Requirements Engineering

Livestock Auction System

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Computing with Software Development

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# Introduction/overview

The livestock auction system will deal with the input of data needed to run a livestock auction mart. The program will set up an account using values gathered from the owner and allow you to update or delete the account, it will allow you to register both an auction and livestock for that auction. It also allows you to look up the livestock and register the sale of that livestock. When you want to do a yearly analysis, you can do that and be able to look at the yearly livestock and revenue analysis

# Functional Components

Livestock Auction System registers owner accounts, auction data and lets you view yearly revenue analysis and Livestock analysis

# User Requirements

## Livestock Auction System will manage Owner Data

* + 1. Livestock Auction System Will Register an Owner
    2. Livestock Auction System Will Deregister an Owner
    3. Livestock Auction System Will Update an Owner’s Info



## Livestock Auction System will manage Auction Data

1. Livestock Auction System Will Schedule an Auction
2. Livestock Auction System Will Register Livestock in an auction
3. Livestock Auction System Will Record a Sale
4. Livestock Auction System Will Query an Auction

## Livestock Auction System will perform administrative reporting

* + 1. Livestock Auction System Will produce a yearly revenue analysis
    2. Livestock Auction System Will produce view yearly livestock analysis

# System Requirements

## System Level Use Case Diagram

The following system level use case diagram illustrates the high-level system requirements.

Clerk

Owner

Guest

Manager

## Manage Owners

This menu provides functions to:

* Register an owner
* Update owner
* Deregister owner­­

### Register Owner

owner

Clerk

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Name | Clerk | | |
| Use Case Id | La001 | | |
| Priority | 1 | | |
| Source | Clerk | | |
| Primary Business Actor | Clerk | | |
| Other Participating Actors | Owner | | |
| Description | This will register an Account for the Owner and collect info such as name, Address and Contact info and Store it in the database. | | |
| Preconditions |  | | |
| Trigger |  | | |
| Expected Scenarios | | | |
| Actor | | System |
| **Step 1: Invoke Register Owner**  **Step 3 Enter New data**   * **Enter owners name** * **Enter phone number** * **Enter email** * **Enter address** | | **Step 2: Display UI**  **Step 4: Validate Data**   * **Verify owners name** * **Verify valid phone number** * **Verify email** * **Verify if owner is in system**   **Step 5: Valid = Yes**  **Step 6: Save Data**  **Step 7: Display Conformation**  **Step 8: Reset UI** |
| Unexpected Scenarios | | |
| Actor | | System |
|  | | **Step 4: Valid = No**  **Step 5: Display Error Message**  **Step 6: Return to Enter Required Data** |
| Conclusions | Owner is added to the system | |
| Post conditions | Owner can now Register Livestock | |



### Update Owner Info

owner

Clerk

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Name | Clerk | | |
| Use Case Id | La002 | | |
| Priority | 2 | | |
| Source | Clerk | | |
| Primary Business Actor | Clerk | | |
| Other Participating Actors | Owner | | |
| Description | This will retrieve Owner info from the database and Change info Such as name, Address and contact info | | |
| Preconditions |  | | |
| Trigger |  | | |
| Expected Scenarios | | | |
| Actor | | System |
| **Step 1: Invoke Update Owner Type**  **Step 4: Enter Owner Data**   * **Get info from combo box**   **Step 6: Enter New data**   * **Enter new owners name** * **Enter new phone number** * **Enter new email** * **Enter new address** | | **Step2: retrieve owner data**  **Step 3: Display Ui**  **Step 6: open new window form**  **Step 7: Validate**   * **Verify valid phone number** * **Verify email** * **Verify if owner is in system**   **Step 8: Valid = Yes**  **Step 9: Load up update window**  **Step 10: Update Owner Data**  **Step 11: Send Confirmation Message**  **Step 12: Return to Enter Required Data** |
| Unexpected Scenarios | | |
| Actor | | System |
|  | | **Step 8: Valid = No**  **Step 9: Send Error Message**  **Step 10: Return to Enter Required Data** |
| Conclusions | Owner Information is updated | |
| Post conditions | Owner info is updated | |

