Submitted to Swinburne University of Technology Student Paper	<1%