**Open Super dApp**

Student's Name: Sree Charan Kilari

Student's ID: 2430839

**Introduction**

[Open Super DApp](https://github.com/2gatherproject/open-super-dapp-android) is a sophisticated decentralized application that combines a mobile messenger, an Ethereum wallet, and a Web 3.0 browser within the same platform. The distributed architecture featured in this project has been built using the principles of decentralization and blockchain interoperability. It is a good case study for developing an advanced DApp to fulfill the CN6035 module requirements.

**Architecture Overview**

At its core, the Open Super dApp has a modular architecture with front and back-end components. The front end is done in modern mobile frameworks with Android devices. This has a responsive user interface (UI) to utilize messaging, browsing, and wallet functionalities without risks and without experiencing typical blockchain transaction delays. The mobile UI's back end is meant to control the communication of the mobile UIs with the blockchain network. This communicates with Ethereum smart contracts through web3 libraries for real-time transactions and data synchronizing with a blockchain test network such as Ropsten or Goerli TestNet (Zavratnik,2022).

**Front-End Implementation**

Developed with the aim of excellent user experience and security, the front-end interface of the Open Super dApp. It implements dynamic UI updates with a reactive UI framework and smooth transition to other screens. Key features include:

1. **Integrated Messaging:** Secure end-to-end encryption ensures that messages remain private, utilizing decentralized protocols for enhanced security.
2. **Ethereum Wallet:** This feature allows users to manage digital assets, sign transactions, and interact with smart contracts directly from a mobile device (Tavares et al., 2018).
3. **Web 3.0 Browser:** The browser enables users to explore decentralized applications (dApps) and interact with blockchain-based services, all within the app environment.

To alleviate latency and get real-time feedback on transaction statuses, the interactions with blockchain are done in an advanced asynchronous programming fashion along with efficient state management frameworks. The critical part has been this robust integration of UI elements and blockchain responses to provide a smooth user experience.

**Back-End Functionality**

The Open Super dApp has its backend, the bridge between the blockchain and the decentralized mobile interface. It uses secure API endpoints related to smart contracts to communicate with smart contracts and process transactions on the blockchain. Key components include:

* **Smart Contract Interaction**: The back end creates secure connections to Ethereum test networks through web3 libraries, allowing users to transact and interact with dApps without compromising security.
* **Data Management**: Data integrity is maintained by encrypting and validating the data sent between the mobile app and the blockchain using the server-side components, ensuring transmission security.
* **Middleware and API Management**: These layers manage request flows and exception handling as a critical function in case of network disruptions, avoiding data inconsistencies (Chaudhary et al., 2021).

**Code Quality and Submission Process**

The project stresses high code quality, achieved through automated testing frameworks, linting tools, and a continuous integration pipeline. Code reviews automated quality checks. All in this line are developed during the process, and their code follows the coding standards used in the industry. The project source code is publicly viewable on GitHub, making it transparent and easy to view. All code submissions are integrated with Moodle, reflecting the consistent usage of version control systems for project evolution tracking.

**Conclusion**

The open Super dApp project is an application of decentralized technologies based on advanced applications in the context of mobile, distributed systems. The project presents sophisticated DApp development practice through its seamless combination of a secure front-end UI and backend, which communicates with blockchain test networks. Further, it highlights that the rigorous emphasis on code quality and effective version control makes it an excellent benchmark project for module CN6035. This report contains a description of the capabilities of the project and how the implementation was created with the complete source code corresponding to the installation manual.

**References**

Chaudhary, P., Goel, S., Jain, P., Singh, M. and Aggarwal, P.K., (2021, September) The astounding relationship: Middleware, frameworks, and API. In 2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO) (pp. 1-4). IEEE.

Tavares, M., Guerreiro, A., Coutinho, C., Veiga, F. and Campos, A., (2018, September) WalliD: Secure your ID in an Ethereum wallet. In 2018 International Conference on Intelligent Systems (IS) (pp. 714-721). IEEE.

Zavratnik, J. (2022) Analysis of web3 solution development principles: <https://upcommons.upc.edu/bitstream/handle/2117/379908/171754.pdf?sequence=1>

<https://github.com/2gatherproject/open-super-dapp-android>

Link for presentation video CN6035

[Presentation 6035-20250429\_123926-Meeting Recording.mp4](https://uelac-my.sharepoint.com/:v:/r/personal/u2430839_uel_ac_uk/Documents/Recordings/Presentation%206035-20250429_123926-Meeting%20Recording.mp4?csf=1&web=1&nav=eyJyZWZlcnJhbEluZm8iOnsicmVmZXJyYWxBcHAiOiJTdHJlYW1XZWJBcHAiLCJyZWZlcnJhbFZpZXciOiJTaGFyZURpYWxvZy1MaW5rIiwicmVmZXJyYWxBcHBQbGF0Zm9ybSI6IldlYiIsInJlZmVycmFsTW9kZSI6InZpZXcifX0%3D&e=6I0z63)