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Name | Clerk | | |
| Use Case Id | La003 | | |
| Priority | 3 | | |
| Source | Clerk | | |
| Primary Business Actor | Clerk | | |
| Other Participating Actors | Owner | | |
| Description | This will retrieve Owner info from the database and Remove info from the database | | |
| Preconditions |  | | |
| Trigger |  | | |
| Expected Scenarios | | | |
| Actor | | System |
| Step 1: Invoke Update Owner Type  Step 4: Select Owner   * **Select from the combo box** | | **Step 2: retrieve owner’s data**  **Step 3: Display Ui**  **Step 5: Retrieve Owner Data biased on data given**  **Step 6: Delete Owner Data**  **Step 7: Send Confirmation Message**  **Step 8: Return to Enter Required Data** |
| Conclusions | Owner is Removed from the system | |
| Post conditions | Owner cannot Register Livestock | |



### Deregister Owner

Clerk

owner

## Manage Auctions

This menu provides functions to:

* Schedule Auction
* Register livestock
* Query auction
* Record sale

### Schedule Auction

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Name | Clerk | | |
| Use Case Id | Lab04 | | |
| Priority | 4 | | |
| Source | Clerk | | |
| Primary Business Actor | Clerk | | |
| Other Participating Actors |  | | |
| Description | This will schedule the auction by date, starting time and Finishing time and assign blocks of time by number entered. | | |
| Preconditions |  | | |
| Trigger |  | | |
| Expected Scenarios | Actor | System |
|  | **Step 1: Invoke Update Owner Type**  **Step 4: Enter Required Data** | **Step 2: Retrieve Auction Data**  **Step 3: Display Ui**  **Step 5: Validate**  **Step 6: Valid = Yes**  **Step 7: Save Auction Data**  **Step 8: Send Confirmation Message**  **Step 9: Return to Enter Required Data** |
| Unexpected Scenarios | Actor | System |
|  |  | **Step 5: Valid = No**  **Step 6: Send Error Message**  **Step 7: Return to Enter Required Data** |
| Conclusions | **Auction is scheduled** | |
| Post conditions | **Buyer can buy livestock at auction** | |

Clerk

### Register Livestock

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Use Case Name | Clerk | | | |
| Use Case Id | Lab05 | | | |
| Priority | 5 | | | |
| Source | Clerk | | | |
| Primary Business Actor | Clerk | | | |
| Other Participating Actors | Owner | | | |
| Description | This will Register the Livestock Data Such as Animal, Bread, age, gender onto the Database. | | | |
| Preconditions |  | | | |
| Trigger |  | | | |
| Expected Scenarios | Actor | | System |
|  | **Step 1: Invoke Update Owner Type**  **Step 4: enter**   * **Livestock type** * **Breed** * **Sex** * **Age** * **Initial price** * **Tag number** | | **Step 2: Retrieve Required Data**  **Step 3: Display Ui**  **Step 5: Validate**   * **Livestock type** * **Breed** * **Sex** * **Age** * **Initial price** * **Tag number**   **Step 6: Valid = Yes**  **Step 7: Save data into the livestock file**  **Step 8: Send Confirmation Message**  **Step 9: Return to Enter Required Data** |
| Unexpected Scenarios | | | |
| Actor | | System | |
|  | | **Step 6: Valid = No**  **Step 7: Send Error Message**  **Step 8: Return to Enter Required Data** | |
| Conclusions | **Livestock is added to the system** | | |
| Post conditions | **Livestock can be sold** | | |

