Software Requirements Specification

for

Zoo and Wildlife Data

Kunj Rakesh Patel(202001421)

Divya Kirtikuar Patel(202001420)

Lab Group - 6

Section - 8

Group ID - 8.15

Dhirubhai Ambani Institute of Information and Communication Technology

23 September 2022

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1. Introduction

1.1 Purpose

The purpose of this database is to record statistics of the different kinds of wildlife sanctuaries, national parks, zoos are present in the country and in which particular state. It is supposed to keep track of all wildlife movements that are present in the locations listed in the database. It also incorporates information of each animal like species, population, geographical location of its habitat, average life expectancy etc. It also stores data about extinct species that once inhabited these wildlife sanctuaries and parks. It also helps administration by keeping track of funding and resources that each wildlife sanctuary gets and what are the major areas of expenditure for them. For helping veterinarians keep animals healthy it also contains information about illness or medical attention required by the animals. Migration of animals between different wildlife sanctuaries can also be recorded along with proper reasons.

1.2 Intended Audience and Reading Suggestions

- Masses who are interested in studying wildlife statistics.
- Professionals such as zoologists who want to analyze wildlife data for rigorous study.
- Computer educated wildlife enthusiasts who are interested in further improving and developing this database.
- People involved in day to day administration of wildlife sanctuaries.

1.3 Product Scope

This software can be used to do graphical analysis of wildlife data and to understand wildlife data in a better way and discover hidden aspects about it, such as patterns and relationships between different attributes of the database. It provides a very general overview of the main features of relational databases for they who do not have any background in data management. It also describes the data that are stored in the wildlife database and how they are organized, with the description of each table and field stored in the database.

1.4 Description

The database consists of multiple tables that are the primary use of different people providing services to the wildlife sanctuaries or that are being employed by the administration. For example people who are veterinarians primarily access the table that contains data related to health and well being of the animals.

Similarly there are tables that contain information related to financial expenditure, animal movements, details about different locations where animals are protected etc. The table related to expenditure contains some attributes like date, rate(price of the product or service bought), Item(name or description of the service or goods), location(wildlife sanctuary where the expenditure was made), ID(number given to each location to uniquely identify it). There are also some constraints implemented like the total amount that can be expended at a location cannot be greater that the budget allocated to it which is stored in a table that contains data regarding the locations. This table also contains attributes like name of the location, ID, state or district where it's located, budget allocated to it, type of location(wildlife sanctuary, bioreserve etc) and details of all the animals that treat the location as their habitat. The expenditure can be decided by studying trends in number of animals of each species, more expenditure can be done on animals with population less than estimated number in the food chain to prevent any “Bottleneck Event” and later on extinction of the species.

For tracking and keeping details updated about animals different tables are needed one table can be made such that it contains information about the entire species. This includes keeping track of population of the species, trend i.e percentage change in population, male to female ratio, average life expectancy of the species, birth rate, remarks etc. But for some endangered species we would also need to monitor every single animal in that species thus a dedicated table should be present to track individual animals. It contains personal data of the animal like species, local name, its habitat, parent, children, health, age etc.

By tracking the movement of animals we can study their favorable weather and favorable climate conditions and in what time of the year they are most active and their food requirements. Birth rate of animals is not uniform throughout the year which we need to monitor precisely in order to maintain stable food chains in the ecosystem.

To prevent erroneous or illicit changes being made to the database strict authorization protocol is also implemented. For example a vet only needs to make changes to a table that contains information relevant to his use i.e table containing medical information of the animals and he only needs to see tables that contain data related to animal movement and

species growth. Similarly he should not be allowed to access tables containing expenditure and financial information of the sanctuary as the administration is concerned with these details and only they should be allowed to access these records.

We can define different views of this database such as gps_positions which shows animal locations with valid coordinates and information on animals, convex_hull which displays the convex hull of all valid locations per all the animals of afrimove dataset, locations_set which displays the core information of locations data (id of the animal, the acquisition time and the geometry) and trajectories which displays trajectories as linear features per each of the animals of wildlife dataset.

