FINAL YEAR PROJECT

PROJECT PROPOSAL REPORT

TITLE: *"SNEAKER VISION"*

SUBMITTED BY

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1 Introduction

Sneakers Vision, the innovative online platform that's changing the dynamics of how sneaker heads buy, sell and engage. Just imagine a site where you can readily discover your desired sneakers, exchange with a vibrant community of similar-minded individuals, and engage in friction-free bidding processes. That has been made possible due to Sneakers concept. Our mission is to create a lively community based on individuality, self-expression, and shared passion for footwear. Sneakers Vision is not merely an online retail store; it's a platform where you can safely bid, purchase, sell, and connect with fellow sneaker heads. Sneakers Vision puts our community's needs and priorities first and offers an easy-to-use experience for both experienced collectors and newcomers. Our site features full search functionality, live bidding, and secure transactions, making it easier than ever to find and buy the sneakers you've always wanted. What sets us apart is our focus on creating genuine connections between sneaker heads. Our community features enable you to join discussions, post your collections, and learn from industry experts and other collectors. Sneakers Vision is not just a marketplace; it's a thriving community that nurtures sneaker culture. Become part of the Sneakers Vision community today and indulge in the ultimate sneaker experience. Together, we will boldly and fashionably step into the future of sneaker culture. Embrace the revolution of the sneaker market and become part of a like-minded community that treasures uniqueness and a passion for the perfect pair of sneakers.

1.1 Project Statement:

Our application provides a solution for individuals who want to save time and avoid spending hours at shopping malls searching for the perfect shoes. We came up with the idea to enhance the online shopping experience, as we understand that many users who purchase shoes online often face issues with sizing and discrepancies between the image and the actual product. Our application, SneakerVision, offers an innovative solution by allowing users to virtually try on shoes using augmented reality technology. This will not only save users time and effort, but also provide a more accurate preview of how the shoes will look and fit, ultimately leading to a more satisfying and convenient shopping experience.

1.2 Project Motivation:

The motivation for Sneaker Vision comes from the increasing need for a hassle-free and consistent online retail experience specific to sneakerheads. With the new world of e-commerce, consumers are generally presented with issues such as not being able to try things on, differences between product photographs and the actual item, and poor visibility to hard-to-find or limited-edition sneakers. These pain points not just lower customer satisfaction but also result in repeated returns and wasted time, opening up a gap which conventional online platforms cannot fill. As the popularity of augmented reality (AR) technology grows and it becomes possible to create immersive experiences, Sneeker Vision plans to bank on this innovation to bridge the gap between offline and online shopping. With the incorporation of AR-based virtual try-ons, Sneaker Vision allows users to see how sneakers fit and appear in real-time, greatly minimizing sizing problems and boosting purchasing confidence. The inspiration for this project is to make a groundbreaking platform that integrates technology, convenience, and community to provide a complete shopping experience improvement for sneaker enthusiasts. Sneaker Vision aims to offer solutions that save

time, establish trust, and create value, ultimately setting itself as the platform of choice for sneakerheads globally.

1.3 Objectives:

- To make the user experience more convenient by eliminating the need for physical visits to the shoe stores.
- Utilize augmented reality (AR) to provide accurate virtual try-ons for confident purchasing decision.
- To provide a reliable preview of how the shoes will look on one's feet without the hassle of visiting stores.
- To enhance the user experience by providing a user-friendly design, easy navigation and a full-flex mobile application.
- Collaborate with retailer to boost sales through innovate shopping experience.

1.4 Literature Review:

Sneaker Vision's concept is grounded in the growing trends of augmented reality in e-commerce and the increasing consumer demand for seamless, interactive, and accurate online shopping experiences. The use of AR technology in retail has been widely researched, with studies indicating its effectiveness in reducing purchase uncertainty and enhancing customer satisfaction. Additionally, literature on sneaker culture highlights the importance of exclusivity, authenticity, and community engagement as key drivers of consumer behavior in this niche.

1. Augmented Reality in E-commerce

Research by Schmalstieg and Hollerer (2016) in "Augmented Reality: Principles and Practice" demonstrates the potential of AR to bridge the gap between physical and online shopping experiences. AR's ability to provide real-time visualization of products in the user's environment is a key factor in reducing return rates and increasing consumer confidence.

2. Sneaker Market Trends

Market reports, such as those by Statista and IBISWorld, have documented the explosive growth of the sneaker industry, particularly driven by collaborations, limited-edition drops, and the secondary market. These studies emphasize the need for platforms that cater to the unique demands of sneakerheads, including access to exclusive products and a trusted marketplace.

