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Computer Science &
Artificial Intelligence
Department

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UMM AL-QURA UNIVERSITY

مُسْتَقَرّ

Software Requirements Specification

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1. Introduction

The "مُستقر" website is a revolutionary platform designed to enhance and streamline the accommodation process for pilgrims. As the number of pilgrims continues to rise and the challenges of managing their accommodation become more complex, there is a pressing need for a comprehensive solution that simplifies and optimizes the planning, organization, and tracking of pilgrims. The "مُستقر" website aims to address these challenges by providing an efficient and user-friendly platform that revolutionizes the way pilgrims are accommodated. By leveraging innovative features, the website aims to transform the pilgrimage experience and ensure a seamless and hassle-free accommodation process for all pilgrims.

1.1 Project Background

Millions of pilgrims embark on the sacred journey of Hajj each year. Ensuring their comfort and well-being during this transformative experience is paramount. However, managing pilgrim accommodation often becomes a complex task due to the sheer volume of attendees and the need to cater to diverse needs.
The current pilgrim accommodation management process often faces challenges due to the increasing number of pilgrims and the complexities of managing room allocation, tracking, and catering to diverse needs. This can lead to inefficiencies, delays, and difficulties in ensuring a smooth experience for pilgrims.
The مُستقر project tackles these challenges head-on by developing a comprehensive software solution for pilgrim accommodation management. This Software Requirements Specification (SRS) document outlines the functionalities, features, and technical specifications that will empower مُستقر to revolutionize the Hajj experience.

1.2 Purpose

The purpose of this Software Requirements Specification (SRS) document for the مُستقر project is to define the functional and non-functional requirements for a comprehensive software solution that enhances and manages pilgrim accommodation. This document clarifies the technical specifications and features essential for the مُستقر website. It details how the system streamlines data entry using virtual pilgrim cards, improves planning and organization for Hajj organizers, and ultimately ensures a comfortable and convenient stay for pilgrims.

1.3 Scope

The scope of this project includes developing a website (مُستقر) to improve the ease of serving pilgrims and tracking them quickly, in addition to facilitating the allocation of rooms and providing easy means to add features to meet their diverse needs.
Scope items include:

1. Offer Real-Time Tracking:
   - Enable efficient room allocation and track room availability in real-time.

2. Simplify Room Assignment:
   - Facilitate a streamlined process for allocating rooms based on pilgrim preferences and allow for adjustments as needed.

 3. Reports and analytics:

- Allows administrators to generate reports and analytics on occupancy rates, revenue, and booking trends.

4. Integration with Nusuk Pilgrim Virtual Cards:
- It allows reading data and retrieving personal data from virtual Hajj cards into the system.

1.4 Definitions, Acronyms, and Abbreviations

Term	Definition
Nusuk pilgrim virtual cards	*The digital card accessible through the Nusuk application, providing extensive information about the pilgrims, such as their place of residence, health records, itinerary, and additional services. The card will facilitate movement through checkpoints, as it will prove a pilgrim's identity.*
(مُستقر)	*The name of the website, which directly translates to "Place of residence and stability"*
Housing official	*An authorized individual who utilizes the مُستقر system to manage pilgrim housing arrangements on-site on behalf of a pilgrim office.*

1.5 References

- (n.d.). وزارة الحج والعمرة - المملكة العربية السعودية [Ministry of Hajj and Umrah - Kingdom of Saudi Arabia]. Retrieved from https://www.nusuk.sa/ar
-(n.d.). Agoda. [Mecca, Saudi Arabia]. Retrieved from https://www.agoda.com/ar-ae/city/mecca-sa.html?cid=1844104
-Chat GPT
-Canva

1.6 Overview

The (مُستقر) website aims to simplify booking, customization and tracking of rooms while offering customizable features to enhance the pilgrim experience, ultimately ensuring smoother organization and efficiency for both officials and pilgrims.
The remainder of this document includes three chapters. The second one provides an overview of the system functionality and system interaction with other systems. This chapter also
introduces different types of stakeholders and their interaction with the system. Further, the chapter also
mentions the system constraints and assumptions about the product.
The third chapter provides the requirements specification in detailed terms and a description of the
different system interfaces. Different specification techniques are used in order to specify the requirements more precisely for different audiences.

2. General Description

The (مُستقر) website is a comprehensive system designed to simplify and organize the management of pilgrim accommodations. It functions within the context of the pilgrimage

organization process, interacting with other systems and providing essential functionality to various users. This overview will introduce the basic functionality of the (مُستقر) website, describe the users who will use the system, and outline the constraints and assumptions associated with its implementation.

2.1 Product Perspective

The مُستقر website is a web-based software application designed as a comprehensive solution for simplifying and organizing pilgrim accommodation management. It operates independently with its own user interface and functionalities, offering a user-friendly experience for officials with varying technical expertise.

The مُستقر website interacts with other systems and platforms to seamlessly integrate with existing infrastructure. This includes:

- **Nusuk Pilgrim Virtual Cards:** Enables the retrieval and update of essential pilgrim information for efficient accommodation management.

- **Accommodation Providers:** Facilitates data exchange with hotels, guesthouses, and other establishments to maintain accurate room availability and allocations.

The website provides tools and features that simplify accommodation planning, real-time occupancy tracking, and reporting capabilities. These functionalities empower officials to efficiently allocate rooms, monitor occupancy levels, and generate meaningful insights for informed decision-making.

2.2 Product Functions

The (مُستقر) website performs several key functions to simplify and organize the management of pilgrim accommodations. These functions include:

1. Accommodation Allocation: The software enables officials to allocate rooms efficiently, considering factors such as room types, occupancy levels, and specific pilgrim preferences or requirements.

2. Room Inventory Management: Officials can maintain an updated inventory of available rooms, including details such as room types, capacities and availability status.

3. Occupancy Tracking: The software allows officials to monitor occupancy levels in real-time, facilitating informed decision-making and optimizing room allocation to maximize capacity while avoiding overbooking and double booking.

