

# User Requirements Specification (URS) for Administrative System for Zoo Bazaar



Date	:	26/06/2024
Version	:	2.0
State	:	Finished
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## Version history

Version	Date	Author(s)	Changes	State
0.1	21-02-2024	Addi, Nuno, Szymon And Vera	Made a beginning on the URS plan.	Finished
0.2	22-02-2024	Addi, Nuno, Szymon And Vera	Changes made based on notes from meeting with tutor 22/02/2024	Finished
1.0	07-03-2024	Addi, Nuno, Szymon And Vera	Changes made based on notes from meeting with tutor 07/03/2024 & 14/03/2024	Finished
1.1	15-03-2024	Addi, Nuno, Szymon And Vera	Changes made based on notes from meeting with tutor 14/03/2024	Finished
2.0	26-03-2024	Addi, Nuno, Szymon And Vera	Reviewed User Cases	Finished

## Glossary

CSV	Comma-Separated Values
JSON	JavaScript Object Notation
KPIs	Key Performance Indicators
PDF	Portable Document Format
RBAC	Role-Based Access Control

# Introduction

The User Requirements Specification (URS) outlines the functional and non-functional requirements for the development of an administrative system to support the operations of Zoo Bazaar. The system will enable efficient management of employees, animals, and resources within the zoo, as well as facilitate tasks related to scheduling, tracking, and reporting.

## Functional Requirements

### FR.1 Employees

- FR. 1.1. The system will allow administrators to create, view, update, and delete employee records (CRUD).
- FR. 1.2. Employees can be assigned based on roles and responsibilities (e.g., caretakers, administrators, resource planners).
- FR. 1.3. Employees can be filtered based on roles and responsibilities (e.g., caretakers, administrators, resource planners).
- FR. 1.4. Each employee record will include personal information, contact details, job title, and assigned tasks.
- FR. 1.5. Each employee record will include a contract with salary, BSN number, overtime, etc.
- FR. 1.6. Each employee will have a username and password that they can login with.
- FR. 1.7. Each employee will have a personal Schedule with tasks that they must complete based on their task information & contract.

### FR.2 Animals

- FR. 2.1. Administrators will be able to create, view, update and delete zoo animal information (CRUD). Including species, age, location, lineage, feeding, notes and health status.
- FR. 2.2. Administrators will be able to associate Animals with their parents using a list.
- FR. 2.3. Administrators will be able to view Animal's birthday and origin.
- FR. 2.4. Administrators will be able to view the date of when the animal has entered the zoo as well as the date of when it has left the zoo.

- FR. 2.5. Animals may be associated with specific locations/habitats within the zoo.
- FR. 2.6. Caretakers should have access to animal records relevant to their FeedingPlan and MedicalRecords.

## FR.3 Schedules

- FR. 3.1. The system will create schedules based on available tasks and available employees.
- FR. 3.2. Admins should be able to edit schedules manually.
- FR. 3.3. Tasks from the schedule can be filtered by start and/or end Date.

## FR.4 Tasks

- FR. 4.1. The system will allow administrators to create, view, update, and delete tasks (CRUD).
- FR. 4.2. The tasks may be repeated or not.
- FR. 4.3. The tasks will be associated with some type of work and therefore be limited to a certain type of employees.
- FR. 4.4. The tasks will be associated with a location.
- FR. 4.5. The tasks can be filtered by location.
- FR. 4.6. Tasks have a start and end date.

## FR.5 Locations

- FR. 5.1. The system will allow administrators to create, view, update, and delete locations (CRUD).
- FR. 5.2. Locations have animals associated with them that can be retrieved.
- FR. 5.3. Locations have a danger level associated with them.

# Non-Functional Requirements

## NFR.1 Usability

NFR.1.1 The system will have an intuitive and user-friendly interface to facilitate ease of use and navigation for administrators, employees, and caretakers.

NFR.1.2 Features such as search filters, sorting options, and contextual help tooltips will be provided to enhance scalability, usability and productivity.

## NFR.2 Scalability

NFR.2.1 The system architecture will be designed to accommodate future growth and scalability requirements, including increased data volume and user concurrency.

NFR.2.2 Modular and extensible components will be utilised to support incremental updates and enhancements to functionality.

