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Software Engineering Project

Graphical User Interface in Java

This project entitled Aldercroft, offers a Java Graphical User Interface that allows users to have an interactive experience with plotting points and lines and saving their actions in a database. Aldercroft, additionally, offers the functionality to load and store points and lines database information in CSV format, they can also be stored selectively.

Our project began with brainstorming sessions where we sketched and planned how this application would be developed, the database design and the GUI components necessary to offer the needed functionalities as outlined in the project task sheet.

The workload was distributed in a manner that everyone had some feature or task to complete on their own before regrouping and integrating the work and deciding on the future course.

Our software development process followed the Waterfall Model. The primary reason for this was the inherent dependancy between the different tasks of the project. The approach is further justified due to the fact that the original requirements, supplied as part of the exercise, were exhaustive and did not have to be iteratively enriched.

Our Gantt chart is a reflection of the waterfall methodology. As depicted, the first activity of our project comprised of designing the GUI, the tasks within this activity included selecting the essential GUI components to satisfy the functional requirements, their layout and their interaction behaviours. The next step to follow was the implementation of event handlers for these GUI components/elements and defining the event workflow for the whole program. At the same time other team members worked on the database schema and connectivity.

Once these elements and event handlers were declared the corresponding methods had to be implemented. One of the first things that had to be done was the formulation and the implementation of the data structure, it was one of the most crucial steps in the development of the Aldercroft application as it stages the data between the UI elements and the database.

The following tasks were dependent on the implementation of the data structure: JTree implementation, selection, retrieval and storage of data from/to JTables and the draw operations on the Draw Panel.

Finally, file import and export functionalities were implemented that enables the user to fetch contents of a CSV file into JTables and vice versa via a file selection browser. Throughout the development testing phases were carried out through iterative definition of test cases.

Fig. 1 Resource Chart (Gantt Chart)

