In The Partial Fulfilment Of

Master Science (Information Technology)

Sem-8

LJ Institute of Computer Applications

LJ University, Ahmedabad

<u>SkillSwap: Skills Exchange Platform</u>

Developed By: Guided By:

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CERTIFICATE

Enrollment No: 21004500210160

This is to certify that **Yash Shah** of Master of Science (MSc.IT), Semester - **8**, Roll No- **60(B)** has satisfactorily completed his project titled **SkillSwap-Skill Exchange Platform** in Web Application Development using MEAN stack.

Internal Guide: HOD:

Date of Submission:

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This is to certify that **Arnold Macwan** of Master of Science (MSc.IT), Semester - **8**, Roll No- **2 8 (B)** has satisfactorily completed his project titled **SkillSwap-Skill Exchange Platform** in Web Application Development using MEAN stack.

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This is to certify that **Nandini Bhavsar** of Master of Science (MSc.IT), Semester - **8**, Roll No- **0 6 (B)** has satisfactorily completed his project titled **SkillSwap-Skill Exchange Platform** in Web Application Development using MEAN stack.

Internal Guide: HOD:

Date of Submission:

SkillSwap

1. INTRODUCTION

- The new currency in today's fast-paced, constantly-changing world is **skills**. But not everyone can afford professional instruction, and not everyone has **equal** access to high-quality learning materials. This is the role of SkillSwap, a peer-to-peer **collaborative network** that allows people to **share** talents and information without exchanging money.
- Using the MEAN (MongoDB, Express.js, Angular, and Node.js), SkillSwap is a full-stack online application that enables users to teach others new skills. People from different backgrounds may interact, teach, and learn according to their areas of expertise in this community-driven setting.

1.1 Existing System

- In today's digital learning landscape, people primarily rely on **paid platforms**, online courses, and traditional coaching institutes to acquire new skills. While these methods provide structured learning, they often come with significant drawbacks that make them inaccessible or ineffective for a large section of learners.
- Affordable, participatory, and community-driven learning opportunities are not offered by the present systems. Individuals are either unable to obtain value for their money or are overly dependent on pricey platforms. This emphasizes the need for a different approach to learning that is economical, individualized, and collaborative.

1.2 Need for The New System

- SkillSwap addresses these needs by introducing a skill-exchange-based learning model, allowing users to both teach and learn through direct interaction and provide centralized collaborative platform. By providing cost effective learning or gather various SkillSwappers across the globe. Such kind of platform that allows people to **exchange skills**, **build networks**, and **grow together**—without the barriers of medium and trust or location. It's more than a platform — it's a **movement for democratized learning**.

1.3 Objective of the System

- The objective of SkillSwap is to create a collaborative, **peer-to-peer** platform where users can **exchange** skills and knowledge. The system aims to **connect** individuals based on their teachable and learnable skills, enabling them to **grow** personally and professionally through mutual learning, interactive sessions, and a community-driven environment. It promotes affordable, accessible, and personalized education by facilitating skill listings, search, filtering, and **request-based** exchange workflows — all built on a secure and user-friendly MEAN stack infrastructure.

1.4 Problem Definition

- In the current digital age, acquiring new skills often requires enrolling in expensive courses, relying on static self-learning resources, or struggling to find personalized guidance. These traditional methods create **financial, geographical, and accessibility barriers**, especially for learners who seek affordable and collaborative learning opportunities. By overcoming these issues, the system provides centralized platform which enables users to interact with each other exchange their skills and thoughts by promoting community-based skill learning.

1.5 Core Components

User	Admin
• Authentication • Provide Feedback • Profile Manage • Get reminders • Skills exchange • Skills Filter & search • Create Blog posts • Payment Management • Communication	• Authentication • User management • Profile management • Skills Management • Manage transactions • Manage Blogs • Handle dashboard

1.6 Project Profile

Project Title	Skill-Swap
Frontend	HTML5, SCSS, TypeScript, Angular
Libraries	Angular Material UI, Tailwind CSS
Back-end	NodeJS, ExpressJS
Database	MongoDB Cluster
Tools	MS-OFFICE, Visual Studio Code, Draw.io

1.7 Assumption and Constraints

Assumption

- Users have access to the internet and a modern web browser to use the application effectively.
- Users will have to provide accurate information when signing up and listing their skills.
- Each user has at least one skill they can teach and one they want to learn.
- The platform will initially target **individual learners and educators**, not organizations.

