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CS-499

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Milestone 3

For category 2, Algorithms and Data Structures I chose my IT-145 application. This is a Java based system that gives various users the ability to add a dog or monkey to the system, remove an animal, view the list of animals, and lastly reserve an animal. The user interacts with the console to perform the various functions. The application was programmed using Eclipse IDE.

There are various reasons why I chose this item to be included in my ePortfolio. First it focusses on finding and interacting with data that is create at runtime. It also takes user input from the console so making sure that input validation is handled properly is of the utmost importance. Furthermore, the original project lacked proper class structure and had all the important methods in the main Driver.java class. For the enhancement I gave the system a better class structure that will allow for different types of animals to be added later on. Lastly this project allows me to showcase my ability to properly search through data as well as show my knowledge in different data structures.

For the first enhancement on this project I created a proper class structure for the system. As stated previously the original project had all the methods in the Driver.java class. This enhancement included moving all of the methods except for the main method, and the menu method to a separate class called Logic.java. I then went ahead and created a delete animal method with will allow the user to remove an animal from the system. By having a separate logic

class, future enhancements can be made to the system without interfering with the processes of other methods.

The second enhancement that I added to the project was that I added secure coding practices throughout the program. This system relies on user input from the console, but the original system has nothing set in place to ensure that the information passed in is valid. For example the system will throw an error message if the user doesn't enter anything in when a question is asked. The enhancement adds additional checks to ensure that the user is not passing in null or empty values.

The last enhancement was to updated the way the system stores and retrieves data. The original project used two array lists that would hold dogs and monkeys. The new system uses a HashMap to save information to the system. The original project would update or remove items by searching through the entire array which took longer. With a HashMap the system can easily search using the key value pair. The system is designed in a way that there are no two dogs with the same name.

I believe that I have met the outcomes that I planned for this enhancement. The course outcomes that pertain to this enhancement are 3 and 4, but also additionally outcome 5 which refers to overall system security. This project uses the various functions of the JAVA programming language to create a well-founded system. The system also allows for various functions such as adding, updating, and deleting information. Since this system uses user input to function properly so its got to have proper input management to ensure that the system does not crash.

While working on this enhancement there were various things that I learned as well as struggled with. Something I struggled with transitioning from an Arraylist to a HashMap. I didn't have much experience using HashMap's so learning how to create the key value pairs and retrieve them was a bit difficult. There were things that I was able to do well, which were properly break the system into different classes. Furthermore the HashMap made it easier to output the information to the console.

References

GeeksforGeeks. (2018, December 11). *Remove an entry using value from HashMap while iterating over it*. https://www.geeksforgeeks.org/remove-an-entry-using-value-from-hashmap-while-iterating-over-it/

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