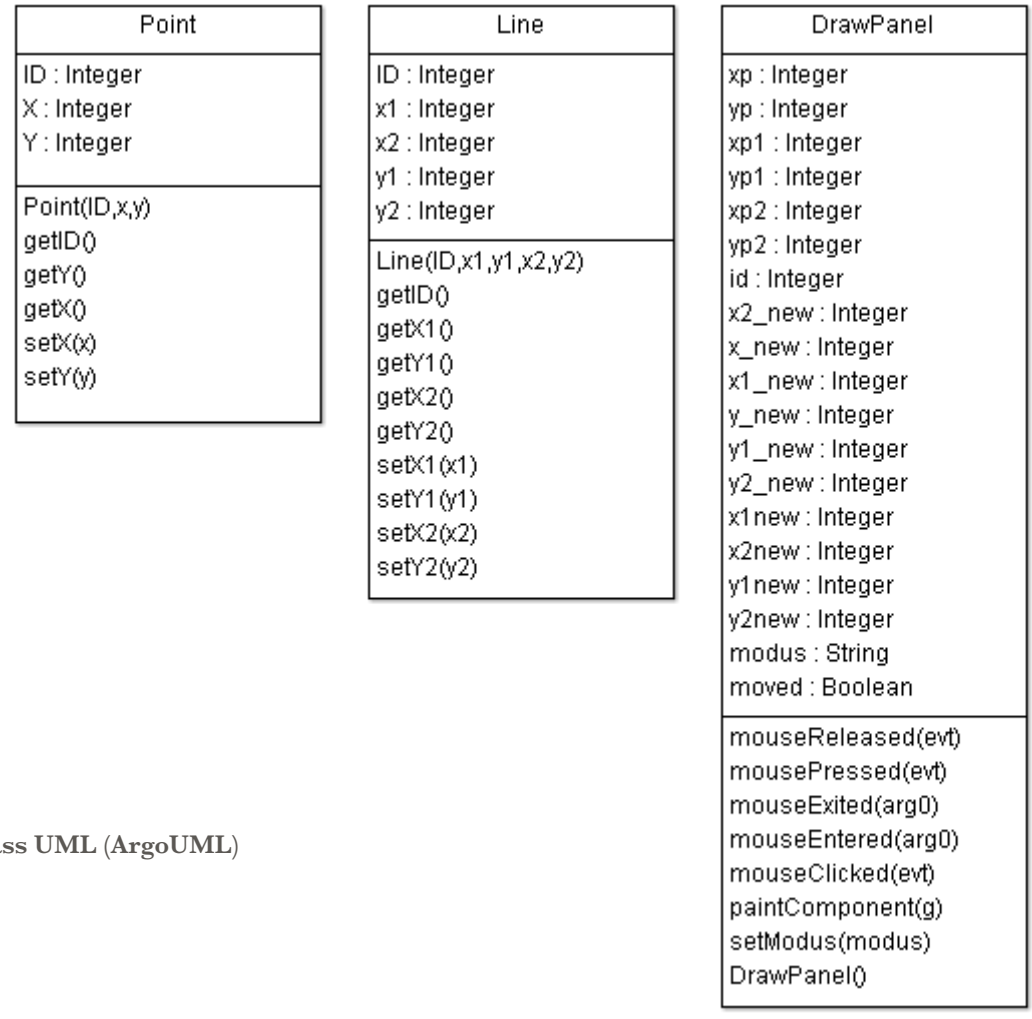
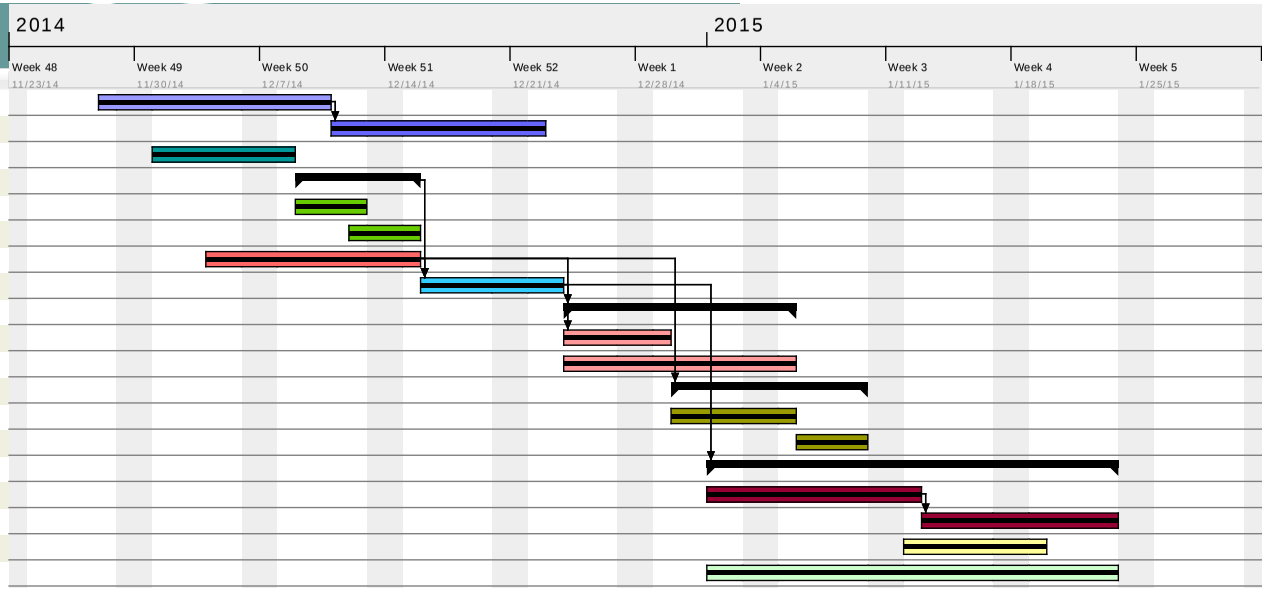


