WILFRID LAURIER UNIVERSITY
LAURIER Inspiring Lives.

**Department of**
**Physics and Computer Science**

SWAPIFY PROJECT PROPOSAL

**Team members:** Mohammad El-Hassan – 169067950, Mahad Ansari – 169070981, Hani Hasani – 169053410, Saroop Ahmad – 210943200, Mohamed Ayed - 169037128

**Summary:**

**Problem definition and motivation**:

In todays interconnected world, individuals often possess valuable skills but lack the resources or opportunities to learn new ones. Traditional skill development methods, such as paid courses, workshops, and private lessons, can be expensive and inaccessible to many people. At the same time, people who have knowledge to share may not always have a platform to exchange it in a meaningful and impactful way.

Currently, there is no widely used, user-friendly platform that allows users to directly trade skill with each other without financial barriers. This creates a missed opportunity for people to both share what they know and gain new abilities in return, all while building meaningful connections.

Swapify aims to address this gap by creating a community-driven platform where users can exchange skills on a mutual basis. By lowering financial and accessibility barriers, the platform empowers users to grow personally and professionally without relying only on monetary transactions.

We can categorize the motivation behind Swapify in three ways:

1- Accessibility: Making skill development more affordable and available to people of different backgrounds.

2- Collaboration: Encouraging knowledge-sharing and growth through peer-to-peer exchanges.

3- Community: Building a supportive network, where users can form connections, discover talents, and foster inclusivity.

Ultimately, Swapify motivates individuals to see their skills not only on a personal scale but also as a valuable contribution to a broader learning community.

**Proposed solution and objectives:**

Our proposed solution is a web-based platform that allows individuals to trade skills and services without the use of money. Every user will be able to create an account with Firebase Auth. Each user will be able to set the skills they are looking for as well the skills they have to offer. There should be a public board for users to be able to look through postings and there should be a system that recommends good matches. Users should be able to propose and try to negotiate the trade.

Our Objectives:

- Enable users to register with usernames and passwords and social logins such as GitHub and Google.
- Users should be able to manage their profiles with offered and requested skills.
- Users should be able to manage their profiles (manage their account, reset their passwords, permanently delete their account and their data)
- Implement a way to search through the database for specific skills.

**Commented [ME2R1]:** I think the best way is to make a way of calculating based on average salary and then letting the users have the final say basically

**Commented [HH3R1]:** Which would also lead us into creating a function where the users can message and negotiate their terms and prices.

**Commented [HH4]:** Any more information we should add or we should cut from the Problem def and motivation?

**Commented [ME5]:** Are there any more that we want to add?

**Commented [ME6R5]:** In my experience these are the two easiest to implement. Facebook is okay, Apple is more difficult to implement and usually comes at a cost

**Commented [ME7]:** Profile Picture changing might be difficult to implement because there's no where to store pictures and also simultaneously prevent abuse

**Commented [ME8]:** If we use PostgreSQL we have to watch out for SQL Injection. If we use Firebase Firestore, we need to make sure our database rules are secure.

- Allows users to initiate, accept or decline trades.
- Track ongoing and completed trades
- Incorporate a single rating/review mechanism to ensure quality and trust
- Design the system following object-oriented principles
- We plan to implement a method of determining how much each person's time is worth based on average salary data that we can fetch from a public API or a dataset which we could integrate into our own API. (For example: An hour of a plumber's time might not be worth an hour of a cleaners). The goal is to make it fairer, but it'll be a recommended time and both parties have the power to negotiate, accept and decline according to their preference.
- Maintain the security of our users by securing our API endpoints and stored user data. Sensitive information will be accessible only to authorized operations and safeguarded against unauthorized access.

**Detailed Project Plan:**

Week 1–2: Requirements & Design

- Finalize requirements, user stories, and use cases
- Sketch wireframes for signup, skill posting, trade negotiation, and profile pages
- Define database schema and API endpoints
- Decide on tech stack details (Firebase vs PostgreSQL for database, hosting setup)

Week 3–4: Backend Development

- Implement Firebase Authentication (email, Google, GitHub login)
- Create APIs for user management, skill postings, and trade negotiations
- Set up database structure for storing skills, trades, reviews, and user data
- Basic security setup (input validation)

Week 5–6: Frontend Development

- Build React components for signup/login, dashboard, and skill posting forms
- Implement skill search and filtering system
- Create trade negotiation UI (initiate, accept, decline trades)
- Integrate backend APIs with frontend components

Week 7–8: Advanced Features

- Implement rating/review mechanism for completed trades
- Add notifications (email or in-app) for trade updates
- Create a basic recommendation engine for skill matches

Week 9: Testing & Debugging

- Unit testing with Jest (frontend) and Mocha/Chai (backend)
- Integration testing for signup then post skill then trade workflow
- User acceptance testing with classmates to gather feedback
- Fix bugs and refine UI/UX

Week 10: Deployment & Finalization

- Deploy application to Vercel or Firebase Hosting
- Ensure database is properly secured and backed up
- Conduct final demo of application
- Submit final project report, GitHub repo, and presentation slide

**Commented [SA9]:** et me know if yalll wanna add anything to it or make it more detailed/ add things to it

Requirements:
- Interface (React / Bootstrap or Material UI):
We will design the interface for our application using the React framework. React lets you build small reusable blocks called components that can be put together to create a user interface. These components are defined as functions and can be used in all sorts of applications and can serve various purposes. For example, a useful component for our skill-trading platform is a booking form that allows users to reserve a spot for a skill exchange. Components like these will be used to take data from users. To build an entire application with React, frameworks like Material UI are recommended for routing (for examples with URLs) or fetching large amounts of data.

Deliverables By Milestone
By the end of Week 2, we expect to have completed all requirements gathering and produced wireframes for the main user flows. This includes the signups and login screens, the dashboard, the skill posting form, the trade negotiation interface, and the user profile pages.
By Week 4, the backend foundation should be functional. At this point, Firebase Authentication will support email, Google, and GitHub logins, and the initial database gist will be set up. Core API's for managing user and skills will also be set and in place.
By Week 6, the essential frontend features will be ready and integrated with the backend. Users should be able to sign up, log in, post skills, browse skills, and use the search system. These components will be connected to the API's created earlier.
By Week 8, advanced features will be added. The platform should now support user reviews, ratings, and notifications. A basic recommendation engine will be integrated to suggest skill matches.
By Week 9, the testing package will be prepared. This will include unit tests for both frontend and backend, integration tests covering the full skill-trade workflow, and results from user testing sessions.
Finally, by Week 10, the system will be deployed to Vercel or Firebase Hosting, with all security checks and backups verified. At this stage, the GitHub repository will be finalized, the full documentation and report will be written, and the final presentation will be prepared.

**Commented [SA10]:** not sure what else I could add or make it different

All team members read and approved this proposal and acknowledge that the information provided is not a reuse or recycling of any previous project.

| | | |
|---|---|---|
| Member 1 Name: | Mohamed Ayed | Signature Mohamed |
| Member 2 Name: | Mohammad El-Hassan | Signature MohammadE |
| Member 3 Name: | Hani Hasani | Signature HH |
| Member 4 Name: | Mahad Ansari | Signature MA |
| Member 5 Name | Saroop Ahmad | Signature SA |