3. Community-Driven Commerce

Studies on social commerce and community-driven platforms, such as eBay and StockX, reveal that creating a sense of belonging and trust through user engagement and transparency significantly impacts customer loyalty and platform success.

2 Project Vision:

The vision of the SneakerVision project is to redefine the way sneaker enthusiasts buy and interact with sneakers online by offering a highly immersive, smart, and user-friendly mobile experience powered by augmented reality (AR). In today's fast-paced digital world, where convenience, personalization, and trust drive purchasing decisions, SneakerVision aspires to become the go-to platform for sneakerheads—providing them not only with a catalog of the latest and most desirable sneakers but also an interactive try-before-you-buy experience.

This project aims to eliminate the traditional barriers in online footwear shopping, such as size uncertainty, mismatch between product photos and reality, and the lack of human interaction, by introducing features like:

- Virtual try-on using AR technology.
- Real-time browsing of a curated catalog.
- Instant checkout with secure payment integration.
- Ratings, reviews, and a potential social sneaker community.

The ultimate goal is to blend convenience with technology in a way that bridges the gap between the in-store experience and the digital marketplace. By doing so, SneakerVision will not only simplify the sneaker purchasing process but also create a community-driven space where fashion meets innovation. Looking ahead, SneakerVision envisions itself evolving into a fully integrated sneaker ecosystem that supports resale, sneaker drops, AI-based recommendations, and brand collaborations—empowering users with tools that make sneaker shopping smarter, faster, and more engaging.

2.1 Business Case and SWOT Analysis:

SneakerVision addresses a major gap in the e-commerce footwear market: the lack of a personalized, immersive, and efficient sneaker-buying experience. With the rise in demand for limited-edition sneakers and the growing culture around sneaker collecting, buyers often face challenges like incorrect sizing, mismatched expectations between product images and real products, and time-consuming shopping efforts. SneakerVision leverages augmented reality (AR) to allow users to virtually try on sneakers before purchasing them, offering a highly realistic and convenient solution that enhances user satisfaction and reduces return rates. This platform offers users:

- A seamless shopping experience with detailed product catalogs and virtual try-on.
- An integrated payment system for easy transactions.
- A user-friendly interface with profile management and product reviews.
- Time-saving functionality by eliminating the need to visit physical stores

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From a business perspective, SneakerVision is not just a mobile app it's a scalable, innovative product with potential for partnerships with sneaker brands, resale marketplaces, and influencer-based marketing. It also provides monetization opportunities through premium features, advertisement integration, and potential peer-to-peer resale in future upgrades.

SWOT Analysis

Strengths

- **Innovative AR Technology:** Virtual try-on reduces uncertainty in size and style, enhancing buyer confidence.
- **User-Centric Design:** Intuitive UI/UX makes navigation and shopping easy, even for new users.
- **Time Efficiency:** Saves users the time of visiting multiple stores or returning unsuitable products.
- **Scalability:** Built on Firebase and Flutter, enabling rapid updates and cross-platform support.

Weaknesses

- **Device Limitations:** AR functionality may not work optimally on all devices, especially lower-end models.
- **Limited Marketplace Features:** Current version lacks peer-to-peer buying/selling and seller dashboards.
- **No Real Payment Gateway Yet:** Payment system is in mock/testing phase and not ready for commercial deployment.
- **Dependency on Internet Connectivity:** Full functionality requires stable internet access.

Opportunities

- **Expansion to iOS and Web:** Broadens user base by covering all major platforms.
- **Integration with Sneaker Brands:** Potential for official partnerships, product drops, and exclusive AR previews.
- **AI-Powered Suggestions:** Future AI integration can increase personalization and user engagement.
- **Peer-to-Peer Resale Market:** Introducing a marketplace can turn SneakerVision into a community-driven platform.

Threats

- **High Competition:** Competing with established platforms like GOAT, StockX, and Nike SNKRS.
- **Technology Dependence:** AR SDKs may have limitations or licensing costs in the future.
- **Security Risks:** With real payments and user data, strong data protection and security measures will be critical.
- **User Adoption Lag:** Some users may resist AR-based shopping due to unfamiliarity or privacy concerns.

2.2 Assumptions and Dependencies

It is assumed that users have access to a smartphone or device compatible with augmented reality technology to fully utilize the virtual try-on feature. The app depends on reliable internet connectivity for seamless browsing, AR functionality, and transactions. It also requires partnerships with sneaker retailers and manufacturers to maintain a comprehensive and updated catalog. Payment gateway integration depends on third-party services, and compliance with legal standards for data protection and e-commerce regulations is necessary for smooth operations.