Clerk

owner

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Name | Clerk | | |
| Use Case Id | Lab06 | | |
| Priority | 6 | | |
| Source | Clerk | | |
| Primary Business Actor | Clerk | | |
| Other Participating Actors | Buyer | | |
| Description | This will Register the Livestock Data Such as Animal, Bread, age, gender onto the Database. | | |
| Preconditions |  | | |
| Trigger |  | | |
| Expected Scenarios | | | |
| Actor | | System |
| **Step 1: Invoke Update Owner Type**  **Step 3: Enter Required Data** | | **Step 2: Display Ui**  **Step 4: Validate**  **Step 5: Valid = Yes**  **Step 6: Show Livestock Data**  **Step 7: Send Confirmation Message**  **Step 8: Return to Enter Required Data** |
| Unexpected Scenarios | | |
| Actor | | System |
|  | | **Step 5: Valid = No**  **Step 6: Send Error Message**  **Step 7: Return to Enter Required Data** |
| Conclusions | Owner is added to the system | |
| Post conditions | Owner can now Register Livestock | |



### Query Auction

Buyer

Clerk

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Name | Clerk | | |
| Use Case Id | Lab07 | | |
| Priority | 7 | | |
| Source | Clerk | | |
| Primary Business Actor | Clerk | | |
| Other Participating Actors | Buyer | | |
| Description | This will Register the Livestock Data Such as Animal, Bread, age, gender onto the Database. | | |
| Preconditions |  | | |
| Trigger |  | | |
| Expected Scenarios | | |
| Actor | | System |
| **Step 1: Invoke Update Owner Type**  **Step 4: Enter**   * **Final price** * **Buyer** * **Livestock tag number** | | **Step 2: Retrieve livestock and auction Data**  **Step 3: Display Ui**  **Step 5: Validate**   * **Final price** * **Buyer** * **Livestock tag number**   **Step 6: Valid = Yes**  **Step 7: Update livestock**   * **Set livestock to sold**   **Step 8: Save in sales file**  **Step 9: Send Confirmation Message**  **Step 10: Return to Enter Required Data** |
| Unexpected Scenarios | | |
| Actor | | System |
|  | | **Step 5: Valid = No**  **Step 6: Send Error Message**  **Step 7: Return to Enter Required Data** |
| Conclusions | **Sale data is Recorded onto the Database** | |
| Post conditions | **Sale data will be used when viewing yearly revenue Analysis** | |

### Record Sale

Buyer

Clerk

## View Data

This menu provides functions to:

* View Yearly Revenue Analysis
* View Yearly Livestock Analysis

### Yearly Revenue Analysis

Business owner

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Name | Clerk | | |
| Use Case Id | Lab08 | | |
| Priority | 8 | | |
| Source | Business Owner | | |
| Primary Business Actor | Business Owner | | |
| Other Participating Actors |  | | |
| Description | This will Register the Livestock Data Such as Animal, Bread, age, gender onto the Database. | | |
| Preconditions |  | | |
| Trigger |  | | |
| Expected Scenarios | Actor | System |
|  | Step 1: Invoke Update Owner Type  Step 4: Enter Year | Step 2: Retrieve sales file  Step 3: Display Ui  Step 7: Show Revenue Analysis  Step 9: Return to Enter Required Data |
| Conclusions | Owner Can view yearly Revenue analysis | |
| Post conditions | Owner can make business Decisions biased on Revenue Analysis | |

### Yearly Livestock Analysis

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Name | Clerk | | |
| Use Case Id | Lab09 | | |
| Priority | 9 | | |
| Source | Business Owner | | |
| Primary Business Actor | Business Owner | | |
| Other Participating Actors |  | | |
| Description | This will Register the Livestock Data Such as Animal, Bread, age, gender onto the Database. | | |
| Preconditions |  | | |
| Trigger |  | | |
| Expected Scenarios | | |
| Actor | | System |
| **Step 1: Invoke Update Owner Type**  **Step 4: Enter Required Info** | | **Step 2: Retrieve Livestock Data**  **Step 3: Display Ui**  **Step 5: Show Livestock Data**  **Step 6: Reset Ui** |
| Conclusions | Owner can view yearly livestock analysis | |
| Post conditions |  | |