4. Reservation Management: Officials can manage pilgrim reservations, including creating, modifying, and canceling reservations as needed. Reservation details, such as check-in/check-out dates, room assignments are recorded and tracked within the system.

5. Integration with Nusuk Pilgrim Virtual Cards: Seamless integration with Nusuk pilgrim virtual cards ensures smooth data entry for each pilgrim, enhancing accuracy and efficiency in managing pilgrim accommodations.

6. Reporting and Analytics: The software provides reporting and analytics capabilities, allowing officials to generate various reports, such as occupancy rates, reservation summaries, and financial analysis, to gain insights and make informed decisions.

7. User Management: The software includes user management functionalities to define roles and permissions for different officials involved in managing pilgrim accommodations, ensuring appropriate access controls.

2.3 User Characteristics

The (مُستقر) website caters to various user types with distinct roles and responsibilities:

1. **Pilgrim Officials/Administrators:**

   o Manage and oversee pilgrim accommodations.

   o Allocate rooms, track occupancy, and generate reports.

   o User roles within this category might include Housing Supervisors (full access) and Booking Agents (limited access).

2. **Accommodation Providers:**

   o Hotels, guesthouses, and other establishments offering pilgrim accommodation.

   o Interact with the system to provide room availability information, update occupancy status, and receive room allocation updates.

3. **Pilgrims:**

   o Indirectly benefit from the system's functionalities.

   o The application ensures fair and efficient room allocation, considering factors like gender segregation and accessibility.

4. **Managers and Decision-Makers:**

   o Rely on reports and analytics to make informed decisions about accommodation management strategies and resource allocation.

   o Expect accurate and timely information to optimize resource allocation.

2.4 General Constraints

1. **Security and Privacy:** The مُستقر website prioritizes the security and confidentiality of user data. It will implement robust security measures to prevent unauthorized access, data breaches, and ensure sensitive information remains secure. These measures include:

- **User Authentication:** Users will be required to log in with secure credentials to access the system.
- **Access Controls:** User roles and permissions will be implemented to restrict access to sensitive data based on user needs.

2. **Scalability and Performance:** The مُستقر website is designed to be scalable and handle a large volume of data and users, especially during peak Hajj season. The system architecture will utilize strategies to ensure smooth operation even during high traffic periods. These strategies may include:

- **Load balancing:** Distributing incoming traffic across multiple servers to prevent overloading and maintain responsiveness.
- **Cloud-based infrastructure:** Leveraging the scalability and elasticity of cloud computing to accommodate fluctuating user demands.

- Compatibility and Integration: The website should work on different devices and operating systems that people commonly use. It should also be able to connect and share information with other systems, like databases or other tools used for managing accommodations.

- Usability and Accessibility: The website should be easy to use, with clear instructions and intuitive navigation. It should be designed so that people with different levels of technical knowledge can use it comfortably. It should also consider the needs of people with disabilities.

- Reliability and Availability: The website should work reliably and be available for users whenever they need it. It should have backup systems in place to prevent downtime and ensure that users can access its important features without interruptions.

- Compliance with Regulations: The website should follow the laws, rules, and standards related to data protection and privacy. Also it should be authorized and approved by the Ministry of Hajj because it contains sensitive information related to pilgrims, which will be extracted from Nusuk pilgrim virtual cards.

- Cost-effectiveness: The development, deployment, and maintenance of the website should be done in a way that is efficient and doesn't exceed the available budget. It should be sustainable in the long run without incurring excessive costs.

2.5 Assumptions and Dependencies

Assumptions:

o **Availability of Nusuk Pilgrim Virtual Cards:** The مستقر website relies on successful integration with Nusuk pilgrim virtual cards to retrieve and update pilgrim information. We will collaborate with the relevant authorities to ensure a seamless integration process. A backup plan will be established in case of unforeseen delays or technical issues with Nusuk card integration. This

plan may involve utilizing alternative data sources or manual data entry procedures as a temporary solution.

- o **Training and Familiarity:** It is assumed that users responsible for managing accommodations through the مُستقر website will receive adequate training. The training will familiarize them with the user interface, functionalities, and best practices for efficient data entry, accurate allocation, and effective utilization of the system's features. We will also consider the varying technical literacy levels of users and design the training materials and user interface accordingly.

Dependencies:

- o **Network and Connectivity**: The website assumes a stable and reliable network and internet connectivity to allow seamless communication. Uninterrupted network connectivity is crucial for timely data retrieval, updates, and system functionality.

- o **System Maintenance and Support:** The software assumes the availability of ongoing maintenance and support for the system. It is assumed that there will be a dedicated team or personnel responsible for addressing any issues, applying necessary updates, and providing technical assistance to ensure the system's continuous operation and optimal performance during the Hajj season.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interface
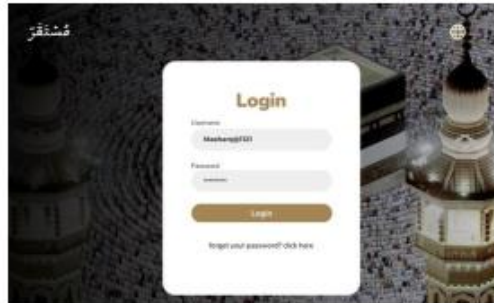
Figure 1 Display log in page
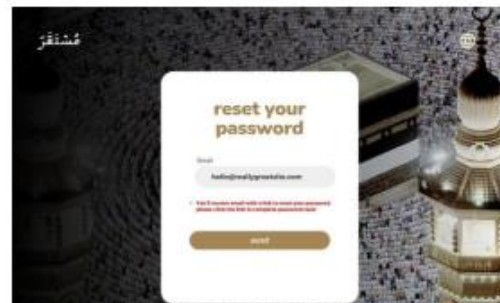
Figure 2: Password Reset for Forgotten Password
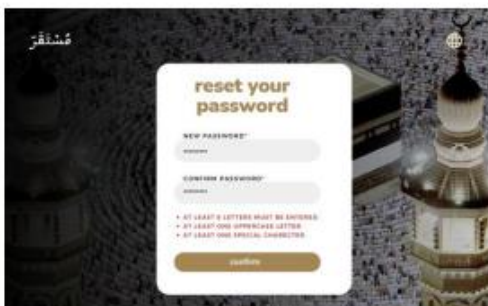
Figure 3 Display the constrains for the password
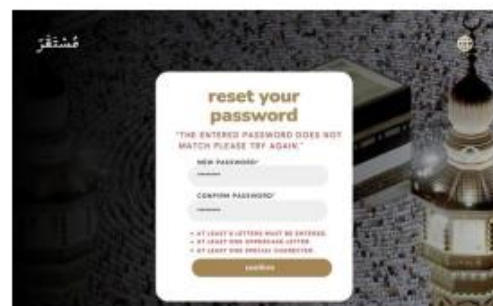
Figure 4 Display massage: the password doesn't match