➢ User Accessibility and Device Compatibility:

- **Assumption:** Users will have access to a smartphone or device compatible with augmented reality (AR) technology.
    - The platform assumes that a significant portion of its target audience uses modern smartphones that support AR features via ARKit (iOS) or ARCore (Android).
    - Users must also have devices with adequate hardware specifications, such as high-quality cameras and sufficient processing power, to ensure a smooth AR experience.
- **Impact:** The lack of a compatible device may limit the ability of some users to fully utilize the virtual try-on feature, although other functionalities like browsing and purchasing will still be accessible.

➢ Internet Connectivity:

- **Assumption:** Reliable internet connectivity is necessary for the platform to function effectively.
    - High-speed internet is required for seamless browsing of sneaker catalogs, AR functionality, and secure transactions.
    - Features like virtual try-on, real-time pricing updates, and user reviews depend heavily on stable network connections.
- **Impact:** Users in areas with poor or inconsistent internet connectivity may face delays or disruptions, impacting their experience with the app.

• Partnerships with Retailers and Manufacturers:

- **Assumption:** The app depends on partnerships with sneaker retailers and manufacturers to maintain a comprehensive and updated product catalog.
    - Retailers and brands must provide timely updates on product availability, pricing, and inventory levels to ensure accuracy.
    - Collaboration with trusted suppliers ensures access to exclusive and limited-edition sneakers, which are critical to attracting the target audience.
- **Impact:** The absence of strong partnerships could result in a limited product catalog, reducing the platform's appeal to sneaker enthusiasts.

• Payment Gateway Integration:

- **Assumption:** Secure and efficient payment processing is dependent on third-party payment gateway services.
    - Integration with reputable payment gateways will enable various payment methods, including credit/debit cards and digital wallets.
    - The platform assumes these services will operate reliably, ensuring smooth transactions without errors or delays.
- **Impact:** Issues with payment gateway providers, such as downtime or security breaches, could disrupt transactions and affect user trust.

3 Project Scope

3.1 In Scope

- User registration and login.
- Browse and search for sneakers.
- Catalog of available shoes with product details and images
- Integration of augmented reality technology to allow users to try on shoes virtually.
- Add sneakers to a cart and purchase them through the app.
- Payment Gateway Integration.
- User feedback and ratings system.
- The admin should be able to manage users' accounts, including creating new accounts, updating user information, and deleting user accounts. Users can adjust their profile.
-

3.2 Out of Scope

- Developing an e-commerce platform that supports selling other products besides sneakers.
- Shoe cleaning, repair, or maintenance services.
- User cannot customize or design their shoes.

4 Proposed Methodology

4.1 SDLC Approach

We are using Prototype methodology for developing the sneaker app with augmented reality.

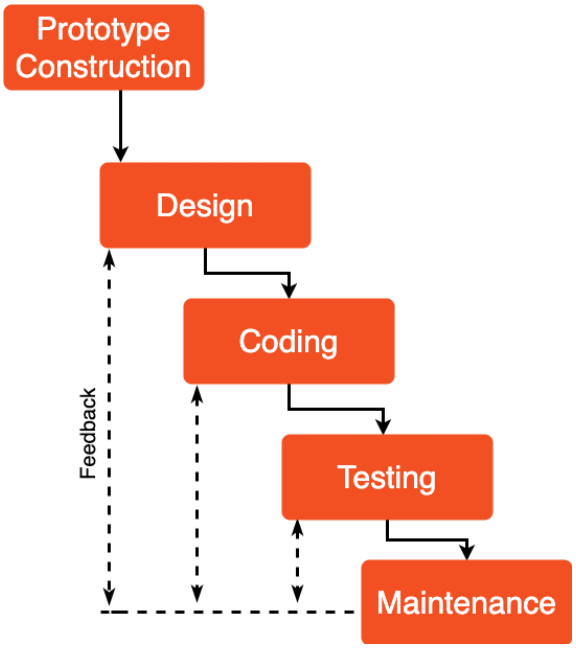


Figure 2: SDLC Approach

Prototype Construction:

