



Cybersecurity Requirements for DDC(MOPH) DDC App Portal

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Abstract

This project presents a cross-platform App Portal, developed with Flutter, featuring a robust Single Sign-On (SSO) system to provide secure, streamlined access to multiple services. Enhanced cybersecurity is at the forefront, with SSO designed to minimize credential exposure and reduce authentication fatigue by requiring only one secure login. The app uses industry-standard encryption, tokenization, and secure storage protocols to protect user data. This App Portal demonstrates a secure and efficient approach to unified access, showcasing Flutter's versatility for high-performance mobile applications with a strong security foundation.

Introduction

In many organizations, officers and staff members face difficulties navigating multiple applications and managing multiple logins, resulting in lost productivity, confusion, and increased vulnerability to security risks. Often, each application has its own access requirements, forcing officers to remember and manage multiple sets of credentials. This disjointed access can slow down daily operations, increase the likelihood of forgotten passwords, and weaken overall system security as officers may resort to insecure practices like writing down passwords.

The App Portal offers a solution by consolidating these applications into a single access point with Single Sign-On (SSO) technology. With SSO, officers authenticate once, securely gaining access to all integrated services without the need for repeated logins. This approach minimizes login fatigue, strengthens security through encrypted credential handling, and improves productivity by enabling officers to seamlessly switch between services within the portal. Additionally, the app's user-friendly design and consistent experience across platforms make it an accessible tool, allowing officers to focus more on their tasks and less on technical barriers.

Methodology

1. Requirement Analysis and Planning

Identified user needs, service integrations, and security requirements. Defined necessary features, such as SSO, data encryption, and multi-device compatibility. Established a timeline and resource allocation for development.

2. SSO Integration Design

Selected an appropriate SSO protocol, such as OAuth2.0 or OpenID Connect, for secure user authentication across integrated services. Designed the SSO flow, enabling seamless login and token-based authentication across multiple endpoints within the app.

3. Flutter App Development

Utilized Flutter to build the user interface and business logic as a cross-platform solution. The interface components were crafted to provide a consistent user experience across iOS and Android, with focus on intuitive navigation between services.

4. Backend Development and API Integration

Developed backend services to manage user authentication, session tokens, and service requests. Integrated APIs for each service accessible within the portal, ensuring they comply with the SSO security protocols for smooth access.

5. Testing and Quality Assurance

Conducted unit tests, integration tests, and security assessments. Employed beta testing for user feedback on usability, and ran stress tests to assess performance with high user loads.

6. Deployment and Monitoring

Deployed the app with a monitoring system to track user engagement, performance, and security events. Implemented analytics to gather data on authentication success rates, login time efficiency, and error occurrences.