Interviews

Interview 1

Project Reference: SF/SJ/2003/12

Interviewee: 1) Shri Devendra Kishor Davda
Designation: Minister of Tourism, Government of India

Contact Details:

Organization Details:Lok Kalyan Party

Interviewer:
1) Kunj Rakesh Patel - Developer
2) Divya Kirtikumar Patel Developer

Date: 30/9/2022 Time: 14:30

Duration: 45 minutes Place: Ministry of Tourism

Purpose of Interview:
To identify requirements for a extensive database to keep track of wildlife in the country

Points discussed in the interview:

- Protection of wildlife is of utmost importance.
- Important streamline efficiency and boost productivity at the national parks.
- Government is committed to boost wildlife awareness and diversity in the country
- To ensure this many exotic animals like cheetahs are brought to the country to revive their extinct population.
- Therefore it is important to maintain this database optimally so people from different walks of life can benefit from it.
- Also correction and verification of data should be ensured and unauthorized changes should be prevented.

Interview 2

System:Wildlife Management Solutions

Interviewee: 1) Dr. Rudrasingh Gohel

Contact Details: rudrapg@gmail.com

Interviewer:
1)Divya Patel, Designation: Developer - Wildlife Management Solutions
2) Kunj Patel, Designation: Developer - Wildlife Management Solutions

Date: 30/9/2022
Time: 18:30
Duration: 45 minutes
Place: Gujarat Forest Department Wildlife, Aranya Bhavan, Sector 10, Gandhinagar

Purpose of the interview:
Preliminary meeting to identify problems and requirements regarding wildlife database management for medical purposes.

Points discussed during the interview:-

We saw that in recent years many animal diseases broke out due to which many animals died in sanctuaries. What's your take on that ?
Many times we see disease breakout due to which a large number of animals die which affects all the animals in the food chain and rare/endangered animals may go to the verge of extinction due to this.

What do you think of the current status of the health monitoring of wildlife animals in wildlife sanctuaries ?
Currently we do routine health checkups of wild animals, but it is very difficult to check the health of all animals and due to which many times animals die when they don't get required medical attention, therefore there is an urgent need for a system which alarms doctors when any animal gets injured or ill in a wildlife sanctuary, for which we need to maintain data of all animals with some unique ID in order to uniquely identify them.

What are your suggestions for the government for managing wildlife ?

- Active participation and inspection of zoological management decisions such as husbandry, nutrition, animal shipment and pest control.
- Scientific biological data collection, analysis and management.
- Management of emerging disease and health crisis intervention

Interview 3

System:Wildlife Management Solutions

Interviewee: 1) Mahadeva Subramania Mani
Designation- Zoologist

Contact Details: mahadevamani@gmail.com

Interviewer:
1)Divya Patel, Designation: Developer - Wildlife Management Solutions
2) Kunj Patel, Designation: Developer - Wildlife Management Solutions

Date: 30/9/2022
Time: 18:30
Duration: 45 minutes
Place: Gujarat Forest Department Wildlife, Aranya Bhavan, Sector 10, Gandhinagar

Purpose of the interview:
Preliminary meeting to identify problems and requirements regarding wildlife management system for research and study purposes.