## NFR.3 Reliability

NFR.3.1 Comprehensive error handling

NFR.3.2 Multiple data validation check

NFR.3.3 Backup and recovery mechanisms shall be implemented to safeguard against data loss or system failures

## NFR.4 Security

NFR.4.1 The system will implement role-based access control (RBAC) to control sensitive information and functionalities based on user roles. This will help the Zoo restrict unauthorised access and ensure that users will only have access to the resources necessary for their roles.

NFR.4.2 The system will implement user authentication mechanisms (e.g., username/password, multi-factor authentication). This will help to verify the identity of users and add another layer of security to the system.

NFR.4.3 The system will implement data encryption protocols to protect confidential data during transmission (e.g., https). This will ensure that confidential data is protected.

## NFR.5 Performance

NFR.5.1 The system shall be capable of handling concurrent user interactions and database transactions without significant performance degradation.

NFR.5.2 Response times for common operations (e.g., record retrieval, schedule updates) should be within acceptable limits, even under peak load conditions.

# Use Cases

## UC1. CRUD (Creating) Employees

Actor: Administrator

Requirement: FR1.1, FR1.2, FR1.4, FR1.5, FR1.7

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the "Employee" section at left side.
2. The Actor selects the "New" button.
3. The system displays an empty form for an employee and prompts the user to input personal information, contact details, contract details, job title, assigned tasks, etc .
4. The actor categorises the employee based on roles and responsibilities. He also fills in all the necessary fields.
5. The system saves the employee record and updates the employee list.
6. The actor goes back to the Dashboard.

**Extensions:**

- 4.1. The information inputted is of the wrong type, the name includes numbers and the phone number includes letters
- 4.2. The System displays a message box alert telling the user what information was of incorrect type.
- 4.3. The Actor closes the message box and corrects the information.
- 4.4. Proceed to step 6.

## UC2. CRUD (Reading) Employees

Actor: Administrator

Requirement: FR1.1, FR1.2, FR1.4, FR1.5, FR1.7

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the "Employee" section at the left side.
2. The Actor types in a name in the Search bar.
3. The System filters all items in the listbox to only show "Employees" with a name that matches the Search bar text.
4. The actor selects an Employee from the list.
5. The actor selects "View" to view an employee record.

6. The system displays the selected employee's personal information, contact details, contract details, job title, and assigned tasks.
7. The actor can view the employee's category based on roles and responsibilities.
8. The actor goes back to the Dashboard.

## UC3. CRUD (Updating) Employees Information

Actor: Administrator

Requirement: FR1.2,FR1.3, FR1.8, FR3.2

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the "Employee" and optionally types in an employee's name in the Search bar.
2. The System filters all items in the listbox to only show "Employees" with a name that matches the Search bar text.
3. The actor selects an Employee from the list.
4. The actor selects "Update" to edit an employee's record.
5. The system displays the information on that employee including their roles, attendance, schedule etc.
6. The actor can update information on that employee including schedule, etc.
7. The system updates employee information.
8. The actor goes back to the Dashboard.

### Extensions:

- 6.1. The information inputted is of the wrong type, the name includes numbers and the phone number includes letters
- 6.2. The System displays a message box alert telling the user what information was of incorrect type.
- 6.3. The Actor closes the message box and corrects the information.
- 6.4. Proceed to step 8.

## UC4. CRUD (Deleting) Employees Information

Actor: Administrator

Requirement: FR1.2,FR1.3, FR1.8, FR3.2

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the "Employee" and optionally types in a name in the Search bar.
2. The System filters all items in the listbox to only show "Employees" with a name that matches the Search bar text.
3. The actor selects an Employee from the list.
4. The actor selects "Delete" to delete an employee's record.
5. The system removes that employee from the system.
6. The actor goes back to the Dashboard.

**Extensions:**

- 4.1. The employee still has tasks associated with them.
- 4.2. The System displays a message informing the Actor that the employee can't be deleted while he still has tasks.
- 4.3. The Actor closes the message and removes the tasks that the employee has associated with him.
- 4.4. The System updates that information.
- 4.5. Proceed to step 9.

## UC5. Employee Login

Actor: Employee

Requirement: FR1.6, FR3.1, FR3.3, FR3.4, FR4.2, FR4.3, FR4.4, FR4.5, FR4.6

Pre-conditions: Employee has access to the WebApp

Main Success Scenario:

1. The Actor uses his password and email to log in the WebApp.
2. The system displays the main page.
3. The actor can access the profile and schedule pages.
4. The system shows an appropriate page.
5. The actor selects a page.
6. The system shows page information.