The impetus for Sneaker Vision is the growing demand for an effortless and reliable online shopping experience tailored to sneakerheads. With the emerging e-commerce era, shoppers are typically given problems such as an inability to try on items, product photos not matching the actual product, and inadequate visibility to hard-to-find or limited-release sneakers. These pain points not only decrease customer satisfaction but also lead to recurring returns and wasted time, creating a gap which traditional online sites cannot address. With the popularity of augmented reality (AR) technology on the rise and with the ability to create immersive experiences, Sneaker Vision intends to leverage this technology to overcome the gap between online and offline shopping. With the integration of AR-based virtual try-ons, Sneaker Vision enables users to view how sneakers fit and look in real-time, significantly reducing sizing issues and increasing buying confidence. The inspiration behind this project is to create a revolutionary platform that brings together technology, convenience, and community to offer a total shopping experience enhancement for sneaker culture enthusiasts. Sneaker Vision endeavors to provide solutions that save time, build trust, and generate value, ultimately positioning itself as the go-to platform for sneakerheads everywhere.

Design:

- Define the overall system architecture, including software and network requirements.

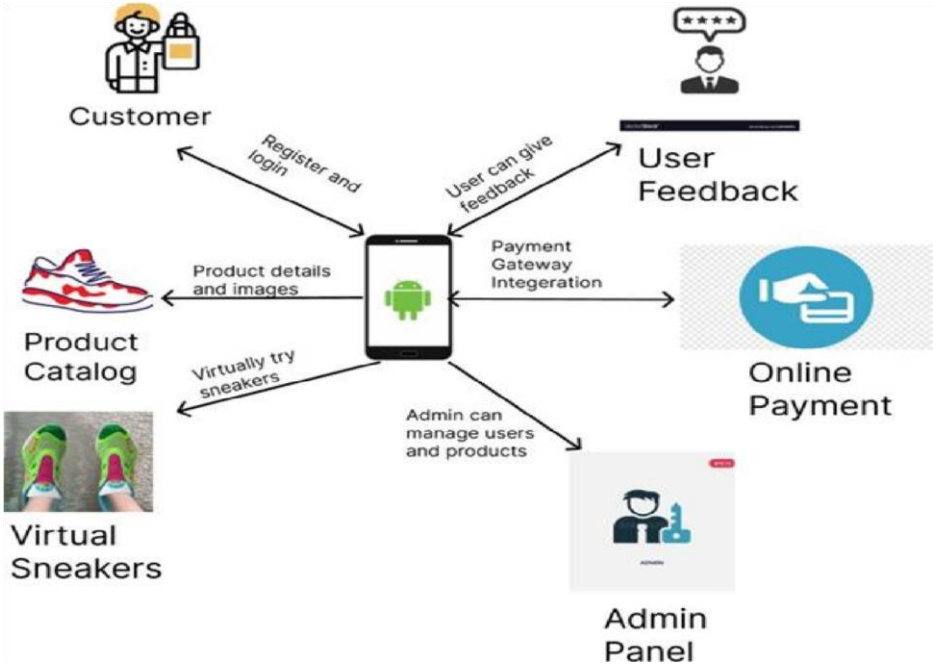


Figure 3: Project Design

Coding:

- Develop the application according to the design specifications.
- Set up the development environment with necessary tools and frameworks.
- Divide the application into modules and assign tasks to development teams.

Testing:

- Ensure the application is free of defects and meets all requirements.
- Test individual components or modules for correctness.
- Test the interaction between integrated modules to identify interface defects.
- Test the entire system to ensure it meets the specified requirements.

Maintenance:

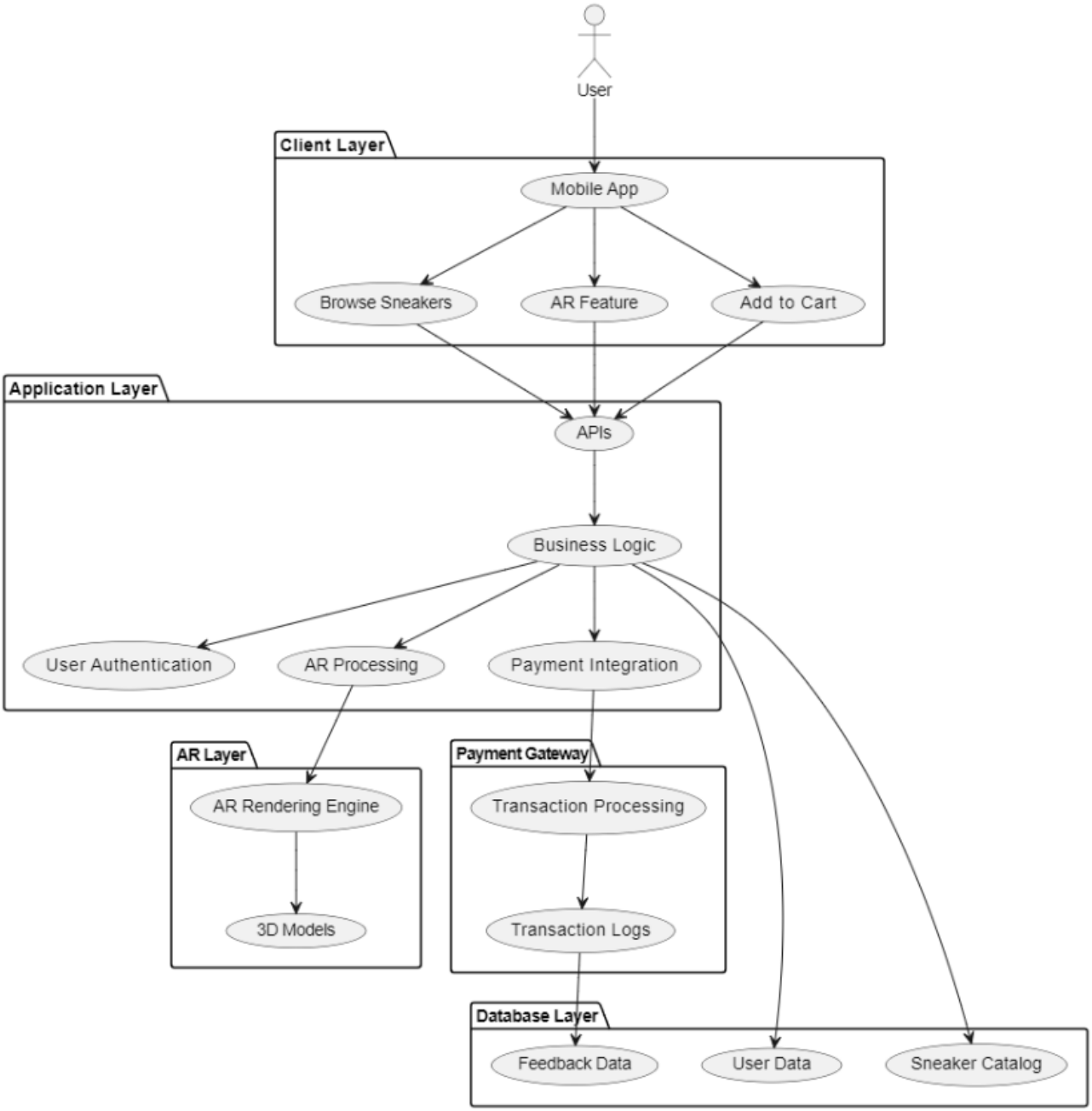
- Resolve defects and bugs found after release, such as AR view glitches or payment errors.
- Make necessary updates to keep the app compatible with new OS versions and device requirements.
- Apply improvements based on feedback (e.g., better virtual try-on accuracy, UI adjustments).

- Regularly update authentication systems and databases to protect user data.
- Optimize app speed, AR performance, and backend operations for growing user base.

4.2 Team Role & Responsibilities

No.	Phase	Duration	Month(s)	Action Performed	Responsible Person
1	Requirement Analysis	3 Weeks	July 2024	Requirement documentation, use case identification	Minahil Khan
2	System Design	3 Weeks	August 2024	System architecture, ERD, class diagrams, UI wireframes, AR design planning	Abdul Basit
3	Implementation	3 Months	Sep – Nov 2024	Flutter development integration of modules	Muhammad Rizwan
4	Testing	1.5 Months	Dec 2024 – Mid Jan 2025	Unit testing, integration testing, AR performance checks, bug fixing	Minahil Khan
5	Deployment	2 Weeks	Late Jan – Early Feb 2025	Finalize hosting and backend settings	Abdul Basit
6	Maintenance	Ongoing till May 2025	Feb – May 2025	Post-deployment bug fixes, performance updates, user feedback implementation	Muhammad Rizwan

4.3 High-level Architecture / Design



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3.2. OUT OF SCOPE:

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4 .Planning:

This project planning timeline for sneakers vision spans over 12 months, ensuring a systematic approach to development, testing, and deployment of the advanced sneakers vision platform. By adhering to waterfall methodologies, conducting iterative releases, and prioritizing stakeholder feedback.

