

## Zoo Information Management System (ZIMS) for Anna Zoological Park, Chennai, India

<sup>1</sup>K. Thiruthanigesan, <sup>1</sup>N. Thiruchchelvan, <sup>2</sup>A. Maria Vinitha and <sup>2</sup>J. Jerald Inico

<sup>1</sup>University College of Anuradhapura, University of Vocational Technology, Sri Lanka

<sup>2</sup>Department of Computer Science, Loyola College, Chennai, India

---

**Abstract:** Anna zoological park of Chennai, India resides a very rich animal diversity, whereas maintenance recorded manually. Since, a research study was conducted to computerize their administration, maintenance and ticketing fields were easy. Therefore, designed a database system named, Zoo Information Management System (ZIMS) to maintain the entire details of the zoological park with an objective, to formulate user-friendly zoo information management system for Anna zoological park. ZIMS was developed as a secured database related to visitors' entry tickets, to keep and maintain the animals' details (birth, death & updates) without manual effort and to store papers. Reducing usage of papers helps to keep green environment.

**Key words:** Zoo Information Management System (ZIMS) • Database • Ticketing • User Friendly

---

### INTRODUCTION

The world in 21<sup>st</sup> century is growing up in every field of technology such as education, medicine, transport and so on, the use of technology makes the world so faster and easier than the early world and it releases the world from manual usage in every field. In the early days the manual usage caused many mistakes by the user and administrative. Using manual properties in the fields was not comfortable for the consumers, because it was slower than technical usages, caused wastages of the consumers' time and contained many formalities in usage. Information and database system projects are initiated to improve the accuracy of the processing data and to ensure the procedure prescribing how to do a specific task. A computer program can maintain accurate and consistent database hence it gives improved performance. The program efficiency increased considerably by including automatic calculations and fast data retrieval capabilities. This will dramatically reduce the manual error and permit more study at lower cost and effort [1].

Arignar Anna Zoological Park (AAZP) is situated Chennai, Tamil Nadu in India and it is very rich in terms of animal diversity, especially for mammals and insects [2, 3]. Anna zoological park is using manual entry and record keeping for their administration, maintenance and ticket

entry fields. Using computerized programs for the above fields is easy to maintain whole data in user friendly way. According to the basic needs of programs for this zoological park, this research was carried out to make the ZIMS for works easier.

**System Description:** The new system is simple in its structure and operations. The operation procedures are easily understandable and sufficiently flexible to cope with future requirements [4, 5]. The need for zoo information management System (ZIMS) is concerned with zoo information handling and keeping all the data in a proper way that maintained without any error data. This project provides a new way to maintain the visitor entries by providing the entry tickets, which saved in the database, so that any time the admin can view the entries details of the visitor as well as the total amount collected by the entries. It also keeps the track of animals' data with its unique id in such a way that the data of the animals are loaded into the database [5-7]. the unique id also used to display the loaded data. The expected system should at least have two types of users with different roles from each other. The administrator has no limitation in handling data and he/she has the power to allow the new user into the system. While the other officers have own limitation in handling data. Zoo information system will provide

diplomatic way in maintain the zoo. Moreover, it enables the management to get reports for making quick decisions, which are not possible in the existing manual system. This system developed by using C#.Net, [8]. and Microsoft SQL Server [9].

**Existing System:** The current system in the Anna zoological park has only the manual entry ticketing and the data both the visitors' entries and data animals not saved in the secured database; it leads to major drawback to handling the data with errors. Since, an objective was developed to formulate a zoo information management system for Anna Zoological Park.

