Umm Al-Qura University
Faculty of Engineering and Computer Science

Software Documentation Project

Course code 1401003123

Tawakkalna Services

Table 1: Team A

Name	Student ID	Task
Sara Alqozi	444008237	lntriduction,Survey,Similar App too Tawakkalna Servces(SingPass-singapore),Non functional Require-ments,System security,interfaces used,Sequence diagram
Razan Abdullah	44410443	Purpose of the Application ,Steps to use the Application ,Similar App to Tawakkalna Servces (MyGov Australia) ,Functionl Requirements ,Design ,use Case Diagram ,Con-clusion

Supervisor:D.Maryam Al-Rashdi

Contents

List of Figures

List of Tables

0.1 Abstract

In this report, we discussed the ”Tawakkalna Services” application, an extension of the main Tawakkalna Services app. We began by describing the application, the problems it solves, the needs it addresses, and its purpose. We also outlined the steps for using the application and compared it to similar applications. Furthermore, we talked about the advantages and disadvantages of competing applications and highlighted what distinguishes Tawakkalna Services. We included a section on the design phase, covering the interfaces, database, programming languages, data models, and general design aspects. Additionally, we addressed the analysis phase, which included both functional and non-functional requirements. Finally, we provided a conclusion that summarizes the entire report.

0.2 Introduction

Before Tawakkalna Services government services relied on in-person visits, paper applications, long waiting times, difficulty accessing information, and a lack of coordination between agencies.

With the implementation of Tawakkalna Services things improved significantly in terms of organization and tracking, helping to control the situation.

Tawakkalna Services app is an integrated platform aimed at facilitating access to a variety of governmental and private services in the Kingdom of Saudi Arabia. The app is characterized by its modern design and user-friendly interface, making it the ideal choice for users who wish to manage their personal information and effectively benefit from the available services.

The Tawakkalna Services application is an extension of the original ”Tawakkalna” app, which was developed initially to address the COVID-19 pandemic.

Reasons for the Existence of the ”Tawakkalna Services” Application Supporting the digital transformation that the Kingdom of Saudi Arabia aims for under Vision 2030. Providing easy and quick access to various governmental and electronic services.Simplifying processes and reducing reliance on traditional paper transactions.Improving the efficiency and speed of providing governmental services to citizens and residents, in addition to facilitating the management of various bookings and appointments, such as health or governmental appointments. Instead of using multiple applications to access different governmental services, ”Tawakkalna Services” aims to provide a unified platform that includes all these services in one place, improving the user experience.

The application is designed to address several issues faced by citizens and residents in the Kingdom of Saudi Arabia, particularly concerning dealing with governmental and daily life services.

The application addresses a wide range of needs that have emerged due to digital evolution and transformations occurring in the Kingdom of Saudi Arabia, particularly under Vision 2030. The main objective is to enhance user experience by providing multiple services on a single platform.

0.2.1 Purpose of the Application

The purpose of the new application is to expand the range of digital services provided to citizens and residents in the Kingdom of Saudi Arabia, covering various government and daily life areas, making it easier for users to access a variety of services in one place.

0.2.2 SURVEY

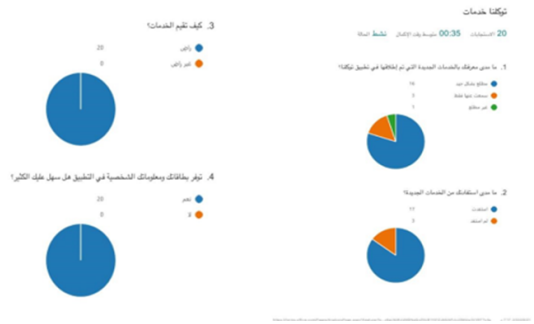

Figure 1: Tawakkalna app evaluation

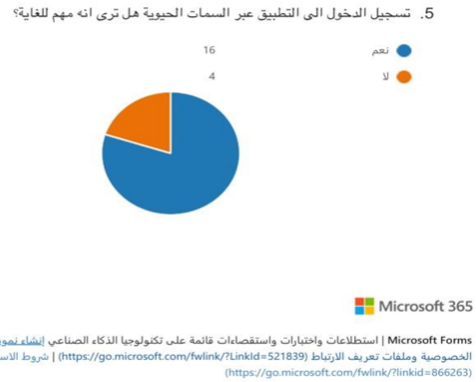

Figure 2: Tawakkalna app evaluation(continued)

Based on data extracted from the survey, there is a good awareness and noticeable benefits of using the application among users.