**Extensions:**

- 1.1. The Username and Password don't match the records in the Database.
  - 1.2. The System tells the Actor that the password and username don't match any known User.
  - 1.3. The Actor inputs the right username and password.
  - 1.4. Proceed to step 2.
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- 1.1. The Database is inaccessible at the moment.
  - 1.2. The System tells the Actor that the database can't be reached and his credentials can't be verified.
  - 1.3. End of use case.



## UC6. Admin Login

Actor: Employee

Requirement: FR1.6, FR3.1, FR3.3, FR3.4, FR4.2, FR4.3, FR4.4, FR4.5, FR4.6

Pre-conditions: Adminopens App

Main Success Scenario:

1. The Actor uses his password and username to log in.
2. The system displays a Dashboard with schedule, listboxes with tasks, animals, locations and employees as well as buttons to Create, Update or Delete an item.
3. The actor filters by category.
4. The system shows appropriate items.
5. The actor selects an item.
6. The system shows item information.

### Extensions:

- 1.1. The Username and Password don't match the records in the Database.
  - 1.2. The System tells the Actor that the password and username don't match any known User.
  - 1.3. The Actor inputs the right username and password.
  - 1.4. Proceed to step 2.
- 
- 1.1. The Database is inaccessible at the moment.
  - 1.2. The System tells the Actor that the database can't be reached and his credentials can't be verified.
  - 1.3. End of use case.

## UC7. Admin CRUD (Create) Tasks

Actor: Administrator

Requirement: FR3.1, FR3.2, FR4.1, FR4.2, FR4.3, FR4.4, FR4.6;

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the "Tasks" section at the left side and selects the "New" button.
2. The system displays a new task with blank fields.
3. The actor changes the task's information as needed.
4. The system shows task information.
5. The actor clicks save.
6. The system redirects to the Dashboard.

### Extensions:

- 3.1. The information inputted is of the wrong type, the name includes numbers.

- 3.2. The System displays a message box alert telling the user what information was of incorrect type.
- 3.3. The Actor closes the message box and corrects the information.
- 3.4. Proceed to step 4.
- 3.5. The information inputted is of the wrong type, the name includes numbers and the date is in the past
- 3.6. The System displays a message box alert telling the user what information was of incorrect type.
- 3.7. The Actor closes the message box and corrects the information.
- 3.8. Proceed to step 4.

## UC8. Admin CRUD (Read) Tasks

Actor: Administrator

Requirement: FR3.1, FR3.2, FR4.1, FR4.2, FR4.3, FR4.4, FR4.6;

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the "Tasks" section and optionally types in a name in the Search bar.
2. The System filters all items in the listbox to only show "Tasks" with a name that matches the Search bar text.
3. The system displays all tasks.
4. The actor selects a task and clicks "View".
5. The system displays a task with its corresponding fields.
6. The actor closes the viewing task window.
7. The system redirects the user to the Dashboard.

### Extensions:

- 1.1 If "Tasks" is not selected in the dropdown list, the actor will see all tasks, locations and animals in the listbox.
- 2.1 If Actor does not use filters, he will see all tasks.
- 4.1 By selecting the wrong task the actor needs to return by clicking the button "Back".

## UC9. Admin CRUD (Update) Tasks

Actor: Administrator

Requirement: FR3.1, FR3.2, FR4.1, FR4.2, FR4.3, FR4.4, FR4.6;

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the “Tasks” section and optionally types in a name in the Search bar.
2. The System filters all items in the listbox to only show “Tasks” with a name that matches the Search bar text.
3. The system displays all tasks.
4. The actor selects a task and clicks “Update”.
5. The system displays a task with their corresponding fields.
6. The actor changes the task’s information as needed.
7. The system updates the task and redirects the user to the Dashboard.

**Extensions:**

- 6.1. The information inputted is of the wrong type, the name includes numbers and the date is in the past
- 6.2. The System displays a message box alert telling the user what information was of incorrect type.
- 6.3. The Actor closes the message box and corrects the information.
- 6.4. Proceed to step 7.

