Bilkent University

Department Of Computer Engineering

CS 353

Database Management Systems Project

Project Proposal

Zoo Database System

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1. INTRODUCTION

The following content of the report will discuss the functionalities and various descriptions of our project. The report opens with a project description which explains the overall project summary and aim of the project, also Firstly, we explained why we should implement a database system to the zoo infrastructure, which is the foundation of our project because our implementation should advance and make an already working system more efficient with complex relationships that already exist in the realm of the zoo. We aim to digitize the processes of the zoo using computer science and database systems techniques which are included in the project description. After that, we listed the requirement analysis bits, which are crucially important when constituting the project from the ground up, because it loosely demonstrates the project and limits the boundaries when no implementation is put. In that way it frames our project in a particular and projected technical landscape.

2. PROJECT DESCRIPTION

Zoo Database System is a web-based application that provides the uses of managing the zoo by assigning the employees jobs and responsibilities and the system is also to be used by the visitors, who can join tours and provide feedback. The system includes the information on events such as group tours, educational programs and conservation organizations created by the coordinators, the invited veterinarians to the educational programs, the keepers that are assigned to cages who are responsible for the animal's various needs, also the visitor information, donation and feedback are a part of the data. Using this data, the users which are employees, can create events and invite veterinarians if they are coordinators, be assigned to cages, respond to the complaint forms, request treatment for an animal, schedule training for an animal and regulate food for the cages if they are keepers. The veterinarians can accept or reject invitations to the educational programs and requested treatments of the animals. The visitor type of users can attend group tours, make donations, create complaint forms and comment on group tours.

The implementation of this application aims to create a web-based platform where zoo management is conducted as efficiently as possible. Additionally, we aim to provide an application for the zoo visitors such that their needs regarding the zoo tours are met to the largest extent. As the zoo is a dynamic work environment with the shipment of many species from around the globe, the data must be kept accurately; its functionalities must be kept updated on a regular basis.

All in all, the Zoo Database System is wanted to be a web-based platform where the zoo employee and visitors can reach their desired information regarding the Zoo reliably, also performing operations that are designed to meet their purposes.

2.1. Why Do We Need a Database for a Zoo Data Management System?

A zoo contains a variety of information regarding educational events, programs, tours, etc. Additionally, data regarding the employees of the zoo such as the cage keepers, animal caretakers, veterinarians, coordinators, etc. must be kept in order to provide job assignments and responsibilities to the employees to provide an efficient working place. This complex set of relationships require an automated database system to keep data in a systematic and accurate way and regulate the actions to be performed by the users of this database system.

2.2. How Do We Use a Database as a Part of the Project?

The database will help to organize the zoo activities, in that way it will manage all the data related to the zoo. Users will use the database system to retrieve or enter the relevant information, which will affect the overall zoo framework positively. There are a number of different employees in the zoo, keeper, veterinarian and coordinator. The database will be updated according to the different events or interactions that actors create. For example, coordinators create events, which can either be educational, group tours and conservation programs, which other employees participate in. The visitors attend those events by paying a requested amount and make donations to specific events. The database will create new data entries or updated new ones according to the aforementioned activities happening in the zoo. The database will relate different elements of the infrastructure in meaningful relationships, where every entry or update will affect the corresponding relationships, making a fluid and functioning data system.

3. REQUIREMENTS

3.1 Functional Requirements

3.1.1 Visitor

- Visitors can select the group tour that they want to attend among all group tours
- Visitors can pay for group tours
- Visitors can attend paid group tours
- Visitors can make donations to the conservation organizations
- Visitors can create complaint forms and comment on group tours

3.1.2 Employee

3.1.2.1 Keeper

- Keepers can track a cage that they have been assigned to
- Keepers can request treatment for an animal that belongs to a cage they look after
- Keepers can schedule training for animals
- Keepers can regularize food for the cages

3.1.2.2 Veterinarian

- Accept/reject the invitation to an educational program
- Accept/reject the requested treatment for animals.

3.1.2.3 Coordinator

- Create event
- Choose event type
- Invite veterinarian if the event is educational
- Assign keeper to a cage
- Respond to complaint forms.

3.2. Non-Functional Requirements

3.2.1. Authentication & Security

- Data going in and out of the server will be encrypted.
- User passwords will not be kept in plain text.

3.2.2. User-Friendliness

- Using the database should be seamless to the user. Every property should be clear to the user for them to use the system clearly.

3.2.3. Quick Response Time

- The system should respond to the user as soon as possible. Loading data and browsing the database should be comfortable and should not irritate the users with laggy navigations.

3.2.4. Accurate Data Distribution

- Data shouldn't be lost under any function. The system design is done in a way that components are dependent, which is any data loss will not be tolerated as It will cause the loss of more data in the system.

3.2.5. Capacity

- A large amount of data will be needed to be stored, such as the vast number of employee types and visitors.

3.2.6. Reliability

- The system should continue performing the functions such that the recovery is done as fast as possible. So that the users will not be affected by the system failure.