Figure 5 Display massage: the password updated successfully
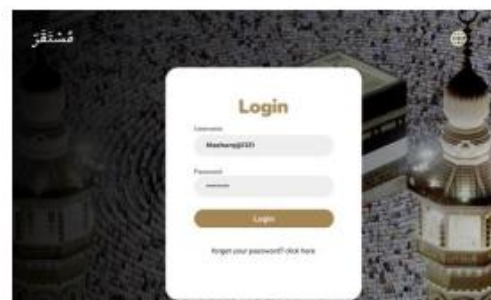
Figure 6 Return to log In page

Figure 7 Display services page

Figure 8 Display the user management page

Figure 9, 10 Display the Roles and permissions that a manager can choose

Figure 11, 12 Display the Roles and permissions that a manager can choose

Figure 9, 10 Display the Roles and permissions that a manager can choose

Figure 11, 12 Display the Roles and permissions that a manager can choose
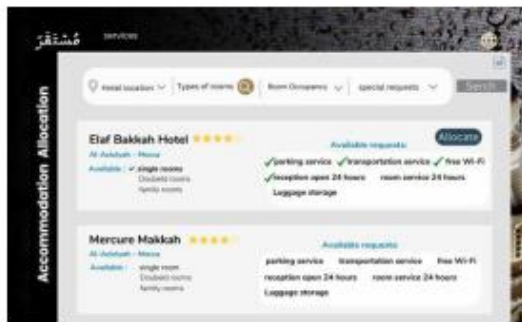
Figure 13 Display the allocation page
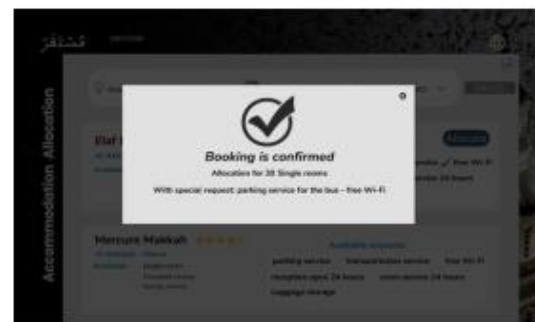
Figure 14 Display that the allocation process is confirmed

Figure 15 Display an error message for unavailable rooms

Figure 16 Display the Room inventory management

Figure 17 Display an error massage for the user that dosn't have the right permission

Figure 18 Disply an error massage to notify officials of discrepancies requiring investigation.

Figure 19 The officials shall enter the pilgrim permit number for the housing process.

Figure 20 Disply the personal information of the pilgrim.

Figure 21 The officials shall be able to edit the booking information and save it.

Figure 22 Disply an error massage for the officials to complete booking information.

Figure 23 Display a warning message before confirming the cancellation of an allocation.

Figure 24 Display a confirmation message for a successful update.

Figure 25 Display the reports and analytics page. including the available parameters.

Figure 26 Display a reservation summary report using the chart format.

Figure 27 Display a room occupancy report using the table format.

3.1.2 Hardware Interfaces

The مُستقر system shall be accessible through a web application interface, allowing users to interact with the system using any device with a standard internet browser and internet connectivity.

3.1.3 Software Interfaces

- **External APIs:**
  - **Nusuk API:** The system will integrate with the Nusuk API to retrieve pilgrim information such as names, passport numbers, nationalities, and potentially visa details based on pilgrim permit numbers. This will streamline data entry and improve data accuracy.
  - **Accommodation Booking System API:** The system may integrate with an API from a hotel reservation system to automate the process of booking accommodation for pilgrims. This would allow for real-time availability checks, booking confirmation, and potentially data exchange regarding room details.

3.1.4 Communications Interfaces

The system will communicate and operate via Wi-Fi.

3.2 Functional Requirements

This section describes specific features of the (مُستقر) project.

3.2.1 Sign In

3.2.1.1 Introduction

The User Sign-In feature provides a secure and reliable authentication mechanism for officials to access the accommodation management system. It ensures that only authorized officials can log in and perform their designated actions within the system.

3.2.1.2 Inputs

- Unique credentials: Officials are required to enter their username and password during the sign-in process.

3.2.1.3 Processing

- Officials enter their username and password to initiate the sign-in process.
- The system verifies the provided credentials against the stored user database to ensure authorized access.
- The system supports password recovery mechanisms, such as password reset through the email associated with the account , to assist officials in regaining access to their accounts if needed.

3.2.1.4 Outputs

- If the provided credentials are valid and the sign-in process is successful, officials are granted access to their respective roles and permissions within the accommodation management system.
- Officials can perform authorized actions and utilize system functionalities based on their assigned roles and permissions.

3.2.1.5 Error Handling

- If officials enter invalid credentials during the sign-in process, the system displays appropriate error messages to notify officials and prevent unauthorized access.
- Error messages provide specific feedback to help officials identify and correct the issues with their credentials.
- The system implements security measures to protect against unauthorized access attempts and potential security breaches.
- In the event of forgotten passwords or account access issues, officials can utilize password recovery mechanisms such as password reset through email or security questions to regain access to their accounts securely.
- In case of resting the password, security measures are enforced to enhance system security, including password complexity requirements (e.g., minimum length, character types) and periodic password updates.

