GUI Design Explained

**Left Panel – Controls and Display**

* **Tabs Dropdown (New File 1)**: Selects the currently active simulation screen.
* **New Tab+ Button**: Creates a new simulation tab/screen.
* **File Text Box (Test1.txt)**: Displays the name of the currently loaded file.
* **Select a File Button**: Opens a file chooser popup to load a .txt file into memory.
* **Execute Button**: Runs the entire loaded program until a halt instruction.
* **Step Button**: Executes one instruction at a time for debugging or controlled flow.
* **Save Button**: Opens a file save dialog to export the current memory state.
* **Quit Button**: Stops the simulation and exits back to the launcher (or app exit).
* **Settings Button**: Opens the color scheme configuration popup.
* **Program Counter Label & Box**: Displays the address of the instruction currently being executed.
* **Accumulator Label & Box**: Shows the current value in the accumulator register.
* **Console Input Label & Box**: Accepts user input when the program requests a word (e.g., via READ).
* **Console Output Section**: Displays logs, prompts, and program messages like input/output events and errors.

**Right Panel – Memory Table**

* **Memory Label**: Section header for memory visualization.
* **Table Header (location, word)**: Column labels for memory address and its corresponding value.
* **Memory Grid (e.g., 00, +1007)**: Editable memory slots showing address-value pairs; updated during program execution.