Object-Oriented Design Principles & Patterns

GALWAY-MAYO INSTITUTE OF TECHNOLOGY

Department of Computer Science & Applied Physics

B.Sc. Software Development – Advanced Object-Oriented Design Principles & Patterns (2020)
ASSIGNMENT DESCRIPTION & SCHEDULE

Measuring Software Design Quality Using the Reflection API

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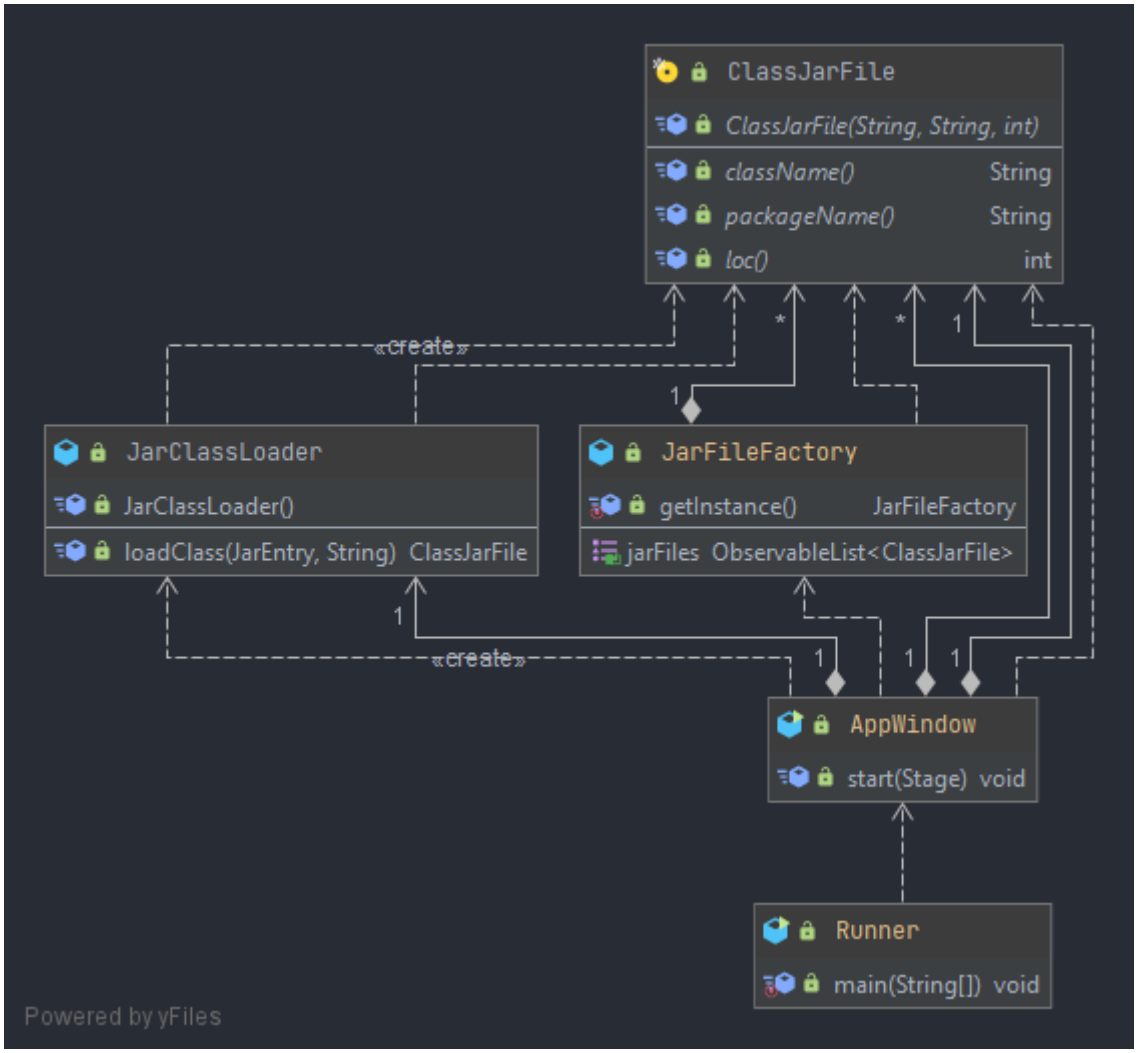
Design Rational

Beginning the Application's design, the Class 'App Window' was first created for the Graphical User Interface (GUI), based on the Composite Pattern. Runner was then created to work along with App Window to Launch the GUI. To create a scene for the GUI, the Strategy Pattern was implemented. App Window was designed to process the Jar files and print them to the GUI. For this to work, the Class 'Class Jar File' was created to handle the files. The 'JarFileFactory' Class was designed as a Singleton that creates a model for the files. App Window then gets the Singleton instance to create the classes. Once this was working, 'Jar Class Loader' was created to abstract the file processing and implement it here. Now App Window handles only the GUI, and Jar Class Loader works as a backend for it. Therefore, App Window imports Jar Class Loader to process the files and make the classes.

In conclusion, the Application's design has App Window working as a front-end, which works together with Jar Class Loader. Jar Class Loader process the files which are handled by Jar File Factory and Class Jar File.

Personally, this project was quite challenging. More time was focused on getting Jar file processing to work. This was seen as a priority and took quite some time to get functionality through trial and error. Multiple ways were tried, and they led to figuring out how to get the files processed to get the Class Names, Packages, and Lines of Code. This led to only an attempt to get the MicroStream DB working but unfortunately could not fully implement.

The following UML diagram shows a suite of classes in the redesign of the application:



END OF DESIGN RATIONAL