3.2.2 User Management

3.2.2.1 Introduction

The User Management feature enables designated officials from each pilgrim office to manage user credentials and access permissions within the accommodation management system. This feature ensures that officials have the necessary tools to assign appropriate roles (Position title) and permissions to users, allowing them to perform their duties effectively and securely.

3.2.2.2 Hajj Season Onboarding

- At the beginning of each Hajj season, service offices will be required to submit an official email requesting access to the مُستقر system. This email should include relevant information about the service office (e.g., name, location, contact details).
- Upon receiving the request, system administrators will create a new user account for the service office with access limited to user management functionalities. This ensures service offices can manage their own user accounts within the system (e.g., adding/removing staff).
- The system will generate a unique username and password for the service office, which will be sent via email to the designated contact address provided in the initial request.

3.2.2.3 Input

- User information (email, ID number)

- User roles and permissions: Officials can define roles and assign specific permissions to different user types involved in managing pilgrim accommodations.

3.2.2.4 Processing

- Officials with the necessary administrative privileges access the User Management functionality.
- Officials define roles that reflect the responsibilities and access levels required for managing pilgrim accommodations (e.g., Housing Supervisor, Booking Agent).
- Officials assign specific permissions to each role to control access to system features and information (e.g., a Housing Supervisor might have permission to modify room assignments, while a Booking Agent might have permission to create and manage reservations).
- The system enforces access controls based on the assigned roles and permissions, ensuring appropriate data security.
- Officials can modify roles and permissions as needed to accommodate changes in responsibilities or organizational requirements.
- Service offices can utilize the User Management functionalities to create user accounts for their staff with appropriate roles and permissions within their designated access level (limited to user management functionalities).

3.2.2.5 Outputs

- User credentials: The system generates and manages user credentials for officials with the appropriate access.
    - System administrators create credentials for service offices upon receiving their access request email.
    - Service offices create credentials for their staff members using the User Management functionalities.
- User roles: Officials can define roles and assign them to users based on their responsibilities.
- User permissions: Officials can assign specific permissions to each role, determining the features and information accessible to users.

3.2.2.6 Error Handling

- The system verifies that officials accessing the User Management functionality have the necessary administrative privileges.
- Officials receive appropriate error messages if they attempt to perform actions beyond their assigned privileges.
- The system enforces access controls to prevent unauthorized modifications to user roles and permissions.
- The system ensures data security by granting access to specific features and information based on user roles, protecting sensitive information from unauthorized access.

3.2.3 Accommodation Allocation

3.3.1 Introduction
The Accommodation Allocation feature enables officials to book rooms in bulk from hotels for pilgrims. This feature streamlines the process of allocating accommodations based on pilgrims' preferences, requirements, and the availability of rooms.

3.2.3.2 Inputs
- Pilgrim preferences and requirements: Officials input the specific preferences and requirements of pilgrims campaign, such as the desired location, room type, occupancy, and any special requests.
- Room availability: The system retrieves information about room availability in hotels through integration with their reservation systems or a designated data feed.

3.2.3.3 Processing
- Officials access the Accommodation Allocation feature through the user interface.
- Officials input the preferences and requirements of pilgrims, including the desired location, room type, occupancy, and any special requests.
- The system integrates with accommodation providers' reservation systems or a designated data feed to retrieve real-time information about room availability.
- The system validates the availability of selected rooms in the designated hotels to avoid double bookings.
- If the selected rooms are available, the system proceeds with the allocation process.
- Officials can specify any special requests or accommodations needed by pilgrims during the allocation process.

  - These special requests might be communicated to the hotels electronically through the system's integration.

- The system updates the room availability status in both the مُستقر system and the accommodation providers' systems to reflect the allocated rooms and ensure they are no longer available for other bookings.

3.2.3.4 Outputs
- Allocated accommodations: The system confirms and records the allocated rooms for pilgrims based on their preferences and requirements.
- Special requests: Any special requests or accommodations specified by officials during the allocation process are recorded and communicated to the hotels.

3.2.3.5 Error Handling

- The system performs validation checks to ensure that the selected rooms are available before allocating them to pilgrims, preventing double bookings.
- In case of unavailability of selected rooms, the system provides appropriate error messages to officials, prompting them to select alternative accommodations or adjust the allocation criteria.
- Officials receive feedback on the allocation status, ensuring transparency and accurate communication with pilgrims regarding their accommodations.

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- The system maintains an audit trail of allocation activities for accountability and troubleshooting purposes.

3.3.1.6 Integration with Accommodation Providers

The مُستقر system integrates with accommodation providers' reservation systems or a designated data feed to retrieve real-time room availability information. This integration helps streamline the allocation process and avoid overbooking situations.

- Upon allocation confirmation by officials, the system might automatically send an email notification to the hotels with details about the booking, requesting confirmation.
- Once confirmation is received from the hotels (or upon successful allocation through the integrated system), the مُستقر system sends a confirmation email to the booking party (e.g., pilgrim office) informing them of the successful allocation.

3.2.4 Room Inventory Management

3.2.4.1 Introduction

The Room Inventory Management feature ensures the system maintains an accurate and updated inventory of rooms allocated to pilgrim groups. This feature reflects room bookings made through the Accommodation Allocation function and updates based on occupancy changes managed within the Housing Management function. It provides officials with essential information for effectively managing pilgrim accommodations.

3.2.4.2 Inputs

- No user inputs are required for this feature. The system automatically updates based on actions performed through other functionalities.

3.2.4.3 Processing

- The system integrates with the Accommodation Allocation function to receive information about rooms booked by pilgrim offices. This information includes:
  o Hotel details (name, location)
  o Number of rooms booked
  o Room types (single, double, suite, etc.) with their respective capacities and amenities
- The system also integrates with the Housing Management function to reflect changes in room occupancy status. When a housing official marks a room as occupied with pilgrims, this information is reflected in the Room Inventory Management feature.

