COMP0004 Coursework 3 – Java Web Application

Program Features:

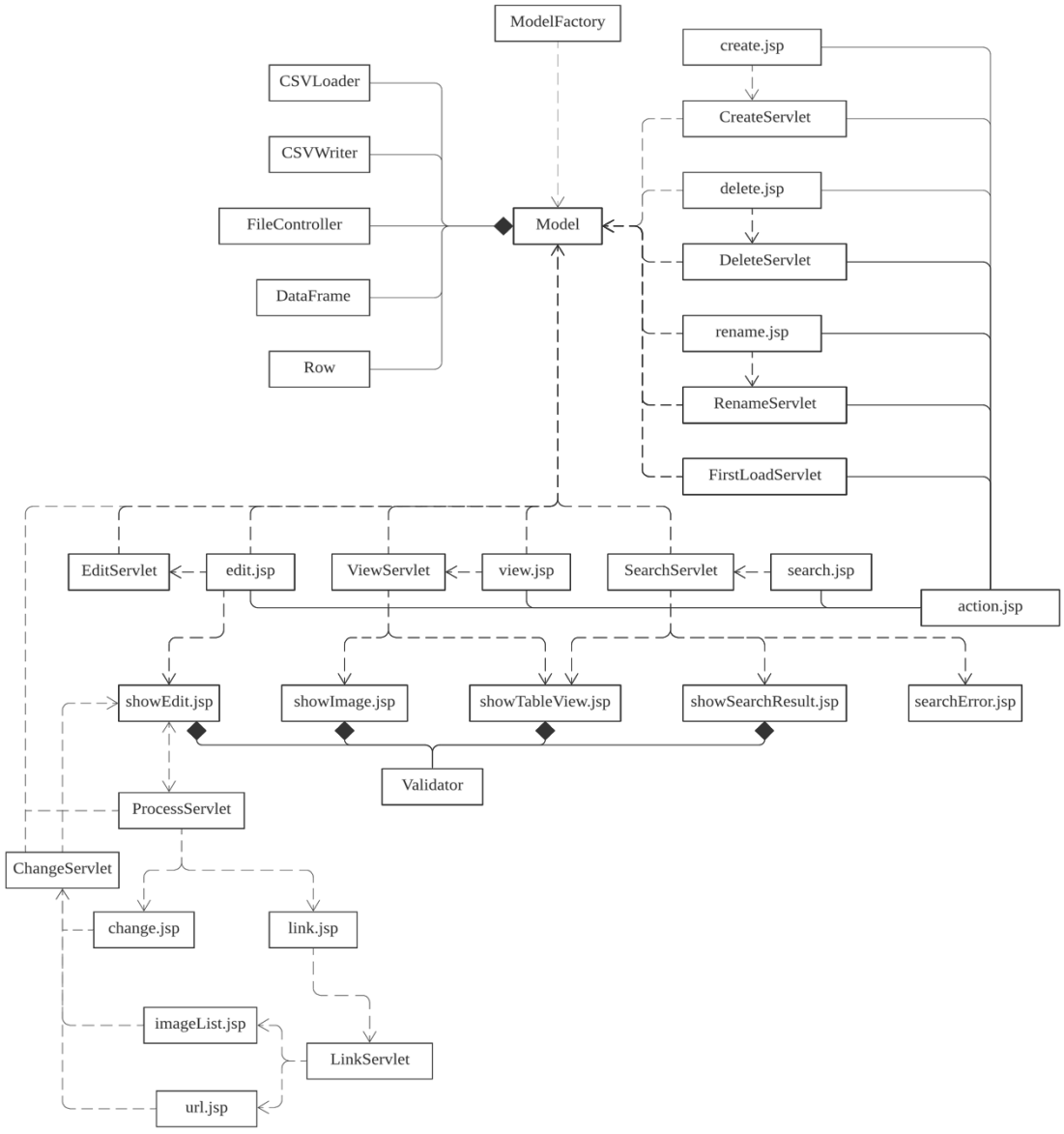
The program can store one or more lists with items of text, image, URL of another website or another list. The web application only loads and supports CSV formatted data files from the “data” directory in the project root, and each line can contain multiple items of different types (separated by commas). Only files in the “data” directory are read and subdirectories are ignored.