Points discussed during the interview:-

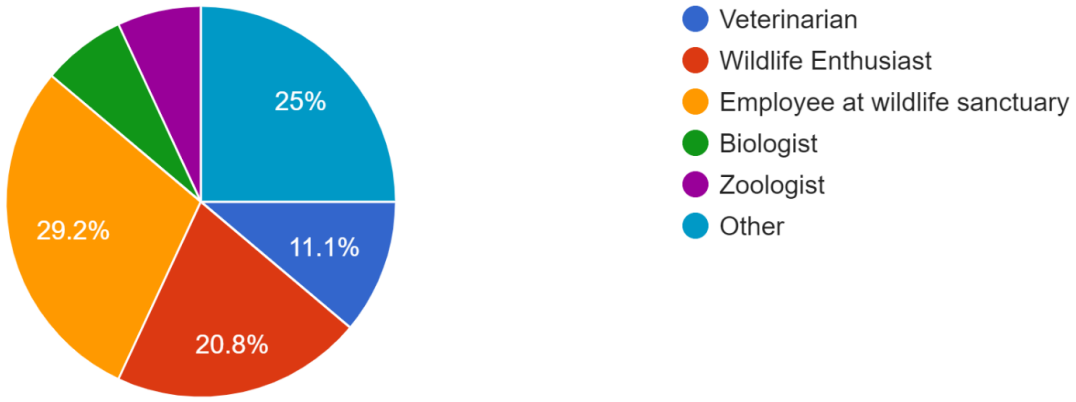
What kind of data do professionals study and what kind of data do you wish to collect ?
We study animal data like population, species, lifespan , daily activities , food preferences, their impact on the ecosystem and food chain for each species of animal. We wish we collected more data for species with very less population and more data about their daily activities and food preferences.

What factors do you think affect the wellbeing of animals ?
By confining animals to a cage or enclosure, we reduce the complexity of their environment, severely narrowing the natural control they should detain over it and restricting the range of behaviors they are able to exhibit. Where animals have very limited choices we are the ones planning almost all aspects of their life (e.g., feeding schedules, what to eat, where to sleep, who to live or to reproduce with). Effects of sensory deprivation and physical variety in the environment may result in aggression, boredom, anxiety, frustration and, ultimately, both physical and physiological illness. Furthermore, preservation of core biological behaviors is essential.Thus, captive establishments have an ethical and legal obligation to provide for the holistic welfare of all animals under their protection for which we need to monitor the behavior of animals under the wildlife sanctuary.

Questionaire

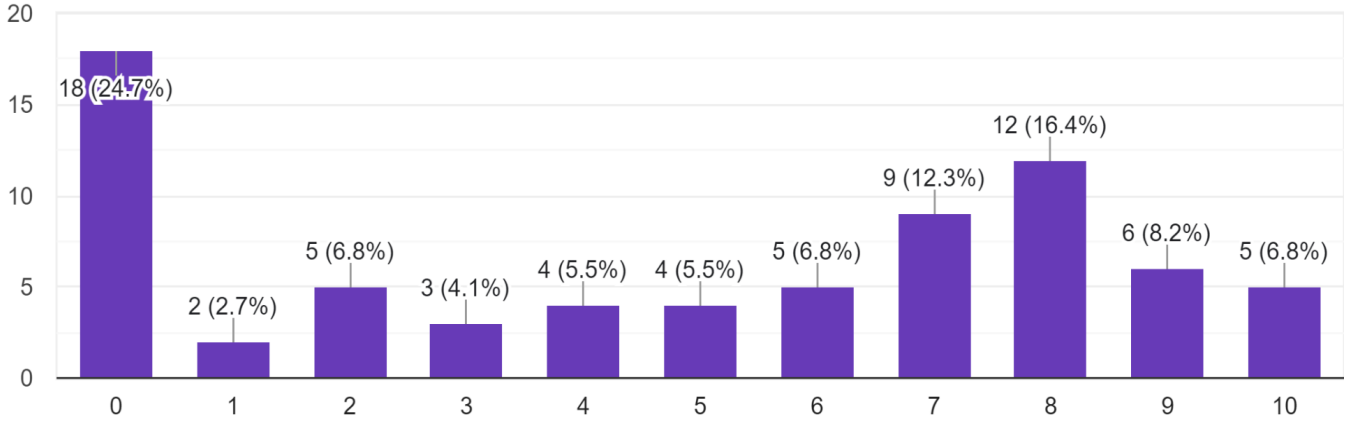
What is your profession ?