3.2.4.4 Outputs

- Room inventory: Officials can access and view the inventory of rooms allocated to pilgrim groups. This includes:
  o Hotel details (name, location)
  o Number of rooms allocated for each hotel
  o Room types (single, double, suite, etc.) with their respective capacities and amenities

o Occupancy status of each room (available, occupied)
o Information about pilgrims occupying a room

3.2.4.5 Error Handling

- This feature is read-only and does not involve user alterations or inputs.
- The system ensures the accuracy and reliability of the displayed room inventory by:
  - o Integrating with other functionalities for data updates (Accommodation Allocation, Housing Management).
  - o Implementing data validation checks to identify and address inconsistencies.
  - o Potentially displaying error messages or alerts to notify officials of discrepancies requiring investigation.
- The system maintains data integrity and security measures to prevent unauthorized modifications or access to the room inventory information.

3.2.5 Housing Management

3.2.5.1 Introduction
The Housing Management feature facilitates the entry of necessary details for pilgrims' accommodations. Officials can enter and modify information such as pilgrim names, nationality, visa numbers, and other relevant details. Additionally, the system integrates with Nusuk pilgrim virtual cards to retrieve and update pilgrim information, reducing manual data entry and ensuring data accuracy.

3.2.5.2 Inputs
- Pilgrim permit number: Officials can enter the pilgrim's permit number, which will be used to retrieve relevant information from the Nusuk pilgrim virtual cards.

3.2.5.3 Processing
- Officials access the Housing Management feature to enter necessary details for pilgrim accommodations.
- Officials input information such as pilgrim names, passport numbers, nationalities, and other required details.
- The system allows officials to specify the check-in and check-out dates for each pilgrim.
- Officials can modify existing reservations, including changing room assignments, updating check-in and check-out dates, and accommodating special requests.
- The system integrates with the Nusuk pilgrim virtual cards to retrieve and update relevant pilgrim information, including personal details, minimizing manual data entry and ensuring data accuracy.

3.2.5.4 Outputs
- Accommodation details: The system stores and manages the entered information, including pilgrim names, passport numbers, nationalities, and check-in/check-out dates.
- Modified reservations: If officials make modifications to existing reservations, the system updates the relevant details, such as room assignments and dates.
- Reservation cancellations: If officials cancel reservations, the system automatically updates the room availability and releases the allocated room for future reservations.

3.2.5.5 Error Handling
- The system validates the entered data to ensure accuracy and completeness.
- In case of missing or invalid information, the system provides appropriate error messages or prompts officials to enter the required information.
- The integration with the Nusuk pilgrim virtual cards ensures the retrieval of accurate and up-to-date pilgrim information, reducing the risk of manual data entry errors.
- The system performs integrity checks and validation procedures to maintain data consistency and prevent data duplication or inconsistencies.
- Officials receive feedback and confirmation upon successful data entry or reservation modifications, ensuring transparency and accuracy in the housing management process.

3.2.6 Reporting and Analytics

3.2.6.1 Introduction

The Reporting and Analytics feature empowers officials to generate comprehensive reports related to accommodations management. This feature provides valuable insights and tracks key metrics, aiding in data-driven decision-making and performance evaluation. Officials can gain a clear understanding of pilgrim occupancy, reservation trends, and other essential aspects.

3.2.6.2 Inputs

No user inputs are required to access reports. However, officials can specify parameters to filter and customize reports for specific needs.

3.2.6.3 Processing

- The system continuously collects and aggregates data from accommodation management activities, including reservations, check-ins, check-outs, and room availability.
- Officials access the Reporting and Analytics feature to select the desired report type.
- Officials can define parameters to filter the report data. These parameters might include:
    - Date range (e.g., daily, weekly, monthly, seasonal)
    - Specific accommodations (e.g., hotels, districts)
    - Pilgrim demographics (e.g., nationality, group size)
    - Reservation status (e.g., confirmed, pending, canceled)
- The system analyzes the data based on the selected report type and specified parameters.
- The system generates the requested report and presents it in a user-friendly format.

3.2.6.4 Outputs

- **Variety of Reports:** The system offers a range of reports to cater to diverse needs. Some examples include:
    - **Occupancy Rate Reports:** These reports provide insights into the occupancy rates of accommodations.

- **Reservation Summaries:** These reports summarize reservation details, including the number of reservations, room types, occupancy levels, and cancellation rates.
    - **Pilgrim Demographic Reports:** These reports analyze pilgrim demographics like nationality or group size to understand pilgrim profiles and optimize future planning.
    - **Trend Analysis Reports:** These reports showcase trends over time, such as occupancy fluctuations or changes in reservation patterns.
- **Data Visualization:** Reports are presented in clear and concise formats, including tables, graphs, and charts, allowing for easy data visualization and interpretation.
- **Report Format:** pdf, Csv, Table, Graph, Charts

3.2.6.5 Error Handling

- The system validates user-specified parameters to ensure they fall within acceptable ranges and adhere to predefined rules.
- In case of errors or invalid parameters, the system provides clear error messages, guiding officials to adjust their selections.
- The system maintains data integrity by considering any recent updates or changes made to accommodation management data during report generation.
- Reports are generated promptly, ensuring officials receive timely insights for informed decision-making.
- The system enforces security measures to restrict access to sensitive data during report generation. Only authorized personnel with appropriate permissions can access reports containing confidential information.

3.3 Use Cases

3.3.1 Use Case Diagram: Overview
The system is designed to manage user access and roles within an organization. It provides a user management feature that allows administrators to define user positions and assign appropriate access levels. Users are assigned credentials based on their position title and the corresponding access permissions they require. The system also includes a sign-in functionality for users to authenticate and access the system.

