CS 319 - Object-Oriented Software Engineering

Final Report

ZooMaster

Group 3

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1. Changes of the Design

One of the most important design decisions was the removal of the DataStructure class. We have decided that rather than creating a data structure class, using database indexes such as a hash index on the allowed search keys, would save a lot of implementation time. This way, we are still able to implement fast search on our database and we have more time to enhance the remaining parts of the application. In addition to time efficiency, we also save from the runtime memory. Since database indexes do not use runtime memory, and the data structure would have been created in the runtime and maintain memory during the runtime, as number of tuples in the database grow, the memory which the data structure use would increase as well. This would lead to low performance and also security threats as an attacker could overload the system with high number of additions.

Second of the most important design decision was the removal of the weekly time table because we thought that plants and animals have to be feed and watered in a daily basis. So that we only keep their hour:minute work time. On the other hand, plants have also light time so that zookeepers can control their daily light circle during the day. Lastly we have changed our GUI based on these changes.

2. Complications during the Implementation

One of the challenges is that store images into the database. In the beginning the database manager didn't work properly due to the problems related to the pictures. Then we solved the problem by storing the image as bufferedImage. Other problem is working on GUI in different IDEs because we divided the work. NetBeans has forms for easier GUI design and Eclipse has windowbuilder which is use only java code for the GUI. It is solved by adding screens written in Eclipse into NetBeans.

Another complication was that the GUI builder of NetBeans auto created all of the components into the same main form. This was defeating the entire purpose of object oriented design and causing 5 of our classes to be merged into one. So, we had to figure out a way which allowed us to use the GUI builder of the IDE at the same time as being able to split the components into different classes and be able to customize those classes at our own will. This combination of having control over our software while being able to benefit from automated features was eventually achieved by utilizing the beans feature of NetBeans.

3. User's Guide

Zoomaster is a helper for zookeepers to store information about species and learn their feed, water and light schedule from the database manager. It is simple, easy to learn how to use and it can store all the species information even their images.

Add Species: Zookeeper can add new species into the database.

Remove Species: Zookeeper can delete species from the database

Modify Species: Zookeeper can modify species from the database

Search Species: Zookeeper can search species in the database and get their information.

Detailed Information about Species: After search zookeeper can get detailed information about species he/she want.

Notify Zookeeper: When Feeding, Watering, Begin-End of light time of plants is approximately 5 min later, Zoomaster notifies zookeeper.