

Self-Review

My original goal for my project was to create a mathematical program such that later it could be reused in Input/Output Modeling. The end result is pretty close to goal. In my time working on the project I have been able to implement most matrix, vector, and rational number arithmetic calculations. In addition to this I also created an extensible Entry, Vector, and Matrix class structure such that more subtypes could be added on later.

In implementing the project I also encountered the problem of overflow when it came to performing arithmetic operations. To solve this problem I consulted the design patterns of command and memento to support undo operations and change the type of the Entry, Vector, and Matrix classes as overflow was encountered. The end result was a better class structure that allowed for greater extensibility of the package. The implementation of the command pattern assisted in creating a structure capable of correcting for user input errors.

For each class and method a test class and method was created, respectively. Most methods and classes were tested with ten cases each with accompanying solutions cases. Some methods, such as toString were not tested being that they were created purely for debugging purposes. Some tests which were smaller were tests where the intent was to test properties of classes rather than testing method correctness.

As a result of doing this project I was able to get a firmer grasp on the use of abstract classes and interfaces in Java Programming. I also got a lot of experience in

designing tests to check the correctness of methods and objects. Lastly, I realized the power of design patterns in object oriented design in solving common problems in software design. The end result was the creation of a flexible backend for a mathematics package.