There are several official positions defined within the system, each with specific access rights. The positions and their corresponding access levels are as follows:

1. Supervisor:
  - Access to sign-in functionality
  - Access to room inventory management
  - Access to reporting and analytics

2. Housing Official:
  - Access to sign-in functionality
  - Access to room inventory management
  - Access to housing management
 - Access to reporting and analytics

3. Reservation Official:
   - Access to sign-in functionality
   - Access to accommodation allocation
   - Access to room inventory management
   - Access to reporting and analytics

4. Financial Manager:
   - Access to sign-in functionality
   - Access to reporting and analytics

The system allows administrators to assign these positions to users and provide them with the appropriate access rights based on their roles and responsibilities. By defining user positions and access levels, the system ensures that only authorized personnel can perform specific actions and view relevant information.
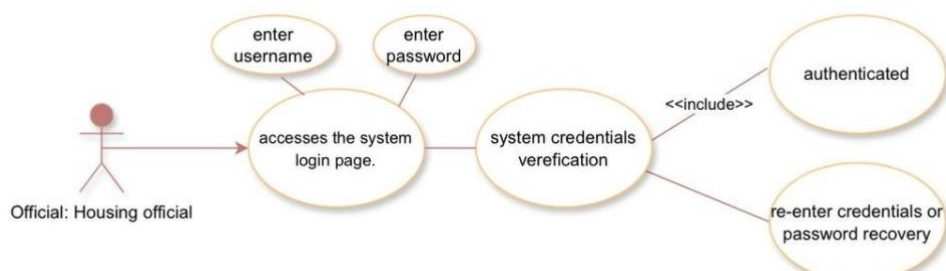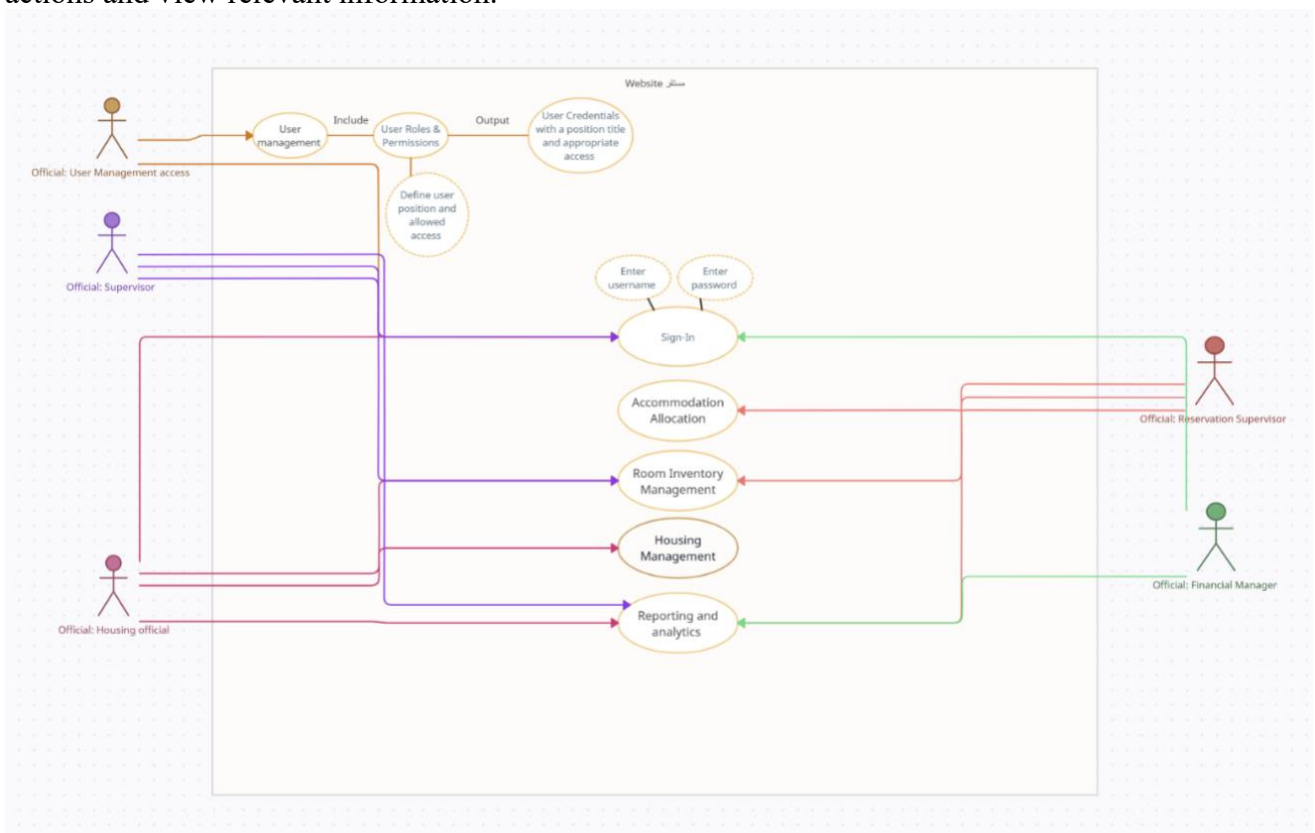
3.3.2 Use Case: Official Signs In

- **Maps to:** Section 3.2.1 Sign In
- **Actor:** Official from a pilgrim office
- **Precondition:** The official has a valid account in the system with an assigned username and password.
- **Flow of Events:**
    1. The official accesses the system login page.
    2. The official enters their username and password.
    3. The system validates the credentials against the user database.
        - **Success:** If the credentials are valid, the system grants access to the official's designated role and functionalities within the system.
        - **Failure:** If the credentials are invalid, the system displays an error message prompting the official to re-enter their credentials.
- **Postcondition:** The official can perform authorized actions based on their assigned role and permissions within the system.
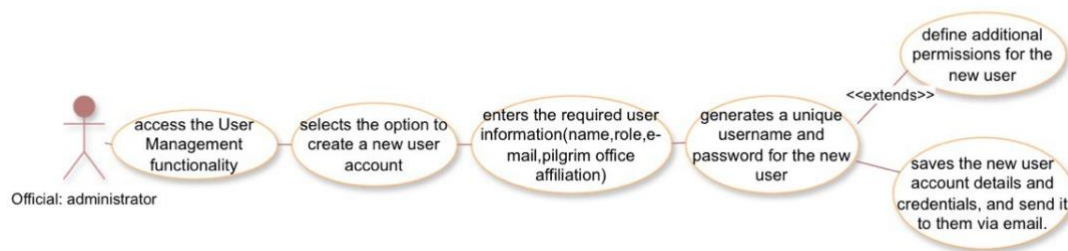

3.3.3 Use Case: Administrator Creates User Account

- **Maps to:** Section 3.2.2 User Management
- **Actor:** Administrator with user management privileges
- **Precondition:** The administrator has access to the User Management functionality.
- **Flow of Events:**
    1. The administrator accesses the User Management feature.
    2. The administrator selects the option to create a new user account.
    3. The administrator enters the required user information, such as name, role, email and pilgrim office affiliation.

