CS499

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Software Design and Engineering Narrative

The artifact I’ve chosen for my Software Design and Engineering category is my Rescue Animal application. This application is designed to manage Rescue Animals for a fictional company called Grazioso Salvare. The company has two different types of animals it trains to be rescue animals, which are dogs and monkeys. This application serves to keep track of rescue animals and record various attributes about them. This was the final project for the IT-145: Foundation in Application Development course. I took this course in 2022 during my second term at Southern New Hampshire University.

I chose this artifact because it was one of the first projects I worked on, and it allowed me to showcase how much I have grown throughout my time in the Computer Science program. When I originally worked on this project there was much that I did know about how to make code friendlier to read and understand for others. I’ve also learned more about industry best practices and how to apply them. For my enhancement, I’ve chosen to convert the original Java code to Python. I chose this because Python is the most popular coding language and because it’s the language that we have used the least throughout the Computer Science program. As such I wanted to showcase my versatility by re-writing the application in Python. Finally, using Python provides cleaner, more efficient code that is also easier to read than Java for this project.

**Python Example:**

A screen shot of a computer program

Description automatically generated

**Java Example:**

A screen shot of a computer program

Description automatically generated

In comparing the examples above we can see that the Python code is much more concise and does not require explicit type declarations and setters and getters are not necessary unless they are needed for encapsulation. The code is also less verbose making it easier to maintain a project of this size. Moving from Python to Java is not the only enhancement made to the code though. One such enhancement is that I’ve added error handling for situations in which the user enters an invalid number for age. I’ve also streamlined the code by condensing repetitive lines. I did this by using a single function to collect data on attributes that are common to both dogs and monkeys. Finally, I added better comments to my code to make it easier for those looking at it for the first time to understand what is being done.

The changes I have made and documentation I have provided directly apply to a couple of the course outcomes. Specifically, the professional documentation and code review I have provided clearly communicate the purpose of the code and how it functions. The additiona of input validation and error handling makes the application easier to use for a wider audience as they will not be stuck dealing with crashes or errors. Additionally, by moving to Python and providing better comments, it has been made easier to collaborate with developers of varying skill levels. Finally, creating different classes makes it easier for various team members to understand on work on specific parts of the code. This creates a more collaborative environment that allows for contributions from a more diverse audience.

As I went through the process of converting the code from Java to Python, there were some lessons I learned and some challenges which I faced. I learned the importance of future proofing and writing for collaboration as I read through the old code and the comments I had made. I realized that 2 years later, the comments weren’t as obvious as I once thought. I gained a better understanding of the importance of input validation and error handling as I tested the old code and saw the different issues which existed. Finally, I learned how powerful Python is while being so simple to write. It allows developers to focus more on what they are trying to do rather than focusing on avoiding syntactical errors that could cost them hours locating later during debugging. As I mentioned, I also faced some challenges when rewriting the code from Java to Python. I have some experience with Python but I had not created a multi-class python script so I had to do some research on how that could be done. There was also a lot of syntax that I didn’t know which led to me doing a lot of research to find out how something done in Java is done in Python. I started by creating the code in Python almost line for line. I then went back and reviewed it to determine how I could make it more efficient and add more enhancements. Looking back on it, I could have done a better job in the planning stage of adding the additional enhancements and removing redundancies. However, not doing so provided me with an opportunity to further exercise my ability to write code in Python, so it was not a complete loss. Facing these challenges allowed me to learn a great deal and I believe I am a better developer for having gone through them.