Furthermore, this web application supports autosaving. Whenever the user makes changes, the application will always save the changes automatically. The lists stored in the application are named according to their filename. Therefore, it is assumed that the files do not have repeated names due to the autosaving function. If there are files of duplicated names, the first file appeared will be shown during search.

The lists stored in the application can be deleted or renamed. In addition, new lists could be created in the application. Apart from that, the items in the lists could be added, removed, edited or linked to a URL, image or list. Searching in a list or items in lists could be done by going to the related section and inputting the text of the target. This function only allows one item or list in each search and it is case sensitive. If the list or item does not exist, an empty webpage will be shown. Besides, if the last grid is deleted and the list is empty, an empty grid will still be shown for easier editing selection.

As for viewing, it only shows table view so that each item is clearly laid out and will not clump together. URL, image or list viewing are done through a button or link so that the user will be redirected to another webpage upon clicking. However, this feature is only available in the viewing section but not the editing section. Editing section will only show the data in string for simplicity and clarity.

UML Diagram:


ModelFactory
create.jsp
CSVLoader
CreateServlet
CSVWriter
delete.jsp
FileController
Model
DeleteServlet
DataFrame
rename.jsp
Row
RenameServlet
FirstLoadServlet
EditServlet
edit.jsp
ViewServlet
view.jsp
SearchServlet
search.jsp
action.jsp
showEdit.jsp
showImage.jsp
showTableView.jsp
showSearchResult.jsp
searchError.jsp
Validator
ProcessServlet
ChangeServlet
change.jsp
link.jsp
imageList.jsp
LinkServlet
url.jsp

Evaluation of Design and Programming Process:

Reflection:

As the first step of the class design process, I started by planning classes and methods needed after understanding the questions. It is then followed by the programming process where the web application is prototyped. In this phase, further research is done due to the introduction of Maven, Java Servlet Pages and Java Web Servlets. After completing the code structure and definitions, refactoring is the last part of the project in order to improvise on readability and OO design.

There are various classes designed for this application and they are appropriate classes as they are designed according to the features and functionality of the web application. Moreover, all classes are fully in use without repetition. The classes are designed as per the OO design principles and therefore are appropriate.

OO Design Practice:

There are a few principles in the Object-Oriented design. One of it is single-responsibility class, which means a class is only responsible in processing a certain type of task or structure. This could be seen in this web application as all classes are mainly working on a field. For instance, the Model class is responsible for the list updates and changes whereas the FileController class is working on files handling such as creating, renaming, deleting and saving. Therefore, whenever a specific task is needed, it is clear on which class and methods to call to carry out the desired task.

Next, open close design is as well another OO design principle. This means that a class or method is open for extension but close for modification. Thus, whenever a new functionality is introduced, it does not affect the old, tested code. This principle is seen in the web application code as new codes can be introduced for new features without affecting the code as all functions feature the same format and mechanism. However, there is a part where open close design is weak in practice, that is the fact that my version of the web application only supports CSV format files. In my code, the file loading method is specifically for this format and introducing new formats would need modifications and this breaks the rules for this principle.

Other than that, good OO design also features the rule of not repeating codes. I have implemented this by refactoring common codes into a method and whenever it is needed, the method will be called and executed. Therefore, repeated codes could be avoided. Besides the principles stated above, OO design also highlights abstractions. However, as this is a relatively small program, I have not implemented abstractions due to few common methods and relations between classes. I had only implemented interfaces or abstract superclasses such as HttpServlet from the standard Java library.

Overall Quality:

As a beginner in web application coding, learning new concepts and putting them into immediate use within a month has been a challenge. In terms of time frame and knowledge, the web application has been well implemented with all features included and appropriate OO design in my opinion. Classes and methods are appropriate with respect to the web application. However, there are still areas for improvements such as formats for file reading as stated in the last section.

In terms of OO design practice, I think that the classes are cohesive and organised personally. However, due to the lack of experience in OO design and knowledge in advanced concepts and principles. Further studies are still required to improvise on principles such as abstraction and encapsulation. Other than that, web pages are the main parts of this application. They are fitted with all required functionalities but with minimal visuals styles. In order to improve this, knowledge on CSS coding is needed.

In a nutshell, with the current level of knowledge and experience, the web application is well implemented and of good quality with some parts to be improved. The web application could still be upgraded to a more advanced level with the improvisation stated above.