## MATERIALS AND METHODS

### System Testing

**Unit Testing:** The ZIMS system was developed following modules such as animals' data entry module, animals' data update module and ticketing module. As a unit testing on each and every modules of a system, the above-mentioned modules were tested independently. Data validation of each an every field were done by entering correct and wrong values, (For an example, in the animals data entry module, Animals name field accepts only alphabets. This field was tested by entering alphabets to ensure that the system accepts it and also by entering numeric values to ensure that the sysetm shows an error message). Number of male, Female and unsex field accepts only numeric values. This field was tested by entering numeric values to ensure that the system accepts it and also by entering alphabets to ensure that the system shows an error message. Initially, few errors were detected on negative values testing and then it was overcome by including appropriate error handling message. In addition to every field of validation, the function of each command button was tested. For an example, on click the add button in the animals' details, was checked with add a new animal data to the table and user is able to retrieve back sucessfully were tested. Few run-time errors were encountered during testing and then it was resolved by adding proper loops & other methods.

**Integration Testing:** Integration teste was done to ensure any action in a module resulted in the appropriate data maintenance in another module.

**Acceptance Testing:** Each module in the system was designed for some purposes. Acceptance testing was done on this system to ensure whether the different

functions of this system perform as expected. System was developed as to be able to add, modify and delete the details at any time. All the errors were resolved after examining the code and a fix was done, so that update details were saved to the database properly. After the fixing, the data were updated properly as expected. System was validated using the methodologies such as static validation testing components, dynamic components, text field validation, numeric field validation, empty field validation, range validation.

## RESULTS AND DISCUSSION

Anna Zoological Park use the traditional methods for issuing tickets and maintaining the animal's data storage and it leads to difficulties and tedious method for animals' data storage. ZIMS finds a new way to overcome the above-mentioned problem that provides the tickets effectively without any corrupted data or information and provide a security database to store all animals' details.

ZIMS was developed as a well-secured system. Start off with the system was secured as user entry authenticated by user name and password (Figure 1). If one got the user name and password of admin, thereafter only admin person authenticated for the creation of the new user accounts.

The following functional modules were developed for ZIMS such as Animals data entry module, Animals data update module, Animals data chart module, Entrance ticket module, Ticket data module, Day to day ticketing information module, ZIMS help module.

Figure 2 shows the module for new entry used to maintain the animal details in a computerized program. Through this page user can add, delete, update and refresh the animal details. The details that were updated through new entry module automatically saved in the database. Module maintains basic details of all types of animals that includes in the whole zoo such as name of the species, unique id of the animal and date of the arrival, number of male, female and unsex. These categories helped to handle the whole details of the animals easily & easy to upload the details.

**Data Update Module:** Data update module (Figure 3) used to update the current changes of the animals. It consists of the following details such as death, birth, acquisitions and disposals of the animals. The given details handled and updated through the specific id of the specific animals these fields allowed to handle by the users as well as admin.