4. The system generates a unique username and password for the new user.
5. The administrator can optionally define additional permissions for the new user beyond those associated with their assigned role.
6. The system saves the new user account details and credentials, and send it to them via email.

- **Postcondition:** A new user account is created with the designated role and permissions. The system will notify the new user about their account creation via email and provide them with login credentials.

Official: reservation Official
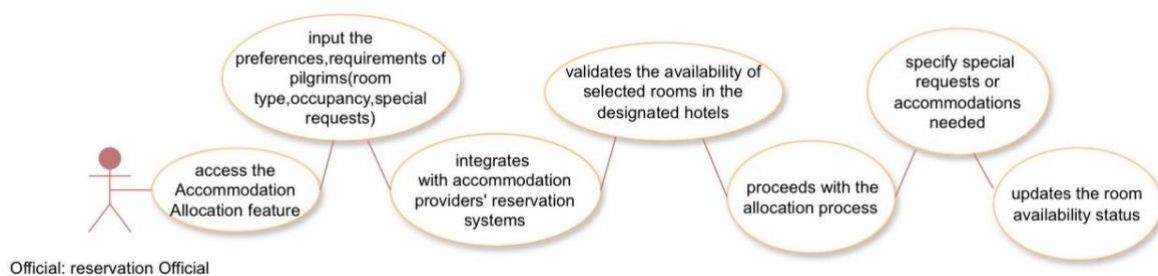
3.3.4 Use Case: Official Books Accommodation for Pilgrims

- **Maps to:** Section 3.2.3 Accommodation Allocation
- **Actor:** Official from a pilgrim office with accommodation allocation permissions
- **Precondition:** The official has access to the Accommodation Allocation feature and relevant information about pilgrim preferences (location, room type, etc.)
- **Flow of Events:**
    1. The official accesses the Accommodation Allocation functionality.
    2. The system displays available room options based on the specified criteria and real-time room inventory information.
    3. The official selects the desired room type and quantity for pilgrim accommodation.
    4. The system verifies room availability to prevent double bookings.
    5. (Optional) The official can specify any special requests for pilgrims during the allocation process.
    6. If rooms are available, the official confirms the allocation.
    7. The system books the selected rooms for the pilgrims and updates the room inventory status to reflect the allocation.
- **Postcondition:** The system confirms the accommodation allocation for the pilgrims. The official can access booking details or generate confirmations for pilgrim records.
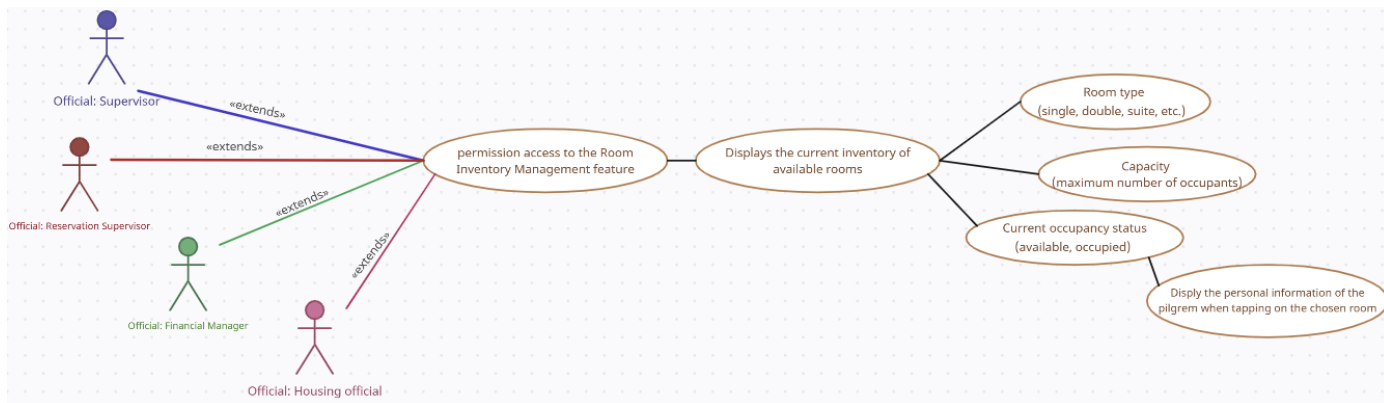
3.3.5 Use Case: Official Views Room Inventory

- **Maps to:** Section 3.2.4 Room Inventory Management
- **Actor:** Official with access to the Room Inventory Management feature
- **Precondition:** The official has access to the system and the Room Inventory Management functionality.
- **Flow of Events:**
    1. The official accesses the Room Inventory Management feature.
    2. The system displays the current inventory of available rooms, including details such as:
        - Room type (single, double, suite, etc.)
        - Capacity (maximum number of occupants)
        - Amenities
        - Current occupancy status (available, occupied)
- **Postcondition:** The official can view the latest information about room types, capacities, amenities, and availability to support informed decision-making regarding accommodation allocation.

3.3.6 Use Case: Official Updates Pilgrim Information

- **Maps to:** Section 3.2.5 Housing Management
- **Actor:** Official from a pilgrim office with Housing Management permissions
- **Precondition:** The official has access to the Housing Management feature and the pilgrim permit number for data retrieval.
- **Flow of Events:**
    1. The official accesses the Housing Management functionality.
    2. The official enters the pilgrim's permit number to retrieve relevant information from the Nusuk pilgrim virtual cards.
    3. The system retrieves and displays the pilgrim's information, such as name, passport number, nationality, etc.
    4. The official can edit existing information or enter missing details for pilgrim accommodation data.
    5. The official can specify check-in and check-out dates for the pilgrim's stay.