1. Integrating Services in One Platform

- The application allows the integration of various governmental, health, and entertainment services into a single platform.

2. Improving User Experience

- The application provides an easy-to-use interface that simplifies access to governmental documents and personal permits.

3. Enhancing Security and Privacy

- Ensuring the protection of personal data and sensitive information.

4. Supporting Digital Transformation

- In line with Saudi Arabia's Vision 2030, the application supports digital transformation by providing integrated governmental and electronic services.

0.2.3 Steps to Use the Application

- Download
  - Login / Create Account
  - Enter ID and Password
  - Verification code will be sent to you
  - Enter the code in the app
  - In case you forget your password
  - Recover Password
  - ID Number and Date of Birth
  - A verification code will be sent to you
  - New Password
  - Confirm Password
  - Login
  - Browse directly in the app

0.2.4 Similar App to Tawakkalna Services

Table 2: Similar App to Tawakkalna Services

Application	SingPass(singaopre)	MyGov(Australia)
Advantages	1-provides a unified portal to access a wide range of Australian government services 2- users can manage social welfare benefits, such as unemployment sup-port 3- It provides user-friendly interface 4-It provides support in multiple languages.	1-Single Gateway: users do not need to download multiple applications.2-Electronic Signature: It allows users to sign contracts.3-Service Integration: Users can access some private services.4-insurance through the same account, enhancing integration between the public and private sectors.
disadvantage	1-Limited Private Sector Integration.2-Geographical Limitations: Some features may be restricted in certain regions.3-Limited Notifications.-health reminders such as vaccination appoint4-ments are not centrally available in the app.	1-some users may find the interface com-plex, especially when dealing with multiple ser2-vices like taxation and pensions.3-It does not offer services like emergency permits or mobility permissions during health crises.4-It does not provide services related to emer-gency situations directly.-requires multiple security verification steps

Tawakkalna Services is distinguished by its focus on health aspects and mobility permits, with the potential to expand its services to include the private sector and enhance integration with other sectors such as banking and education. Although it does not provide a certified digital signature, it facilitates electronic document management and offers services related to Hajj and Umrah,focusing on the needs of citizens and residents in Saudi Arabia.

0.3 Analysis

“In the analysis phase, the system focuses on the functional and non-functional requirements of the application, from login to logout or account deletion.”

0.3.1 Functional Requirements

1. Register a New Account (Citizen / Resident) Direct registration requires entering the passport number or Gulf ID number for Gulf citizens, along with the mobile number and selecting the nationality.

2. Reset Password (Citizen / Resident) This feature allows users to reset their password if forgotten. Learn how to use this service.

3. Update Mobile Number Citizens and residents registered in the Absher system must first change their mobile number in Absher, and then update their mobile number in Tawakkalna Services.

4. Services Users can learn about new services in the Tawakkalna app, the most used services, and also benefit from general, religious, professional, health, educational services, and services for family members and dependents.

5. Emergency Assistance This service enables users of the Tawakkalna app to report incidents to the Saudi Red Crescent Authority regarding accidents involving themselves or others.

6. My Prescription This service allows users to view active and inactive medical prescriptions, share them with a guardian, and locate the nearest participating pharmacy to collect medication.

7. Religious Services - Pilgrimage Gateway The gateway aims to facilitate users by providing a single location that gathers services related to the Ministry of Hajj and Umrah.

8. Educational Services - My School Platform Data The Tawakkalna app provides access to login data for the My School platform, sent by the Ministry of Education, allowing parents to view their children’s accounts on the platform.