Fig. 1: Login Module for the ZIMS

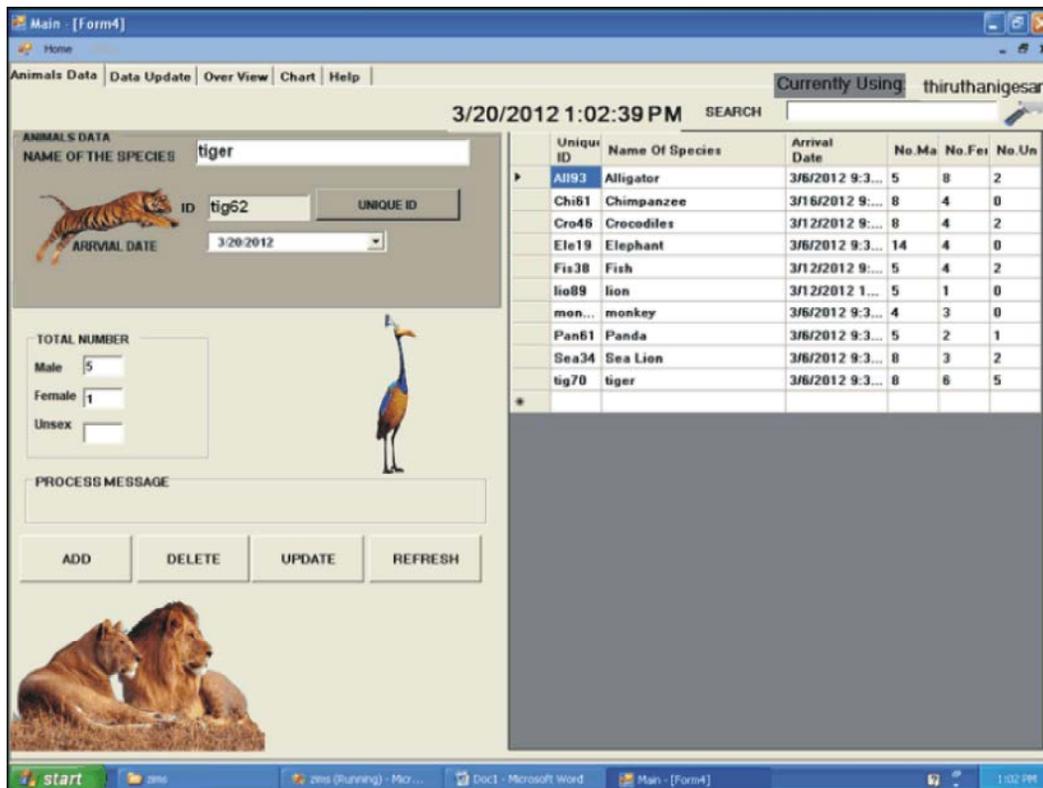


Fig. 2: Module for new entry form to the ZIMS

Animals' data report was used to build the report documents. It helps to view the updated details of the animals through crystal report viewer and easy to convert the given details to different types of documents like pdf, excel it is support for printing.

Entry ticketing module (Figure 4) used to generate ticketing for whole zoo. In this module, the updates were categorized as given bellow topics such as adult, children, camera, video and student. These given fields are

automatically stored when the tickets are printed under the specific ticket number, Specific categories of the ticketing can only be handle by the users and the whole details are able to handle by the admin. This technique was used to prevent the unnecessary hiding or changing of the details of ticketing

Figure 4 reveals that ticketing according to the concept of textbox leave event. This page contains a form of ticketing. It makes ticketing for zoo counters easier than

Animals Data | Data Update | Over View | Chart | Help

Currently Using: thruthanigesan

ANIMALS DATA

ID:

**BIRTH**  
 Male   
 Female   
 Unsex

**DEATH**  
 Male   
 Female   
 Unsex

**DISPOSALS**  
 Male   
 Female   
 Unsex

**ACQUISITIONS**  
 Male   
 Female   
 Unsex

PROCESS MESSAGE  
 Please Select The Row For Update

UPDATE

ID	name	BM	BF	BU	DM	DF	DU	DPI	DPI	DPI	AM	AF	AU
AI193	Alligator	5	4	0	0	0	0	0	0	0	0	0	0
Ch...	Chimpanzee												
Cr...	Crocodiles												
El...	Elephant	0	5	0	0	2	5	0	0	0	0	0	0
Fi...	Fish												
lio89	lion												
mo...	monkey												
Pa...	Panda												
Se...	Sea Lion												
tig62	tiger												

Fig. 3: Module, day by day updating animals' data

ANNA ZOOLOGICAL PARK TICKETING

Type:

Numbers:

Please enter Number of ticket

Type	Numbers	Amount

Amount Of Pay:

Balance:  Total:

Fig. 4: Ticketing form

normal ticketing form. After the data was entered, it shows the amount, total, balance. Thereafter system automatically printed the ticket.

The numerical data of the animals shown in chart form (Figure 5). When the animals' details changed record, the data chart updated automatically.

