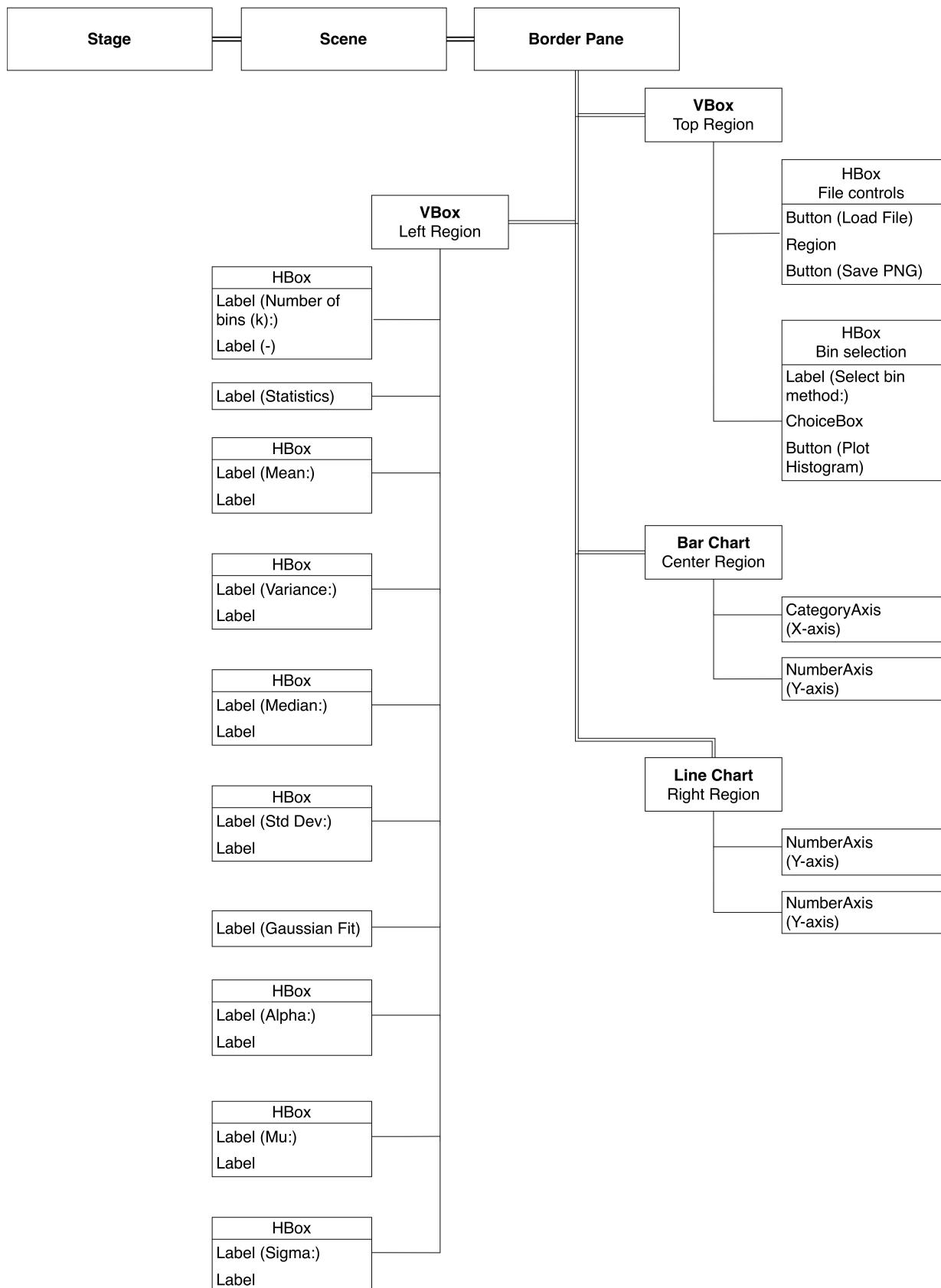