Constraints

- The platform currently supports only English for content and communication.
- OAuth login is limited to selected provider (Google).
- Real-time communication or chat features may not scale efficiently in the early stages of the platform.

1.8 Advantages and Limitations

Advantages
- Role-based access control
- Secure communication
- Organised flow
- Visual dashboards

Limitations
- User adaption curve
- Low maintanance
- Cross-platform compatability

2. REQUIREMENT DETERMINATION
AND ANALYSIS

2.1 Requirement Determination

➢ Requirement determination for task management involves gathering, Analysing, and documenting the needs and expectations of stakeholders.

➢ Requirements were identified through a combination of user research, brainstorming, and analysis of similar platforms.

• This phase is consisting of:

- o Surveys & sampling
- o Stockholders' requirements & analysis
- o Review existing system if available
- o Competitive analysis
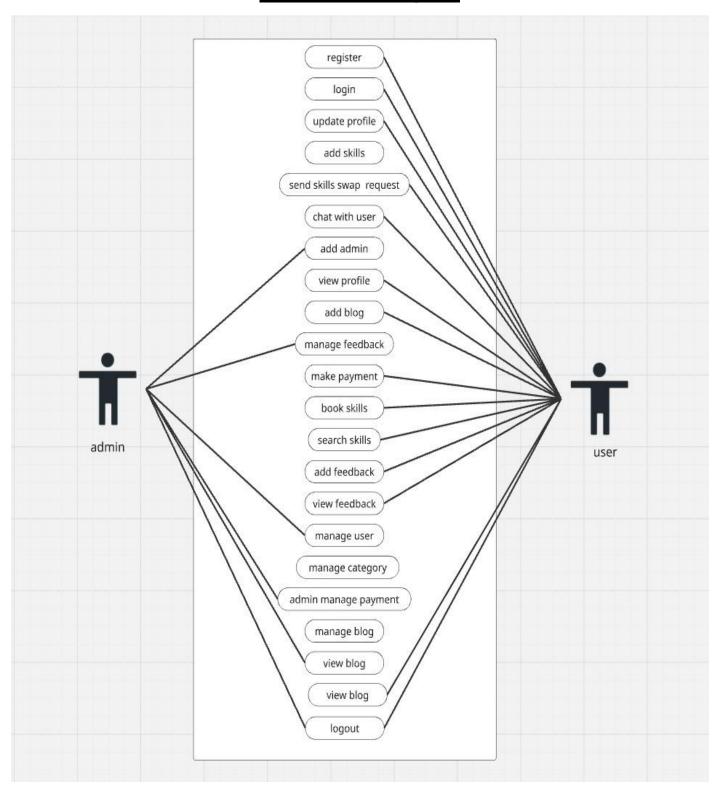- o Planned or hypothetical interviews
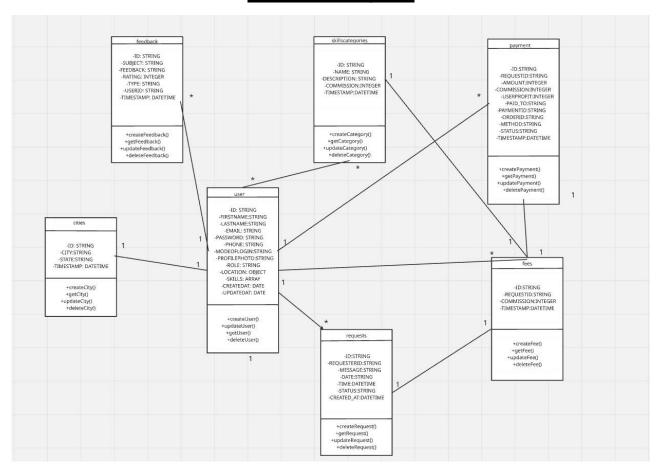- o Mock-up