Phase I - Alpha Prototype

- Project Planning
- Gather Requirements
- Meeting With Supervisor

Phase II - Beta Prototype

 Front-End Development

 Testing

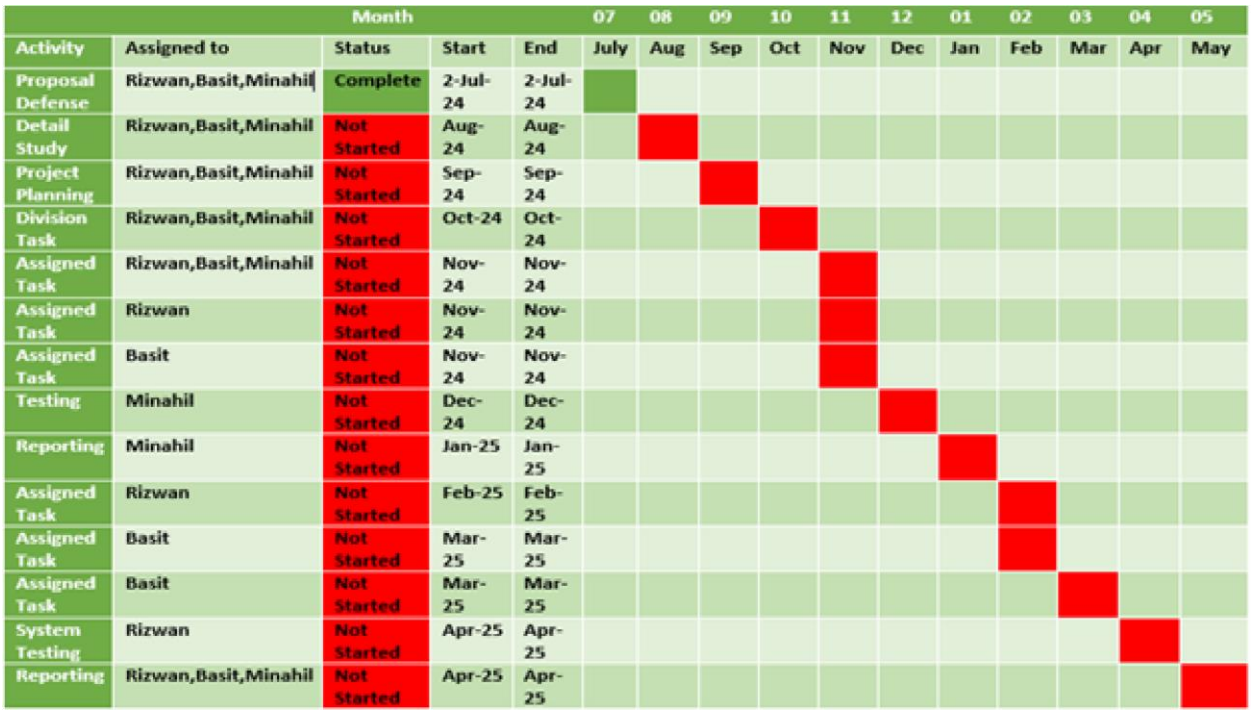
Phase III - Release Candidate

- Back-End Development
- AR Development

- Testing

Phase IV - Final Product

- Complete testing and bug fixing
- Submission of complete FYP report
- Submission of complete application



Activity	Assigned to	Status	Start	End	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
		Month			07	08	09	10	11	12	01	02	03	04	05
Proposal Defense	Rizwan,Basit,Minahil	Complete	2-Jul-24	2-Jul-24											
Detail Study	Rizwan,Basit,Minahil	Not Started	Aug-24	Aug-24											
Project Planning	Rizwan,Basit,Minahil	Not Started	Sep-24	Sep-24											
Division Task	Rizwan,Basit,Minahil	Not Started	Oct-24	Oct-24											
Assigned Task	Rizwan,Basit,Minahil	Not Started	Nov-24	Nov-24											
Assigned Task	Rizwan	Not Started	Nov-24	Nov-24											
Assigned Task	Basit	Not Started	Nov-24	Nov-24											
Testing	Minahil	Not Started	Dec-24	Dec-24											
Reporting	Minahil	Not Started	Jan-25	Jan-25											
Assigned Task	Rizwan	Not Started	Feb-25	Feb-25											
Assigned Task	Basit	Not Started	Mar-25	Mar-25											
Assigned Task	Basit	Not Started	Mar-25	Mar-25											
System Testing	Rizwan	Not Started	Apr-25	Apr-25											
Reporting	Rizwan,Basit,Minahil	Not Started	Apr-25	Apr-25											

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