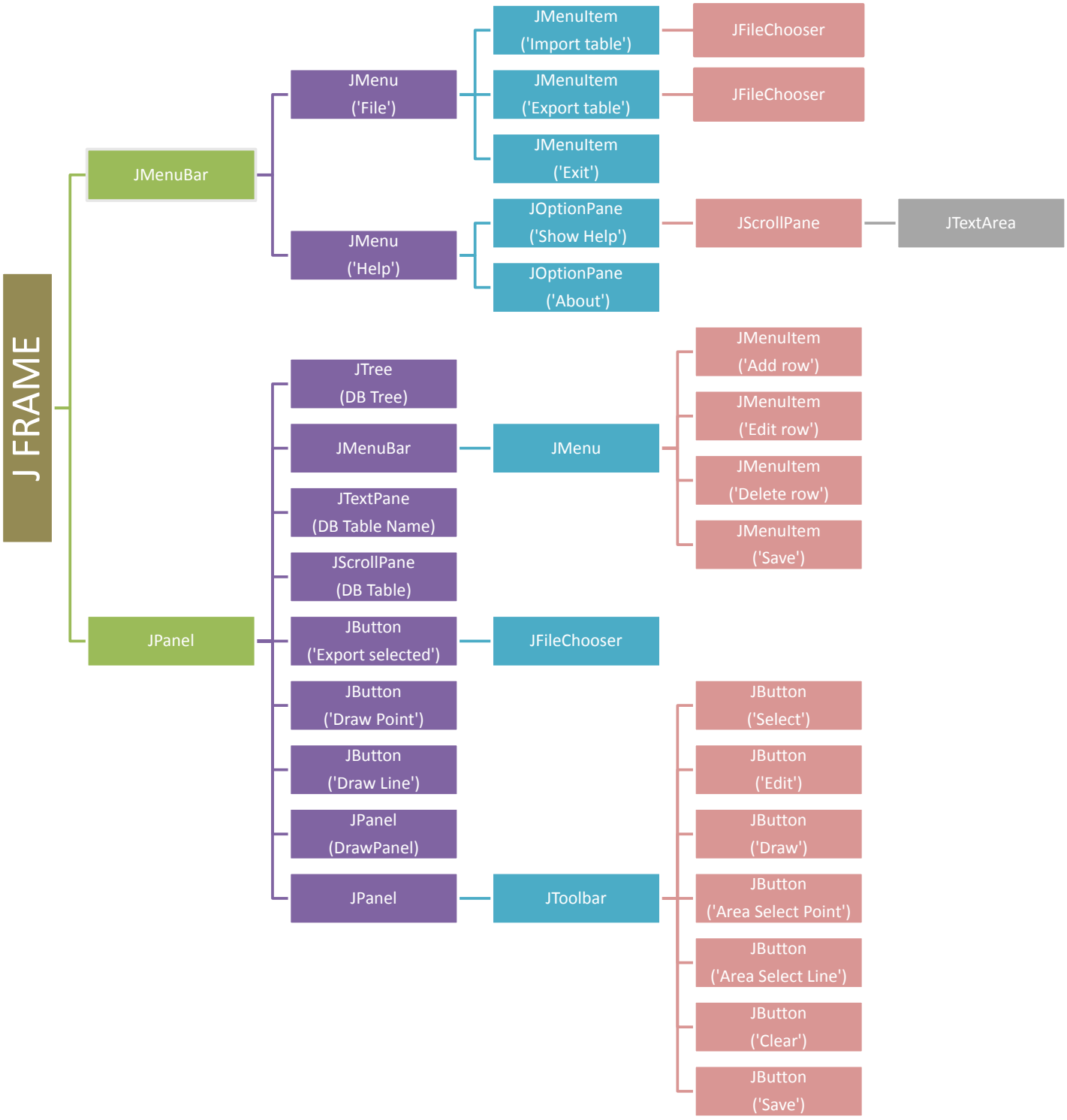
Fig 2. Class UML (ArgoUML)