- **Postcondition:** The system updates the pilgrim's accommodation details based on the official's modifications. The integration with Nusuk cards can help ensure data accuracy and reduce manual entry errors
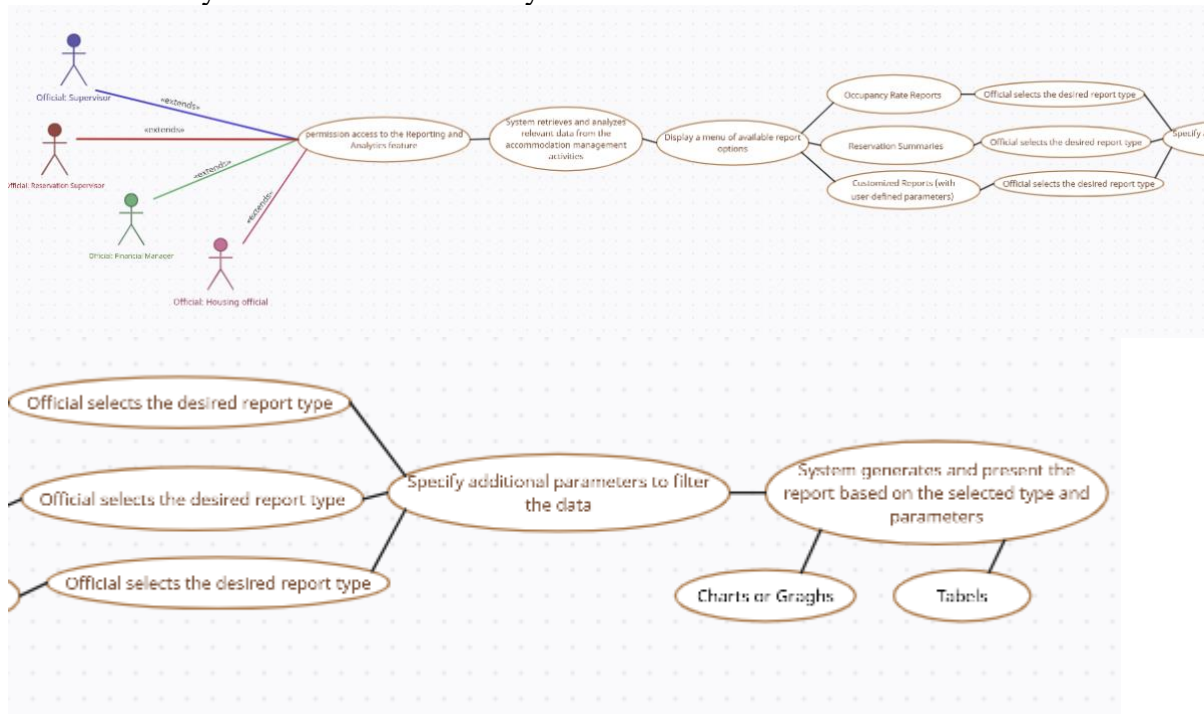
3.3.7 Use case: Use Case: Official Generates Accommodation Reports

- **Maps to:** Section 3.2.6 Reporting and Analytics
- **Actor:** Official with access to the Reporting and Analytics feature
- **Precondition:** The official has access to the system and the Reporting and Analytics functionality.
- **Flow of Events:**
    1. The official accesses the Reporting and Analytics feature.
    2. The system displays a menu of available report options, such as:
        - Occupancy Rate Reports
        - Reservation Summaries
        - Customized Reports (with user-defined parameters)
    3. The official selects the desired report type.
    4. (Optional) Depending on the report type, the official can specify additional parameters to filter the data:
        - Specific Accommodation(s)
        - Room Type(s)
        - Other relevant filters (e.g., by pilgrim office)
    5. The system retrieves and analyzes relevant data from the accommodation management activities.
    6. The system generates the report based on the selected type and parameters.
    7. The system presents the report to the official in a user-friendly format, such as:
        - Tables summarizing data points
        - Charts or graphs for visual representation of trends and patterns
- **Postcondition:** The official receives a report with insights into accommodation management metrics, such as:
    1. Occupancy rates (number of reservations, room types, occupancy levels)

2. Reservation summaries
3. Trends and patterns in accommodation usage based on user-defined parameters
4. The system will offer options for exporting reports in different formats (e.g., PDF, CSV) for further analysis or sharing.
5. The system enforces security measures to ensure that sensitive data within reports is accessible only to authorized officials based on their roles and permissions.

3.5 Non-Functional Requirements

3.5.1 Performance:
- The (مُستقر) website shall achieve a page load time of less than 3 seconds for 90% of user interactions under normal traffic conditions.
- The website shall support a maximum user concurrent load of 1,000 users without a decrease in response time greater than 20%.

3.5.2 Reliability:
- The (مُستقر) website shall have a Mean Time Between Failures (MTBF) value of at least 30 days, indicating the average time between system failures.
- The website shall recover from failures and restore full functionality within 15 minutes, minimizing downtime and impact on users.

3.5.3 Availability:
- The (مُستقر) website shall be available for use by users 24 hours a day, 7 days a week, with a maximum downtime of 1 hour per month for scheduled maintenance.
- The website shall achieve an uptime of at least 99.9% over a 30-day period, accounting for both planned and unplanned downtime.

3.5.4 Security:
- The (مُستقر) website shall use encryption algorithms with a minimum key length of 128 bits for all sensitive user data transmission.
- The website shall achieve a minimum score of 90% on security vulnerability assessments conducted annually, indicating a high level of security.

3.5.5 Maintainability:
- The website should have a bug fix and update response time in less than 48 hours for critical issues.
- The website shall provide comprehensive documentation, including design documents, user manuals, and developer guides, to facilitate future maintenance and enhancements.

3.5.6 Portability:
- The (مُستقر) website shall be compatible with the latest versions of popular web browsers, including Chrome, Firefox, Safari, and Edge, ensuring consistent functionality and appearance across these platforms.

	Samar	Aisha	Lamar
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