2.2 Targeted users
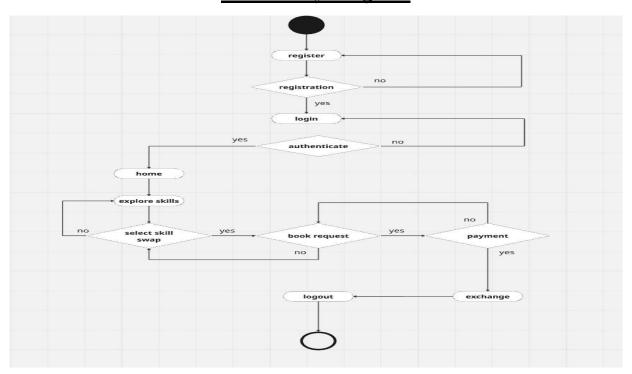
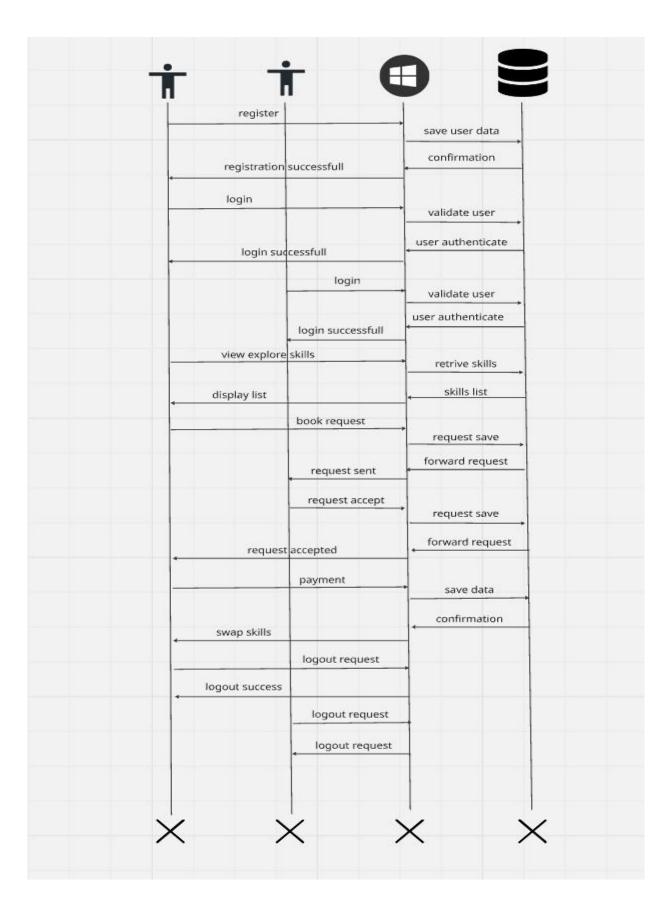➢ Admin
➢ User

3. System Design

3.1 Use Case Diagram

3.2 Class Diagram

3.3 Activity Diagram

3.4 Sequence Diagram

SkillSwap

3.5 Data Dictionary

SkillSwap

1. User

Fieldname	Datatype	Field size	Constraint	Example
Id	String	50	Not null	67f6c02dc5a0504124894dc6
Firstname	String	50	Not null	Yash
Lastname	String	50	Not null	Shah
Email	String	100	Not null	2106450211600@jku.edu.in
Password	String	50	Not null	$2a$10$cdnc5bxyuebb1bqwbvmfdeenchisjthvnrrhlbc.khylsany2x5u2
Phone	String	15	Not null	1234567890
Modeoflogin	String	50	Not null	Google
Profilephoto	String	100	Not null	1744224697311.jpg
Role	String	20	Not null	User
Location	Object	-	Notnull	-
Location.house	String	100	Not null	Sweetal appartment
Location.area	String	100	Not null	Shapur
Location.state	String	100	Not null	Gujarat
Location.city	String	100	Not null	Ahmedabad
Location.pincode	Integer	6	Not null	380001
Skills	Array	-	Not null	-
Skills.categoryid	String	50	Reference key	67ea79b253d89517f16bd0a4
createAt	Date	50	Not null	2025-04-09