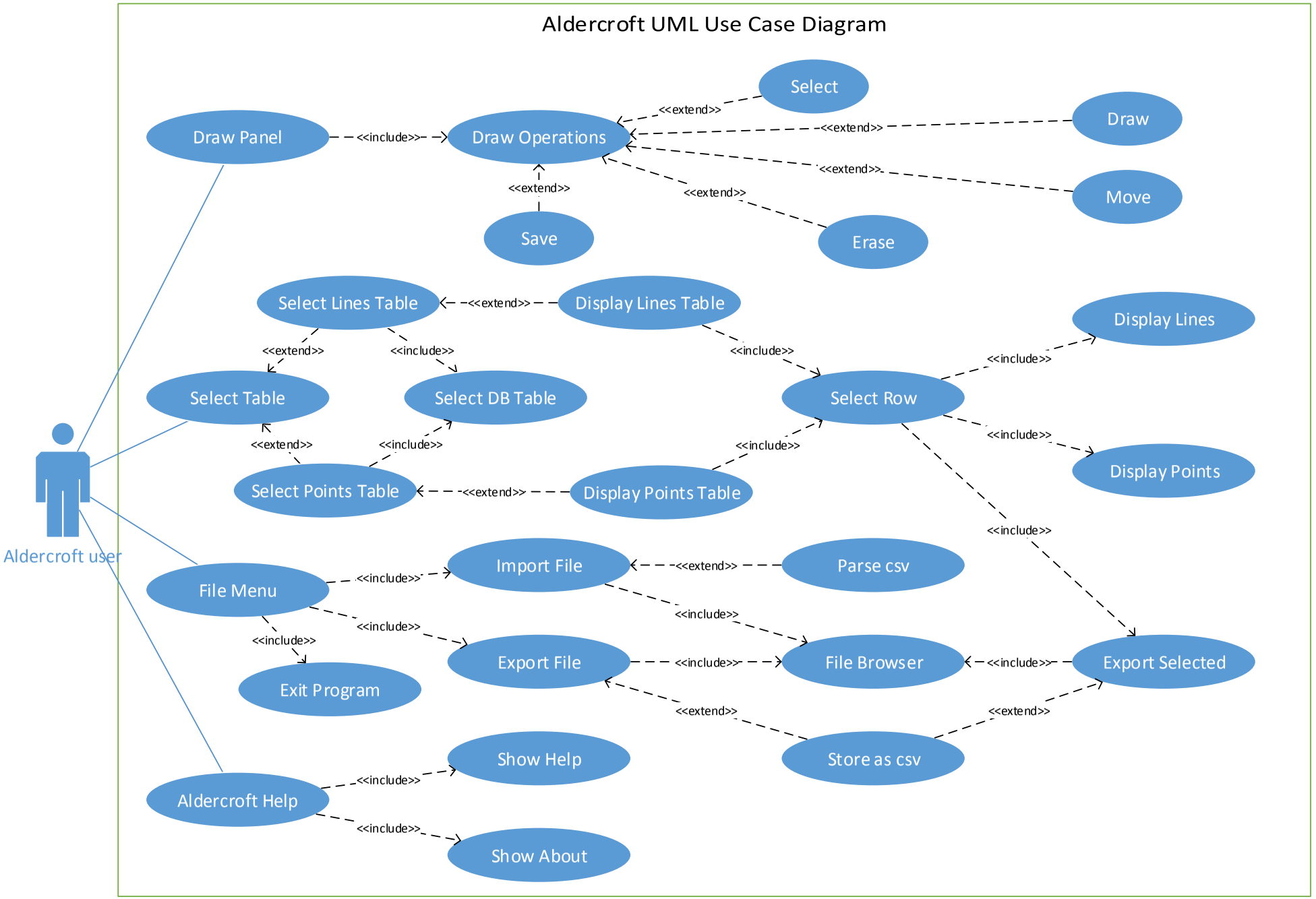
Gantt Chart

Name	Begin date	End date
GUI Design	11/28/14	12/10/14
GUI Implementation	12/11/14	12/22/14
DB Schema	12/1/14	12/8/14
Database Connectivity	12/9/14	12/15/14
MySQL (not imple...	12/9/14	12/12/14
MSAccess(impleme...	12/12/14	12/15/14
Datastructure	12/4/14	12/15/14
Populating JTree & JT...	12/16/14	12/23/14
Drawing Functionalities	12/24/14	1/5/15
DrawPanel	12/24/14	12/29/14
DrawPanel Toolba...	12/24/14	1/5/15
JTable Functionalities	12/30/14	1/9/15
Edit/Add/Save Row	12/30/14	1/5/15
Draw Point/Line	1/6/15	1/9/15
File Handling	1/1/15	1/23/15
Implementing File ...	1/1/15	1/12/15
Import/ExportCSV	1/13/15	1/23/15
About/Help Implemen...	1/12/15	1/19/15
Testing	1/1/15	1/23/15



Lines & Points GUI - Design Diagram




Aldercroft UML Use Case Diagram
Aldercroft user
Draw Panel
Draw Operations
Select
Draw
Move
Erase
Save
Select Lines Table
Display Lines Table
Display Lines
Select Table
Select DB Table
Select Row
Display Points
Select Points Table
Display Points Table
File Menu
Import File
Parse csv
Exit Program
Export File
File Browser
Export Selected
Store as csv
Aldercroft Help
Show Help
Show About
<<extend>>
<<include>>