72 responses



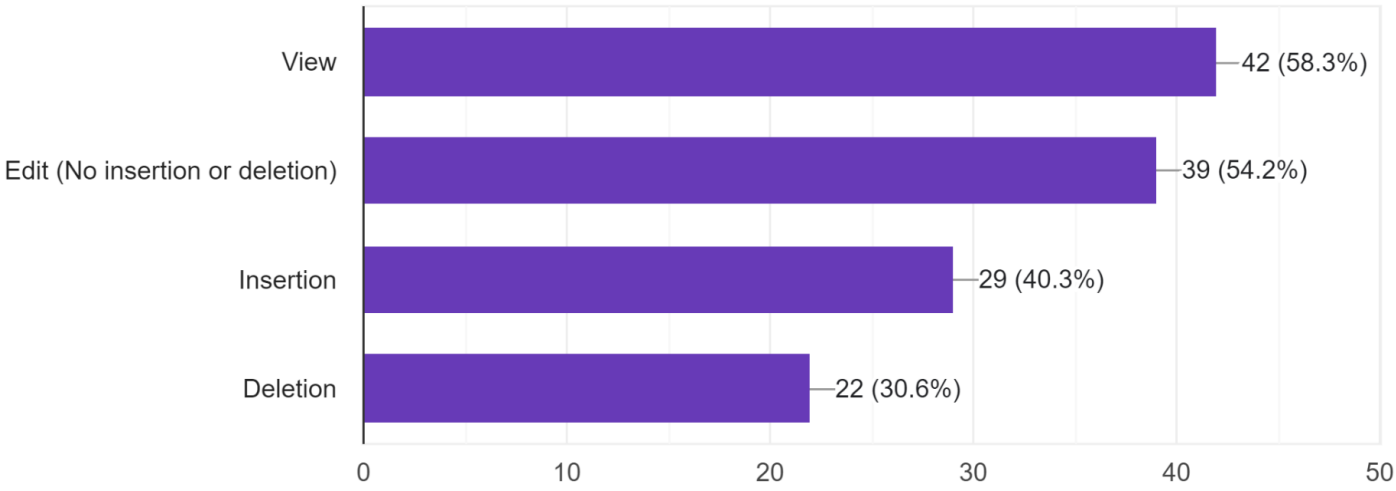
How frequently would you be using this database on daily basis ? (value/10)

73 responses



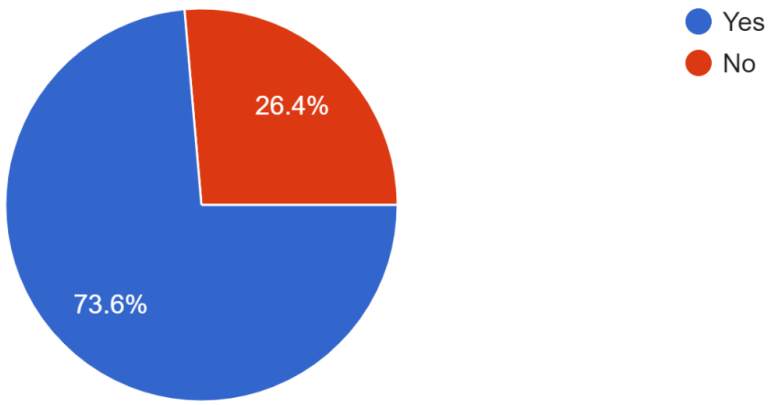
What kind of access would you require ?

72 responses



Would you require a dedicated table or view to yourself ?

72 responses



Observation:

From the survey we observed that most of the people preferred that they would have a dedicated view to themselves so that they could easily go through data that was relevant to them and was needed for their work.
We can also note that most of the people just needed to see the data and not make any changes to it. Only a small percentage of people were involved in the maintenance and regularly updating the data.Hence it would be carefully given authorization to people based on their needs.
As it can be seen that most of the people would make 70-80 requests to the database so if we assume that every day 1000 people will use the database a total of 70-80 k requests should be processed every day.