9. Family Members and Dependents Services This service allows users to view a list of family members and dependents.

10. Event Services - Al-Ol Park This service allows users to browse and purchase upcoming tickets for events at Al-Ol Park.

11. Delete Account This service enables users to submit a request to delete their account in the Tawakkalna Services app. Learn how to access this service.

0.3.2 Non-Functional Requirements

1. My CV Service The ”My CV” service available in the information icon allows users to view the data present in their CV.

2. My Cards Service The ”Tawakkalna” app offers a digital documents service (”My Cards”) for users to display personal documents, vehicle documents, professional documents, educational documents, health insurance documents, volunteer documents, and other documents for citizens, residents, and visitors.

3. Access to Privacy Policy This feature allows users to view the privacy policy.

4. Frequently Asked Questions This feature enables users to browse frequently asked questions.

5. My Documents This service allows users to view all of their personal documents, such as passports, deeds, or power of attorney documents.

6. Achievements This service enables users to view their awards for organ donation, charitable contributions, and other charitable organizations.

0.4 Design

“In the design phase, the focus was on cloud infrastructure, scalability, programming languages on both sides, database management, and system security through data encryption, identity and access management, and security tools. Additionally, APIs, monitoring tools, and performance optimization were considered in the design of the application system, and finally, the application’s integration with other systems.”

1. Infrastructure:

- Cloud Infrastructure:

- The system relies on a robust cloud infrastructure managed by the Saudi Data and Artificial Intelligence Authority (SDAIA) in collaboration with the National Information Center (NIC). - This infrastructure utilizes scalable computing resources to support a large number of operations and services.

- Scalability:

- Given that the application interacts daily with millions of users, the system architecture must support scalability.

- Technologies such as Auto-Scaling are used to automatically adjust server resources based on usage demands.

- Load Balancers are employed to distribute the load among servers, ensuring stable performance during peak demand.

2. Programming Languages:

- Backend:

- Strong languages like Java, Python, and Node.js are used to develop backend services.

- Frontend:

- React Native or Flutter are used to develop mobile applications supporting both iOS and Android.

- HTML5, CSS3, and JavaScript are used for web interfaces.

3. Database Management:

- Relational databases like PostgreSQL or MySQL are used to manage structured data (e.g., user data, permissions, and services).

- Additionally, NoSQL databases like MongoDB are used to store unstructured data that requires high performance and rapid response (e.g., event logs or location data).

- Redis or Memcached can be utilized to enhance performance through caching.

- Distributed databases are employed to ensure data availability and easy access for users.

4. System Security:

- Data Encryption:

- Encryption protocols such as SSL/TLS are used to secure communications between clients and servers, especially when handling sensitive data like health permits or payments. - AES-256 is used to encrypt data stored in databases.

- Identity and Access Management (IAM):

- Protocols like OAuth 2.0 and OpenID Connect are used to manage user authentication and authorization for accessing various services.

- Two-Factor Authentication (2FA) support ensures account security.

- Security Tools:

- Web Application Firewall (WAF): Protects the system from common attacks such as SQL injection and cross-site scripting (XSS).

- Intrusion Detection Systems (IDS): Detect any hacking attempts or suspicious activity within the system.

5. APIs:

-REST or GraphQL APIs are used to facilitate communication between the different components of the system.

-The interfaces must be scalable to handle increasing demand and process millions of requests daily.

-API security is ensured through API gateways like Kong or AWS API Gateway, which provide authentication and authorization.

6. Monitoring and Performance Tools:

-Tools like Prometheus and Grafana are used to monitor system performance in real-time and analyze data.

-AWS CloudWatch or Azure Monitor can be used to track logs and performance, detecting issues or response delays.

-The ELK Stack (Elasticsearch, Logstash, Kibana) is used for comprehensive log analysis and system performance monitoring.

7. Integration with Other Systems:

-The system must be designed to integrate with various other government services, such as the Ministry of Health and the Ministry of Interior.

-This is achieved through open APIs that allow for secure and flexible integration between the system and other external systems.

0.4.1 Interfaces used

The key interfaces used and how they are interconnected:

Government APIs

•The application relies on various government APIs to communicate with systems from different ministries and government agencies, such as the Ministry of Interior, Ministry of Health, and Ministry of Education.