## UC10. Admin CRUD (Delete) Tasks

Actor: Administrator

Requirement: FR3.1, FR3.2, FR4.1, FR4.2, FR4.3, FR4.4, FR4.6;

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the “Tasks” section and optionally types in a name in the Search bar
2. The System filters all items in the listbox to only show “Tasks” with a name that matches the Search bar text.
3. The actor selects a task and the “Delete” button.
4. The system deletes the task and updates the task view page.

**Extensions:**

- 3.1. The task is still assigned to a User.
- 3.2. The system tells the actor that the task cannot be assigned to an employee.
- 3.3. The actor updates the task and removes the employees assigned to it.
- 3.4. Proceed to step 4.

## UC11. CRUD (Create) Locations

Actor: Administrator

Requirement: FR5.1, FR5.2, FR5.3;

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The actor selects the “Locations” section at the left side and selects the “New” button.
2. The system shows a Form for locations with blank fields.
3. The actor fills in the location’s information such as name, number of animals, species danger level & notes.
4. The system creates the appropriate location and redirects the user to the location view page.
5. The actor goes back to the Dashboard.

**Extensions:**

- 3.1. The information inputted is of the wrong type, the name includes numbers.
- 3.2. The System displays a message box alert telling the user what information was of incorrect type.
- 3.3. The Actor closes the message box and corrects the information.
- 3.4. Proceed to step 4.

## UC12. CRUD (Read) Locations

Actor: Administrator

Requirement: FR5.1, FR5.2, FR5.3;

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the “Location” section and optionally types in a name in the Search bar.
2. The System filters all items in the listbox to only show “Locations” with a name that matches the Search bar text.
3. The system displays all locations.
4. The actor selects a location and clicks “View”.
5. The system displays a location with its corresponding fields.
6. The actor closes the viewing location window.
7. The system redirects the user to the Dashboard.

**Extensions:**

- 1.1 The saved locations failed to load. - System displays an alert.
- 2.1 The location’s data failed to load. - System displays an alert.

## UC13. CRUD (Update) Locations

Actor: Administrator

Requirement: FR5.1, FR5.2, FR5.3;

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the "Locations" section and optionally types in a name in the Search bar.
2. The System filters all items in the listbox to only show "Locations" with a name that matches the Search bar text.
3. The system displays all locations.
4. The actor selects a task and clicks "Update".
5. The system displays a location with their corresponding fields.
6. The actor changes the location's information as needed.
7. The system updates the location and redirects the user to the Dashboard.

### Extensions:

- 1.1 The saved locations failed to load. -System displays an alert.
- 4.1 The location's data failed to load. -System displays an alert.
- 6.1 Information type invalid - System displays an alert

## UC14. CRUD (Delete) Locations

Actor: Administrator

Requirement: FR5.1, FR5.2, FR5.3;

Pre-conditions: Logged in as administrator

Main Success Scenario:

1. The Actor selects the "Locations" section and optionally types in a name in the Search bar.
2. The System filters all items in the listbox to only show "Locations" with a name that matches the Search bar text.
3. The system displays all locations.
4. The actor selects a location and clicks "Update".
5. The system displays a location with their corresponding fields.
6. The actor changes the location's information as needed.
7. The system updates the location and redirects the user to the Dashboard.

### Extensions:

- 1.1 The saved locations failed to load. -System displays an alert.
- 4.1 The location's data failed to load. -System displays an alert.
- 6.1 The location failed to be deleted. -System displays an alert.

## UC15. CRUD (Create) Animal.

Actor: Administrator

Requirement: FR2.1, FR2.2, FR2.4, FR2.5, FR2.6 and FR2.7

Pre-conditions: The Administrator has access to the zoo management system.

Main Success Scenario:

1. The administrator selects the "Animal" section at the left side and clicks the "New" button.
2. The system displays an empty form with blank fields for all the information needed for an "Animal".
3. The actor associates the animal with a specific location or habitat within the zoo. As well as a medical record, a feeding plan and any other information needed.
4. The System saves the animal in the database and redirects the user to the Dashboard.

**Extensions:**

- 3.1. The information inputted is of the wrong type, the name includes numbers.
- 3.2. The System displays a message box alert telling the user what information was of incorrect type.
- 3.3. The Actor closes the message box and corrects the information.
- 3.4. Proceed to step 4

## UC16. CRUD (Read) Animal.

Actor: Administrator

Requirement: FR2.1, FR2.2, FR2.4, FR2.5, FR2.6 and FR2.7

Pre-conditions: The Administrator has access to the zoo management system.