­­

Business Owner

# System Model

The following dataflow diagrams have been produced for the system:

## Level-0 DFD

buyer

Live auction system

owner

## Level-1 DFD

Get owner info for update/delete

Owner file

D1

Manage owners

P1

Save info in owner file

Get owner data

Get owner file data for livestock

Auction file

D2

owner

Get auction data for livestock

Save auction date

Get owner info for livestock

View Data

P3

Manage Auction

P2

View livestock data

Get livestock data to view query/register sale

Save livestock data

Livestock file

D3

View sales data

Save sales data

Get buyer data

sales file

D4

buyer

## Level-2 DFD (Process P1: Manage Owners)

Register owners

1.1

Save owner data

Get owner data

retrieve owner data

Update owner info

1.2

Get owner data

Owner file

D1

owner

Save owner data

(optional)

Retrieve owner data

Deregister Owner

1.3

## Level-2 DFD (Process P2: Manage Auctions)

Schedule Auction

2.1

Save auction data

Auction file

D2

Save auction status

Get auction data

Get livestock data

owner

Register livestock

2.2

Save livestock data

Get owner input

Livestock file

D3

Retrieve livestock data

Query Livestock

2.3

Retrieve livestock status

Retrieve livestock data

Get buyer input

buyer

Get buyer data

save sales data

Record sale

2.4

sales file

D4

## Level-2 DFD (Process P3: View Data)

Retrieve sales data

Retrieve livestock data

Yearly Livestock analysis

3.2

Yearly Revenue analysis

3.1

Livestock file

D3

sales file

D4

# Data Model (Class Diagram)

This data model shows how the data in the program interacts with each other.

## Class Diagram

name

address

town

county

phone

email

Owner id

owners

Auction date

Time

Slot Id

Slot\_status

auction

1

Relates to

1

Has a

0..\*

Type

Breed

Age

Gender

Tag

Starting Price

status

livestock

0..\*

Buyer

Buyer contact

Final price

sale id

sales

Relates to

1

1

## Relational Schema

Owners (Owner ID, Address, town, county, phone, email)

Livestock (Tag, Type, Breed, Age, Gender, Starting Price, status)

Auction (Slot id, Auction Date, time)

Sales (sale id, Buyer, contact, Final Price)

## Database Schema

Relation Owners

OwnerId numeric (3)

OwnerName varchar2(20)

Town varchar2(15)

County varchar2(10)

` PhoneNo char (12)

Email varchar2(20)

Primary key OwnerId

Relation Auction

SlotId numeric (3)

auctionDate Date

time varchar2(5)

slot\_status char (1)

Primary key SlotId

Relation Livestock

Tag Char (15)

OwnerId numeric (3)

SlotId numeric (3)

Type varchar2(6)

Breed varchar2(20)

Age numeric (2)

Gender char (1)

Starting Price numeric (3.2)

Status char (1)

Primary key Tag

Foreign Key OwnerID References Owners

Foreign Key SlotId References Auction

Relation Sales

Saleid numeric (3)

BuyerName varchar2(20)

BuyerPhoneNo char (12)

Final Price numeric (3.2)

Tag Char (15)

Primary key Saleid

Foreign Key tag References Livestock

# Conclusion

I have completed the forms for the livestock auction and organised the data into 4 files which could make it easier for integrating the sql into the project, I have also translated my knowledge of java into c# in such ways as finding a char, using a try catch, and parsing values into ints and doubles. I have learned how to make lists and managing the list values.

# Appendices

## Declaration of Originality Form

|  |  |
| --- | --- |
|  | |
| Name James Clifford  T Number t00225039  Class Group kcompb2s  Assignment Title livestock auction system | |
| **Students are advised to inform themselves of the Institute Anti-Plagiarism Policy.** | |
| **I confirm that this assignment is my own work and that I have** | |
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| Used the Institute’s approved referencing style throughout | **✓** |
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# Sources

Cow image: https://www.britannica.com/animal/cow