3.3. Pseudo Requirements (Constraints)

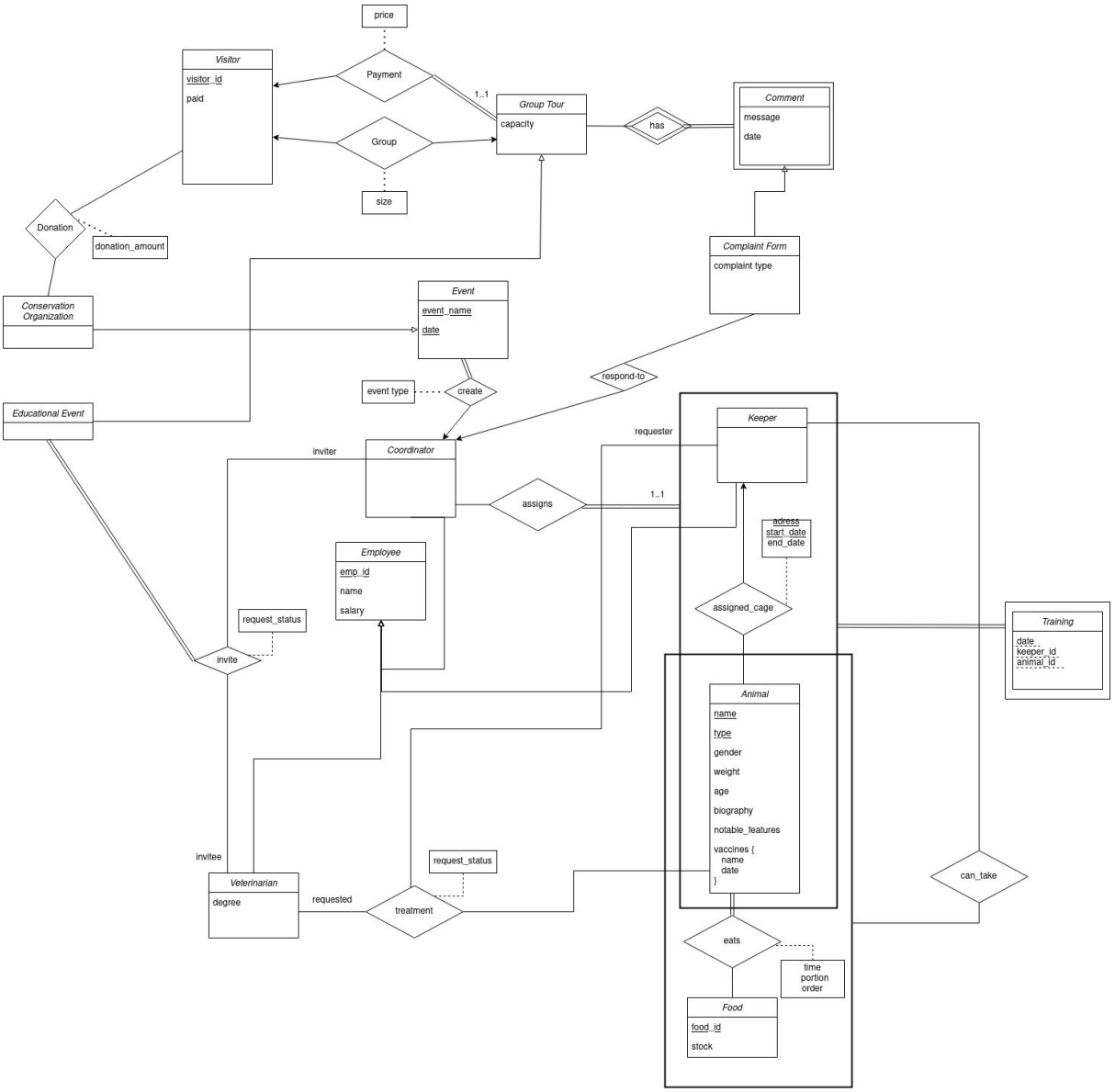
- PostgreSQL will be used for the database.
- Javascript, HTML, CSS, JQuery will be used for the front-end development of the website.
- Spring will be used for the back-end development of the website.

4. LIMITATIONS

- A keeper cannot be assigned to more than one cage at the same time.
- Employees cannot be a type other than a keeper, veterinarian or coordinator.

- Coordinators cannot create an event other than the types, group tour, educational program or a conservation organization.
- Tours should be attended by at least one visitor.
- The visitor must choose a group tour that is created by a coordinator.
- The visitors must pay the requested amount of money for the selected group tour.
- Group size cannot exceed the Group Tour capacity.
- Each animal eats food.
- Animal training can only be arranged at a date, which is between the start date and the end date of the keeper’s assignment time to the cage, which is determined by the coordinator.

5. ENTITY RELATIONSHIP DIAGRAM



6. CONCLUSION

The Zoo Database System is a web-based application that is designed for the zoo employees and visitors, for making management and data observation more efficient throughout the zoo system. The database system displays the job assignments and data of activity management such as tour, educational program and conservation organization accurately.

In this report, the information on the zoo database system project is explained followed by the aim and importance of incorporating a database management system as a

part of the zoo system. The description of the project is followed by the requirements where functional requirements, non-functional requirements and pseudo requirements are discussed. The limitations of the system are followed by the ER diagram to display the design of the database.

7. WEBSITE

Reports will be available at:
https://atayurtsever.github.io/Zoo/