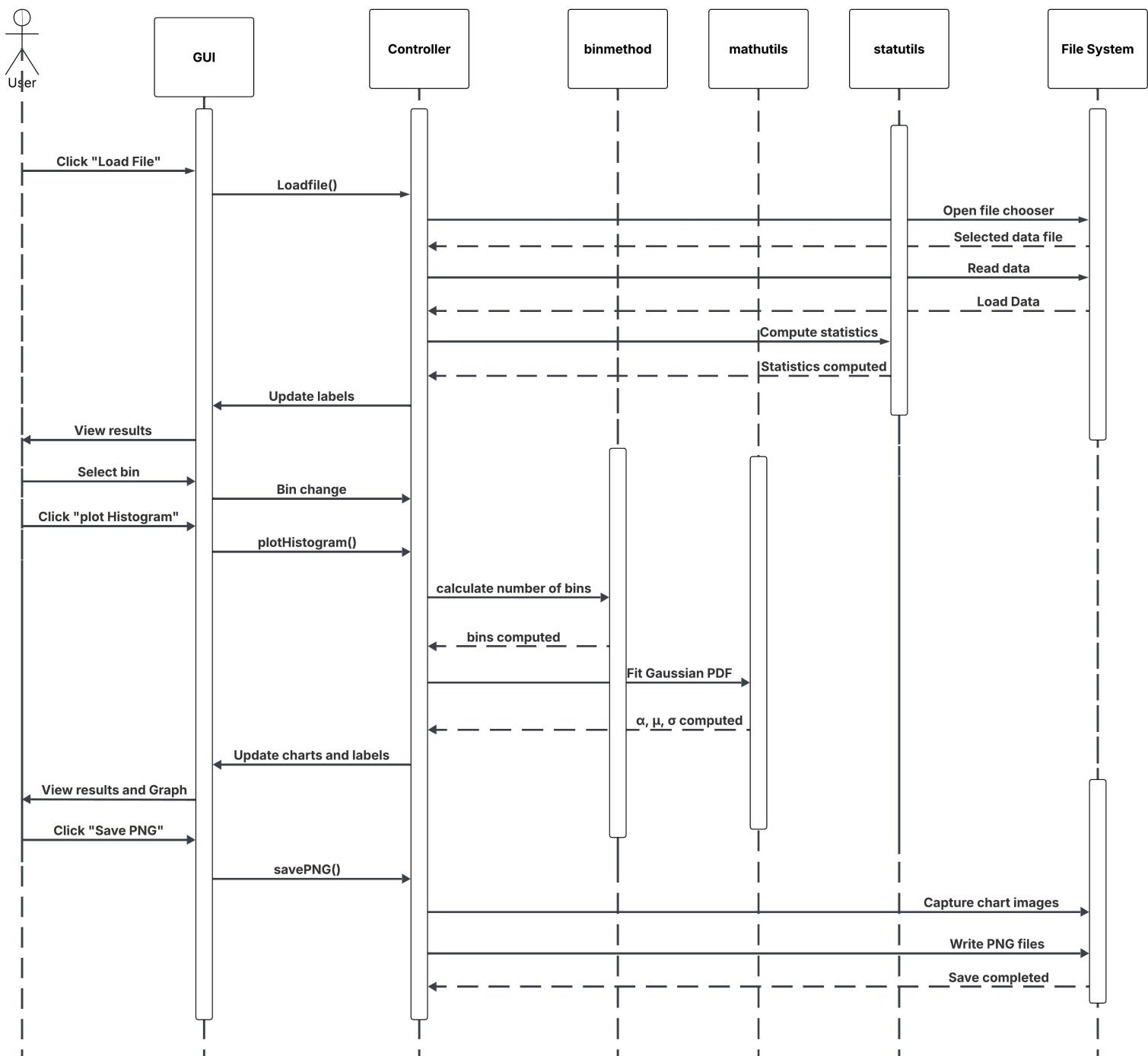