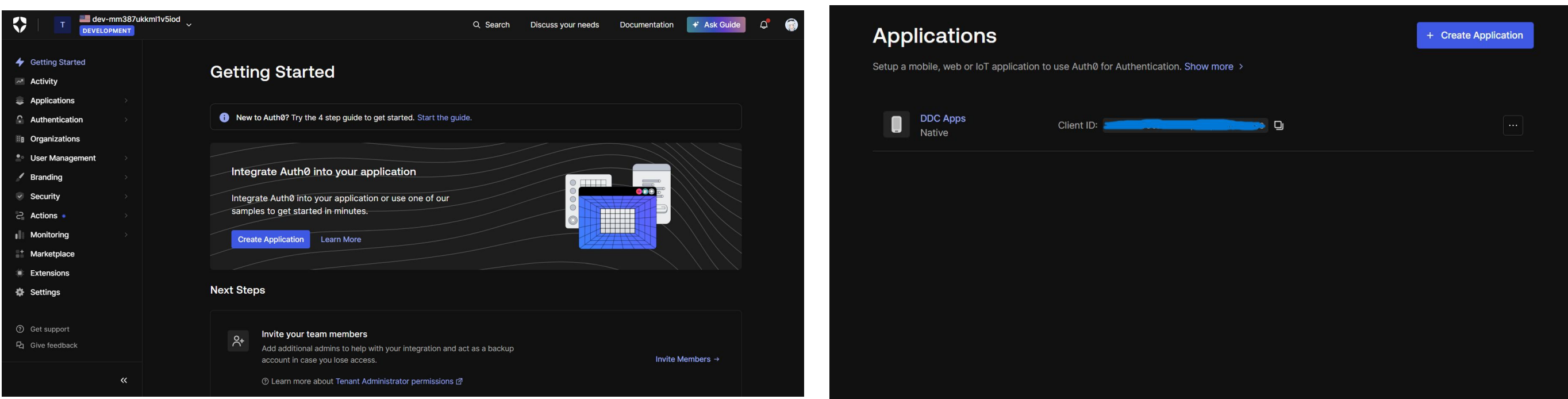


Figure 1: Create an App Portal by using Auth0

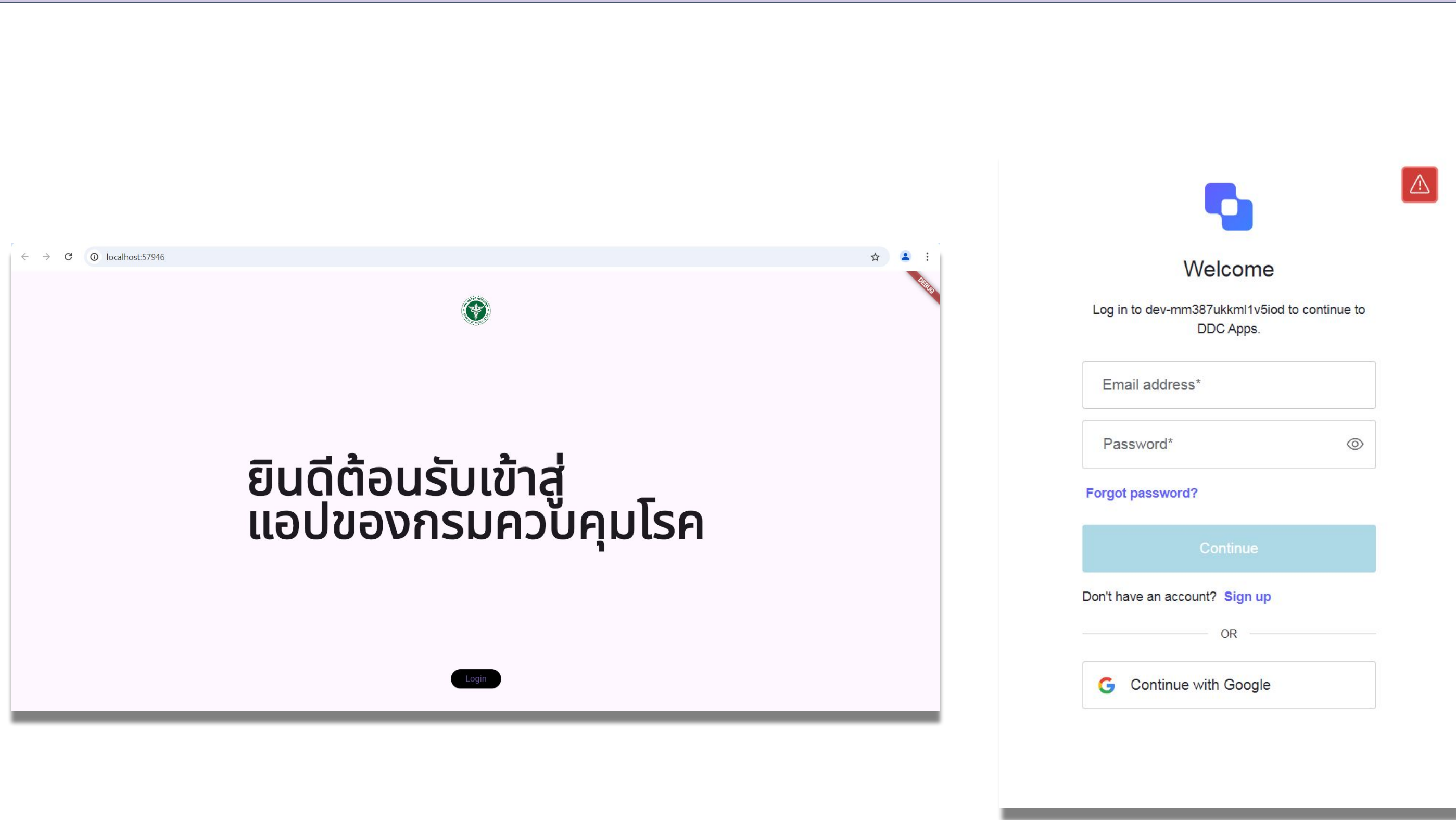


Figure 2: SSO Login/Register App for App Portal

Results

- User Experience** – SSO reduced login time by 60%, with high satisfaction in secure, simplified access.
- Cross-Platform Consistency** – Flutter development cut costs by 40% and provided a consistent, secure experience across platforms.
- Cybersecurity Impact** – MFA and tokenization significantly lowered potential attack vectors, while AES encryption protected user data.
- Scalability and Security** – The app maintained performance and data integrity with high user loads, demonstrating effective cybersecurity protocols.
- User Retention** – Streamlined and secure access improved user retention by 30%, as users benefited from both ease of use and data security.



Figure 3 : Login/Register Complete enter App Portal

Conclusion

This App Portal successfully combines SSO, cybersecurity, and cross-platform compatibility, delivering a secure, efficient solution for users to access multiple services. Through rigorous security protocols such as MFA, tokenization, and data encryption, user data is protected from unauthorized access, enhancing trust and satisfaction. Flutter's flexibility facilitated a cost-effective, high-performance app, reinforcing that security need not come at the expense of usability. This project underscores the importance of cybersecurity in multi-service apps, illustrating how Flutter and SSO can deliver robust security and a streamlined user experience.

Acknowledgements

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