2. Feedback

Fieldname	Datatype	Field size	Constraint	Example
Id	String	50	Not null	67f4f4dd8a819d3b2f06fbb
Subject	String	100	Not null	User interface
Feedback	String	100	Not null	Nice
Rating	Integer	5	Not null	5
Userid	String	50	Reference key	67f6c92dc5a85094124894dc6
Timestamp	Datetime	50	Not null	2025-04-12t11:32:29.597+00:00

3. Cities

SkillSwap

Fieldname	Datatype	Field size	Constraint	Example
Id	String	50	Not null	67f4f4dd8a819d3b2f06fbb
City	String	100	Not null	Ahmedabad
State	String	100	Not null	Gujarat
Timestamp	Datetime	50	Not null	2025-04-12t11:32:29.597+00:00

4. Requests

Fieldname	Datatype	Field size	Constraint	Example
Id	String	50	Not null	67fd2bae6e6bba7a45d3787b
Requesterid	String	50	Reference key	67f6c02dc5a0504124894dc
Message	String	100	Not null	I want to swap this skills
Date	String	100	Not null	2025-04-17t00:00:00.000+00:00
Time	Datetime	50	Not null	Night
Status	String	50	Not null	Pending
Created_at	Datetime	50	Not null	2025-04-14t15:37:18.703+00:00

5. Fees

Fieldname	Datatype	Field size	Constraint	Example
Id	String	50	Not null	67fe8e83037b27ddf67114ca
Requestid	String	100	Reference key	67fe1df1e8fed1e45a4b0109
Commission	Integer	100	Not null	75
Timestamp	Datetime	50	Not null	2025-04-15t17:08:56.401+00:00

6. Skill Category

Fieldname	Datatype	Field size	Constraint	Example
Id	String	50	Not null	67ea79b253d89517f16bd0a4
Name	String	100	Not null	Health, wellness & fitness
Description	String	100	Not null	They are crucial for both personal and professional growth
Commission	Integer	100	Not null	10
Timestamp	Datetime	50	Not null	2025-04-12t11:32:29.597+00:00

7. Payment

SkillSwap

Fieldname	Datatype	Field size	Constraint	Example
Id	String	50	Not null	67fe8e83037b27ddf67114cd
Requestid	String	100	Reference key	67fe1df1e8fed1e45a4b0109
Amount	Integer	100	Not null	500
Commission	Integer	100	Not null	75
Userprofit	Integer	100	Reference key	425
Paid_to	String	100	Not null	67f69b7a7b65f87cac357fd1
Paymentid	String	50	Reference key	Pay_qjpcxqulgicai5
Orderid	String	50	Reference key	Order_qjpbxfg2eftecz
Method	String	50	Not null	Razorpay
Status	String	50	Not null	Success
Timestamp	Datetime	50	Not null	2025-04-15t17:08:56.401+00:00

SkillSwap

4. <u>Development</u>

<u>4.1 Coding Standard</u>

➢ **Project structure:**

- Use clear, descriptive names for directories, reflecting different modules.
- Name source code files meaningfully to indicate their function.

➢ **Code-version management:**

- Write detailed and meaningful commit messages that summarize changes
- Organize the repository with well-defined branches.

➢ **Error handling:**

- Implement comprehensive error handling for user input validation, skill matching conflicts, and payment processing failures.
- Ensure error messages are user-friendly and informative, without exposing internal system details.