Question 5

Task 5b: *Reporting*: The hierarchical order of the GUI nodes.



Task 5c: *Reporting*: The GUI Event Handling UML diagram of my App



Purpose of UML diagram

- it shows how user interactions with the GUI
- its also a timeline of how the application works which moves from top to bottom
- My UML diagram shows the interaction between GUI, Controller, Model(packages/code), and File System.

Load File event handling

- It starts with the user clicking the “Load File” button.
- The GUI forwards this event to the controller via `loadFile()`.
- The controller interacts with the file system to read the file.
- After loading, the data is fed to a new array to hold the contents of file uploaded.
- The computed values are returned to the controller and then it calls the model to do some calculations and then is displayed.

Selection of Bin Method and Plot Histogram events

- First the user selects the bin method and clicks “Plot Histogram” button.
- The GUI then calls the controller’s `plotHistogram()` method.
- The controller determines the number of bins using the `binmethod`.
- with help of `BarChart` we plot the Histogram graph against the data from the file
- then we calculate the PDF and with `LineChart` we plot PDF graph.
- The controller then updates the sigma, alpha and mu. It also shows the number of bins.

Saving the Graphs.

- When the user clicks “Save PNG” in the GUI, The GUI invokes the controller’s `savePNG()` method.
- The controller runs the code to save the two images as png images in the file system

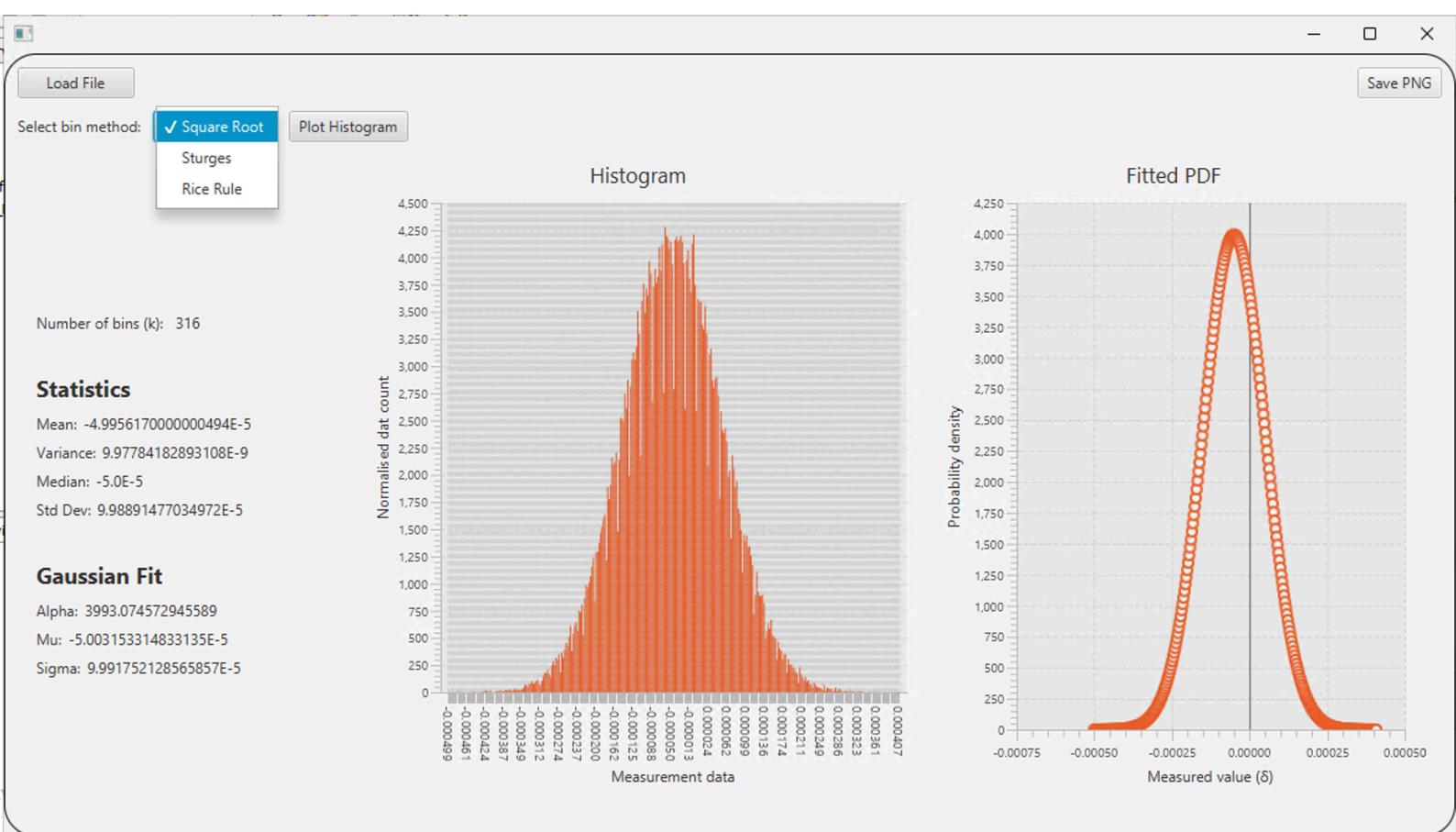


Figure: screenshot of the application

AI disclosure:

AI tools were used only in understanding the coursework requirements, refining explanations, and learn more about the JavaFX coding part.

- Helped me with UML diagram structure, which I made from (draw.io)
- JavaFX concepts, and report presentation, I also watch YouTube videos to know more about.
- Helped with GUI Event Handling where I used the lucid.app for doing the diagram
- All code implementation, diagram creation, design decisions, and final content selection were completed and verified by the author. AI tools were not used to automatically generate final code or diagrams without manual modification and understanding.