•Through these APIs, information related to services such as health permits, digital identity, violations, and government appointments is retrieved and displayed to users within the application.

Figure 3: Government APIs

Messaging and Notifications API

•The Messaging and Notifications API is used to send notifications to users about various updates, such as vaccination appointments or mobility permits.

•This API is integrated with the cloud infrastructure, allowing for the rapid and widespread delivery of notifications to a large number of users simultaneously.

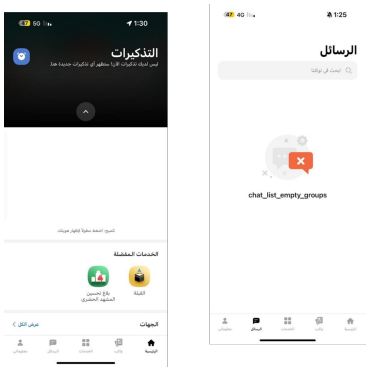

Figure 4: Messaging and Notifications API

Personal Information Management API

•The application provides an interface that allows users to manage their personal data through the automatic collection of information from various government entities. Users can access information such as ID cards, licenses, visas, and other documents.

•This API is connected to the Civil Affairs systems and the Ministry of Foreign Affairs, offering a unified access point for all personal information.

Figure 5: Personal Information Management API

Digital Identity API

•The application uses the Digital Identity API to authenticate users and verify personal data through the National Unified Access platform (Nafath).

•This API is directly connected to the Ministry of Interior and Civil Affairs systems to verify user data, ensuring security and reliability.

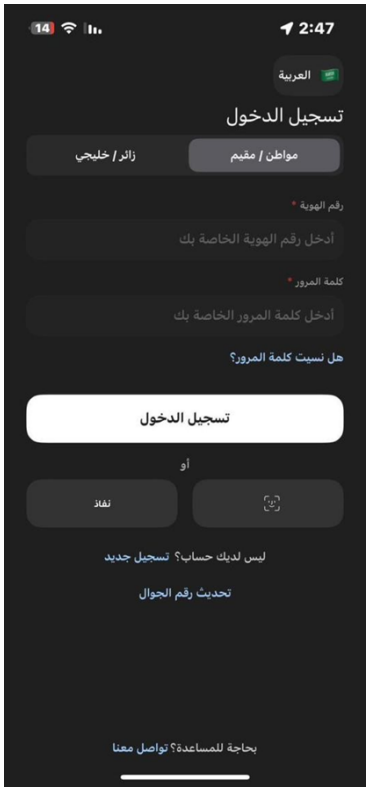

Figure 6: Digital Identity API

How these APIs are interconnected: - All these APIs rely on seamless integration between various government services through strict security protocols to ensure secure communication between systems.

- A Microservices architecture is used to distribute responsibilities

0.4.2 Data Model

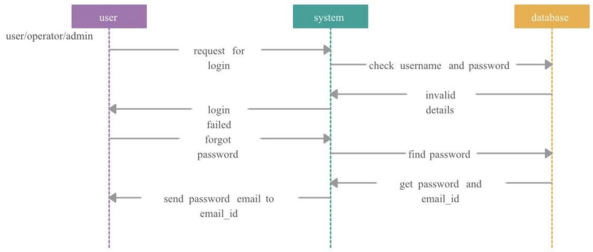

Figure 7: forgot password sequence diagram

The following image shows a sequence diagram for a login process in a system similar to the "Tawakkalna Services" application. It illustrates the interaction between the user, the system, and the database during the login and password recovery process. In our system, the password is recovered by clicking on "Forgot Password," then entering the national ID number and date of birth (instead of an email). A verification code is sent to the phone number registered in "Absher," after which the new password is entered and confirmed.