➢ **UI design:**
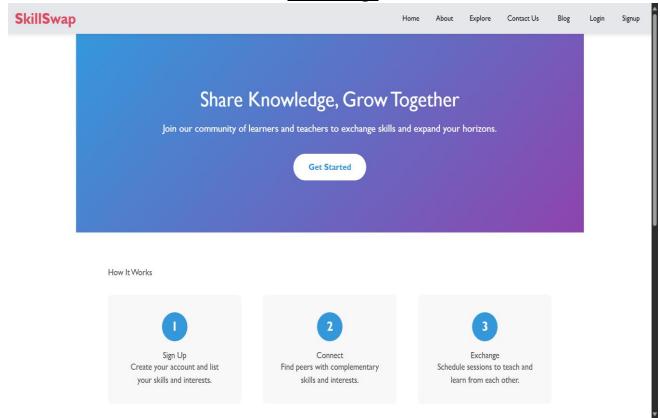
- Design a user-friendly and responsive interface so that users can use the system and understand it easily

➢ **Further development:**
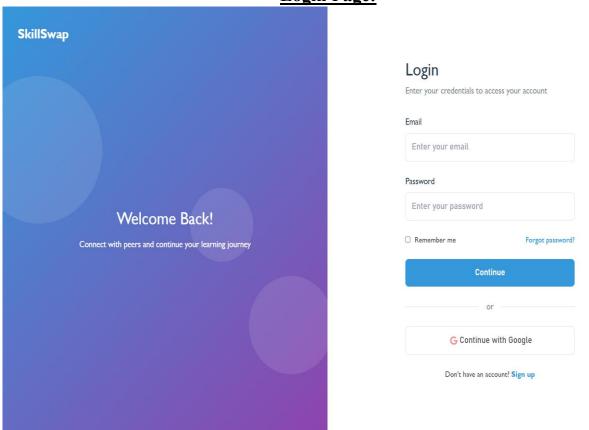
- Conduct regular code reviews to maintain code quality, promote best practices, and detect bugs or inefficiencies early.
- Keep documentation up-to-date, especially when new features are added or existing features are changed.

4.2 Screenshots

Home Page

Login Page:

SkillSwap

Register Page:

First Name

Enter your first name

Last Name

Enter your last name

Email

Enter your email

Password

Create a strong password

confirm Password

Create a same password

Phone Number

Enter your phone number

Profile Photo

Choose File No file chosen

No file chosen

Create Account

Join Our Community

Connect, learn, and share skills with peers around the world

Contact us:

SkillSwap

Home   About   Explore   Contact Us   Blog   Welcome, Arnold   Logout

Have any questions or feedback? Feel free to reach out!

Subject

Enter the subject

Message

Enter your message

Rate Your Experience ★ ★ ★ ★ ★

Send Message

SkillSwap

Explore page

Profile page

SkillSwap

SkillSwap

Home About Explore Contact Us Blog Welcome, Arnold Logout

Creative & Artistic skills
💎 Fees/Day: ₹599

Your Requests

Skill	Status	Swapper	Date & Time	Note	Payment/Action	Stage
Creative & Artistic skills	Accepted	Ronald Macwan ronaldmacwan4524@gmail.com	Apr 22, 2025 ⏰ Noon	hyy	COMPLETED	Pending
Tech & Digital Skills	Accepted	Maxine Mayfield maxfield254@yahoo.in	Apr 25, 2025 ⏰ Evening	aa	PAY NOW	Pending

Your Bookings

Skill	Status	Requester	Date & Time	Note	Payment/Action	Stage
Health, Wellness & Fitness	Accepted	Maxine Mayfield maxfield254@yahoo.in	Apr 23, 2025 ⏰ Night	konnichiwaa	PAID	COMPLETED
Tech & Digital Skills	Accepted	Ronald Macwan ronaldmacwan4524@gmail.com	May 2, 2025 ⏰ Night	hey	PAID	PENDING
Tech & Digital Skills	Accepted	Manthan Parmar parmarmanthan@gmail.com	Apr 28, 2025 ⏰ Morning	hdbdhbvh	PAID	PENDING

User detail page

SkillSwap

Home About Explore Contact Us Blog Welcome, Arnold Logout

User Details

Name: Maxine Mayfield
Email: maxfield254@yahoo.in
Phone: 8501236974
Location: Leh - Jammu & Kashmir

Skills:

Tech & Digital Skills
💎 Fees/Day: ₹552
[View Certificate] [👍 Book]

Parenting & Family Skills
💎 Fees/Day: ₹100
[View Certificate] [👍 Book]