Main Success Scenario:

1. The Actor selects the "Animals" section at the left side and optionally types in a name in the Search bar
2. The System filters all items in the listbox to only show an Animal with a name that matches the Search bar text.
3. The System displays this Animal in the listbox.
4. The Actor selects this Animal and clicks "Update".
5. The Actor can view the Animal's information.
6. The Actor closes the Animal's section.

**Extensions:**

- 1.1 If "Animal" is not selected in the dropdown list, the actor will see all tasks, locations and animals in the listbox.
- 2.1 If Actor does not use filters, he will see all animals.

4.1 By selecting the wrong animal the actor needs to return by clicking the button "Back".

## UC17. CRUD (Update) Animal

Actor: Administrator

Requirement: FR2.1, FR2.2, FR2.4, FR2.5, FR2.6 and FR2.7

Pre-conditions: The Administrator has access to the zoo management system.

Main Success Scenario:

1. The Actor selects the "Animals" section at the left side and optionally types in a name in the Search bar.
2. The System filters all items in the listbox to only show "Animals" with a name that matches the Search bar text.
3. The system displays all Animals.
4. The actor selects an Animal and clicks "Update".
5. The system displays the selected animal's information for modification.
6. The actor updates the necessary fields.
7. The system saves the modified record and updates the animal list.

**Extensions:**

- 6.1. The information inputted is of the wrong type, the name includes numbers and the number fields are blank.
- 6.2. The System displays a message box alert telling the user what information was of incorrect type.
- 6.3. The Actor closes the message box and corrects the information.
- 6.4. Proceed to step 7.

## UC18. CRUD (Delete) Animal.

Actor: Administrator

Requirement: FR2.1, FR2.2, FR2.4, FR2.5, FR2.6 and FR2.7

Pre-conditions: The Administrator has access to the zoo management system.

Main Success Scenario:

1. The Actor selects the "Animals" section at the left side and optionally types in a name in the Search bar
2. The System filters all items in the listbox to only show "Animals" with a name that matches the Search bar text.
3. The system displays Animal.
4. The actor selects this Animal and clicks "Delete".
5. System removes the animal record from the database and updates the animal list.

**Extensions:**

- 2.1 If Actor does not use filters, he will see all animals.
- 4.1 If “Animal” is not selected in the dropdown list, the actor will see all tasks, locations and animals in the listbox.
- 5.1 The System failed to delete this animal. The actor returns to step 4.

If there are any issues with saving the record to the database (e.g., database connection failure), the system notifies the Administrator and prompts them to try again later.

## UC19. Schedule Generation.

Actor: Administrator

Requirement: FR2.1, FR2.2, FR2.4, FR2.5, FR2.6 and FR2.7

Pre-conditions: The Administrator has access to the zoo management system.

Main Success Scenario:

1. The Actor selects the “Schedule” section at the left side.
2. The System loads tasks and employees from the database.
3. The Actor sets the shift length and the start and end times of the workday using the provided input controls.
4. The Actor clicks “Generate Schedule”.
5. The application displays the generated schedule.

### Extensions:

- 3.1 If Actor does not use filters, he will see the error message.
- 5.1 If any errors occur (e.g., database access issues), the application displays an error message.

## UC20. Employee Schedule View.

Actor: Employee

Requirement: FR1.7, FR3.1

Pre-conditions: The Employee has access to the WebApp.

Main Success Scenario:

1. The Actor clicks “Employee Schedule”.
2. The System shows a personalised Schedule.
3. The Actor views the Schedule.



4. The Actor clicks the "View Details" button to see the content of the task.
5. The Actor closes the details by clicking the button "Close".

## UC21. Change an employee's password.

Actor: Employee

Requirement: FR1.7, FR3.1

Pre-conditions: The Employee has access to the WebApp.

Main Success Scenario:

1. The Actor clicks "Profile".
2. The System shows an employee's profile.
3. The Actor clicks "Update".
4. The Actor fills everything: old password and new password.
5. The Actor clicks the "Update" button.

### **Extensions:**

4.1 If some fields are empty or the old password is wrong, the Actor will get an error message.