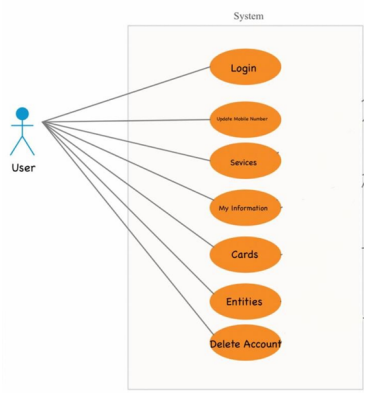

Figure 8: Use case diagram for requirements analysis

The image shows a Use Case Diagram that illustrates the different interactions a user can perform with the system. The user interacts with the system through the following:

1.Login: The user can log into the “Tawakkalna Services” application.

2.Update Mobile Number: The user can change or update their registered mobile number via Absher.

3.Services: The user can access various services available within the system.

4.My Information: The user can view digital documents or modify their personal information.

5.Cards: The user can view their personal cards through the application.

6.Entities: The user can view or interact with entities linked to the system.

7.Delete Account: The user can delete their account from the system.

This diagram simplifies the main operations a user can perform within the system, helping to understand the interaction between the user and the system.

0.5 Conclusion:

The “Tawakkalna Services” application was developed to facilitate access to government and private services in Saudi Arabia, which previously relied on paper applications. The purpose of the transactions is to expand the range of digital services provided to citizens and residents. Key reasons for the app’s existence include supporting digital transformation, easing access to services, reducing reliance on paper transactions, enhancing efficiency, and offering a comprehensive service for users.

The application addresses several issues, such as dispersed services and applications, reliance on paper transactions, difficulty in booking government appointments, managing permits, and quickly accessing personal information. These problems were solved through the app.

Additionally, the application meets user needs, including the need for a unified platform for government services, simplifying daily processes, managing official documents and records, providing reminders and alerts for services, and improving access to events and entertainment.

A survey was conducted to gauge public opinion on the application, revealing good awareness and noticeable benefits from using it, along with clear steps on how to use the app.

Similar applications to “Tawakkalna Services” exist in Singapore and Australia, but “Tawakkalna Services” stands out by offering a broader range of services compared to these similar apps.

The application provides comprehensive support for users, from login to account deletion, along with common questions and user-friendly features. The app has a large database, and its design includes a use case diagram outlining functional requirements, a password recovery sequence diagram, and a focus on security, performance, programming languages, database management, system integration, and easy-to-use interfaces like login, services, reminders, and personal information.

0.6 Reference:

Creately. (2024). Forgot password sequence diagram. Creately.
https://creately.com/diagram/example/h1d6v26e1/forgot-password-sequence-diagram
NATIONAL INFORMATION CENTER. (2024). توكلنا .[تطبيق] App Store.
https://apps.apple.com/sa/app/
Services Australia. (2024). myGov .[تطبيق] App Store.
https://apps.apple.com/sa/app/mygov/id938033081?l=ar
Government Technology Agency. (2024). Singpass .[تطبيق] App Store.
https://apps.apple.com/sa/app/singpass/id1340660807?l=ar
Microsoft. (2024). Microsoft Forms. Microsoft Office.
https://forms.office.com/Pages/AnalysisPage.aspx?AnalyzerToken=mqKI1cukebGcofacRSiX0UONqqwn
1egedWw3USPkAv3FR9cP2fw5AZXPs1JiJWv8aLNjWJUMDNaQzZSUE1YS1ZJMUhFUzJDMUw3VVRT
الاصطناعي. والذكاء للبيانات السعودية الهيئة توكلنا. (2024). الاصطناعي. والذكاء للبيانات السعودية الهيئة
https://ta.sdaia.gov.sa/Tawakkalnaar.pdf
Cinergix Pty Ltd. (2008-2024). Creately | Visual Collaboration Diagramming Platform.
Creately.
https://creately.com/
الاصطناعي والذكاء للبيانات السعودية الهيئة توكلنا. (2023). الاصطناعي. والذكاء للبيانات السعودية الهيئة
https://ta.sdaia.gov.sa/
الأوسط. الشرق والمقيم. للمواطن خدمة 140 يجمع خدمات» «توكلنا السعودية: (2022). الأوسط. الشرق
https://aawsat.com/home/article/3620251/