SkillSwap

Admin Dashboard

Users List

SkillSwap

Add skill category

Admin profile

Payment Gateway

SkillSwap

5. Agile Documentation

5.1. Project Charter

Project Name	Skill Swap
Guide	Ananya Yaduvanshi
Project expected Start date	02-01-2025
Project expected end date	17-04-2025
Project Scope	Skill Swap is a platform where people can exchange skills with each other. Users can offer a skill they know like cooking, coding, or painting and find others who can teach them something new in return. The system helps match users based on skills, set up sessions, and manage bookings. It also includes features like messaging, reviews, and payments if needed.
Project mission	The mission of Skill Swap is to create a user-friendly platform that connects people who want to learn new skills with those who are willing to teach, through a simple and fair skill exchange system. Instead of using money, users trade their knowledge, making learning more accessible and community-driven. Skill Swap aims to empower individuals by helping them share what they know, discover new talents, and build meaningful connections through learning.
Project vision	Our vision is to build a global community where everyone can learn, grow, and share their skills freely. We imagine a world where skill-sharing is easy, accessible, and empowering for all—regardless of background or income. Skill Swap strives to become the go-to platform for exchanging knowledge, fostering personal growth, and building strong human connections through learning.

5.2 Project Roadmap

	Start Month	Jan-25		Project Roadmap		
	End Month	Apr-25				
SkillSwap						

Task	Jan			Feb			March			April	
	Week 01	Week 02	Week 03	Week 01	Week 02	Week 03	Week 01	Week 02	Week 03	Week 01	Week 02
Initial Setup & Database connections											
Authencation system											
Password reset											
Email verification											
RBAC											
Feedbacks & Ratings											
Profile Management											
Admin Dashboard initial setup 1.0											
Admin Dashboard 2.0											
Skill Listing											
Skill Filter & search											
Skill Explorer											
Testimonial sections											
Skill Exchange											
Integrate Payment Gateway											
Chat module											

5.3 Sprint Table

Id	Task/Module	Assigned to	Status	Estimated time (hours)	Story points
1	Authentication	Arnold	Completed	2.5	6
2	Password reset & Email Verification	Yash	Completed	2	5
3	Feedback & Ratings	Nandini	Completed	4.5	5
4	Profile Management	Arnold	Completed	6	**7**
5	Dashboard UI	Nandini	Completed	4	7
6	Admin Dashboard	Arnold	Completed	5	7
7	Skills Listing	Yash	Completed	2.5	8
8	Skills Filter & Search	Arnold	Completed	2.5	8
9	Skills explorer	Nandini	Completed	2	7
10	Skill exchange	Arnold, Yash	Completed	7.5	9
11	Chat Module	Yash	Completed	8	7
13	Payment Module	Yash, Arnold	Completed	4	8

5.4 User Story

| Sr.	As a <user>	Want to <task>	So that <goal>
1	Admin	Login	Admin login to access the system dashboard.
2	Admin	Logout	Admin logout securely from the system.
3	Admin	View User	Admin view users
4	Admin	Generates reports	Admin can view or generate reports to gain system's useful insights
5	Admin	Manage Skills	Admin can add, update or delete available skills.
6	Admin	Manage Transactions	Admin can monitor user payments.
7	User	Login	User logs in to access their account.
8	User	Logout	User logs out to securely end the session.
9	User	Edit Profile	Users can update or edit their profiles.
10	User	Exchange Skills	User finds and connects with others to exchange skills.
11	User	Filter & Search Skills	User easily finds matching skills or users.
12	User	Provide Feedback	User shares feedback after a skill exchange.
14	User	Get Reminders	User receives notifications or reminders for scheduled sessions.
15	User	Create Blog Posts	User shares their experience or knowledge with the community.
16	User	Manage Payment	User completes or reviews payments for premium exchanges or services.
17	User	Communication	User chats or messages other users to plan skill exchanges.