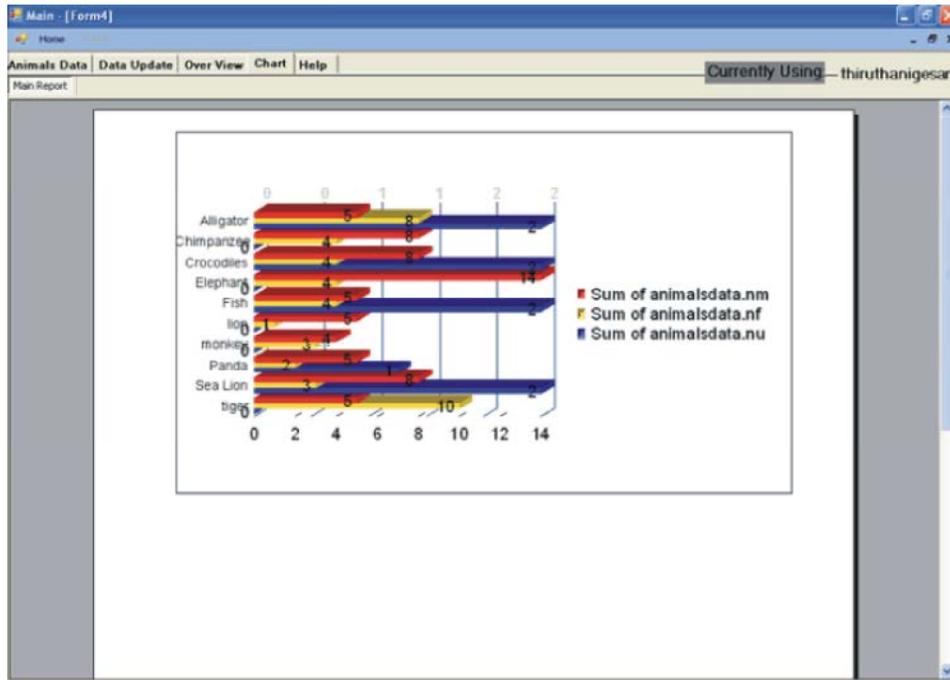


Fig. 5: Chart for number of animal

### CONCLUSIONS

ZIMS is a complete database system for the Anna Zoological Park, gifted to store massive data related to animals and also produce reports according to the requirement. ZIMS successfully controls the data in a user-accessible manner. Furthermore permits the user to access, update and remove the data in a flexible mode.

### REFERENCES

- Gautam, P., R.S. Ragumani and Y.K. Sharma, 2010. A System for Payroll Management, Journal of Computer Science, 6(12): 1531-1534
- Barat, A. and G. Poyyamoli, 2000. Captive breeding and zoo policy in india – lessons from arignar anna zoological park. Zoos' Print Journal, 15(1): 177-183.
- Rajagopal, T., M. Sekar, A. Manimozhi, N. Basker and G. Archunan, 2011. Diversity and community structure of butterfly of arignar anna zoological park, Chennai, Tamilnadu, Journal of Environmental Biology, 32: 201-207.
- Connolly, T.M. and C.E. Begg, 2004. Database System: A Practical Approach to Design, Implementation and Management. 4th Edn., Addison Wesley, USA., pp: 1236.
- Ahmad, N., N. Khan, A.N.A. Alla and A.H. Beg, 2010. A novel database design for student information system. Journal of Computer Science, 6: 43-46.
- Noraziah, A., R. Norhayati, A.N. Abdalla, A.H. Roslina and M.A. Noorlin, 2008. A novel database system model design for tender management system. Journal of Computer Science, 4: 463-466.
- Muslih, O.K. and I.H. Saleh, 2010. Increasing database performance through optimizing structure query language join statement. Journal of Computer Science, 6: 585-590.
- Kogent Learning Solutions Inc, 2008. C# 2008 Programming: Covers. Net 3.5 Black Book, Platinum Ed. Dreamtech Press, pp: 71-226.
- Navathe, S.B. and R. Elmasri, 2011. Fundamentals of Database Systems. Fifth edition, Pearson Education, pp: 152-333.