5.5 Release Plan
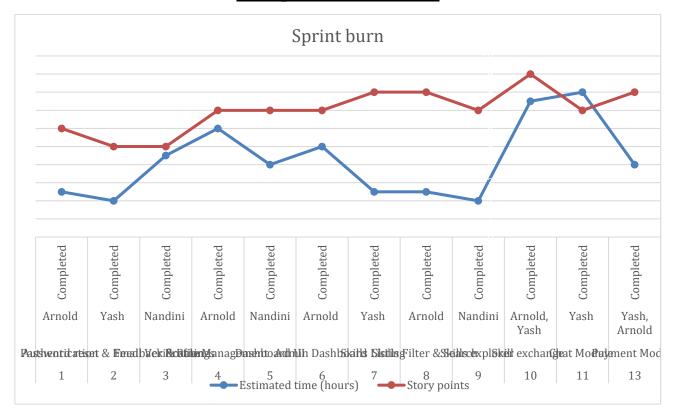
Task	Start Date	End Date	Status	Release date
Database connection & Initial setup	02-01-2025	02-01-2025	Released	03-01-2025
Authentication	03-01-2025	05-01-2025	Released	06-01-2025
Password reset & Email Verification	05-01-2025	09-01-2025	Released	12-01-2025
Feedback & Ratings	07-01-2025	08-01-2025	Released	12-01-2025
Profile Management	12-01-2025	15-01-2025	Released	15-01-2025
Admin Dashboard UI	30-01-2025	03-02-2025	Released	05-02-2025
Admin Dashboard Management	05-02-2025	09-02-2025	Not Released	-
Skills Listing	16-02-2025	21-02-2025	Released	23-02-2025
Skills Filter & Search	25-02-2025	01-03-2025	Released	05-03-2025
Skills explorer	03-03-2025	09-03-2025	Released	15-03-2025
Skill exchange	10-03-2025	19-03-2025	Released	22-03-2025
Chat Module	21-03-2025	26-03-2025	Released	01-04-2025

SkillSwap

5.6 Test Plan

Project Name	SkillSwap	Browser:	Chrome
Tested on:	16-04-2025	Device:	Ryzen 5 Laptop

Test#	Action	Expected Result	Actual Result	Status
1	User Authentication	Redirect to home screen	Redirect	PASS
2	Admin Authentication	Redirect to admin dashboard	Redirected	PASS
3	Add skill category	Add the skill category by only admin credentials	Added with only Admin rights	PASS
4	Reset password using Email	Password reset by email verification	Password reset by email verification	PASS
5	Feedback section	Feedbacks should be displayed on user screen	Feedbacks is displayed on user screen	PASS
6	Profile management	Edit profile with valid credential of own profile	Edited profile with authorized user	PASS
7	View and filter skills (user)	Skills should be listed and filtered on user screen	Skills are listed and filtered	PASS
8	Edit Skill Category	Skill category should only edit by admin	Admin only can edit skill category	PASS
9	Skill exchange	Skills exchange should be complete after payment	Skill is exchanged after payment	PASS
10	Chat box	Chat box should be open with particular user only	Chat box is only opened with authorized user	PASS

SkillSwap

5.7 Sprint Burn Chart

Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed
Arnold	Yash	Nandini	Arnold	Nandini	Arnold	Yash	Arnold	Nandini	Arnold, Yash	Yash	Yash, Arnold
Authentication & Feedback	User Profile Management	Skill Rating	Dashboard to Admin	Admin Dashboard	Skill Listing	Skills Filter & Search	Skills explorer	Skill exchange	Chat Module	Payment Module	
1	2	3	4	5	6	7	8	9	10	11	13

Estimated time (hours)   Story points

6. Proposed Enhancement

- The proposed enhancements for the SkillSwap platform aim to take the system beyond its basic functionality and transform it into a highly scalable, feature-rich and user-centric application. The system also proposed to implement following features:
  - AI Chat Bot
  - Dynamic Skills Ratings & recommendation
  - More scalable reach
  - More enhanced Chat Module
  - Regular maintenance

7. Conclusion

The Skill Swap platform offers a smart way for people to share and learn skills from each other. It helps users connect based on their interests, making learning more flexible, affordable, and community-driven. By allowing skill exchange, the platform encourages personal growth and builds a helpful network of learners and teachers. With planned improvements and user-friendly features, Skill Swap has the potential to become a valuable tool for lifelong learning and collaboration.