|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Artifact Information** | | | | | | | | |
| **Artifact ID** | | **Artifact Title** | | | | | | |
| SFL-001 | | Software Flowchart and Logic | | | | | | |
| **Capstone Team** | | | | **Revision** | | **Artifact Date** | | |
| Capstone Team 27 - Granustem | | | | 1.0 | | Feb 19, 2019 | | |
| **Prepared by** | | | | **Checked by** | | | | |
| Ben Alexander | | | | Tanner Gaskin | | | | |
| **Revision History** | | | | | | | | |
| **Revision #** | **Date** | | **Prepared by** | | **Checked by** | | **Description** | **Approved by** |
| 1.0 | Feb 19, 2019 | | Ben Alexander | | Tanner Gaskin | | Initial Version | Reese Bastian |

1. Purpose

The purpose of this artifact is to outline the appearance and functionality of each view in the application. The flowchart for how each view interacts with each other is shown at the end of this artifact.

2. Main Menu View

* Layout
  + Four buttons to select from: Settings, Testing, Live Feed, and Exit
  + Shows environment data: Temperature, Humidity, Location, and Time
* Functionality
  + Clicking the Settings button will navigate to the Settings View
  + Clicking the Testing button will navigate to the Testing View
  + Clicking the Live Feed button will navigate to the Live Feed View
  + Clicking the Exit button will navigate to the Exit View

3. Settings View

* Layout
  + Six buttons to select from: Height, Plot, Operator, Folder, Notes, and Back
* Functionality
  + Clicking the Height button will navigate to the Height View
  + Clicking the Plot button will navigate to the Plot View
  + Clicking the Operator button will navigate to the Operator View
  + Clicking the Folder button will navigate to the Folder View
  + Clicking the Notes button will navigate to the Notes View
  + Clicking the Back button will navigate back to the Main Menu View

4. Height View

* Layout
  + An input text box that, when selected, allows the user to type in the current Height setting via a touch screen number pad that will pop up. The value in the input text box when you first visit this view is whatever value for the Height setting is currently stored in our settings file
  + Two buttons to select from: Save and Cancel
* Functionality
  + Clicking the Save button will save whatever value is currently written in the input text box to our settings file on the raspberry pi as the Height setting. If the input text box is empty, the settings file will retain whatever Height setting was already set. In either scenario, clicking Save will ultimately navigate back to the Settings View
  + Clicking the Cancel button will navigate back to the Settings View

5. Plot View

* Layout
  + An input text box that, when selected, allows the user to type in the current Plot setting via a touch screen number pad that will pop up. The value in the input text box when you first visit this view is whatever value for the Plot setting is currently stored in our settings file
  + Two buttons to select from: Save and Cancel
* Functionality
  + Clicking the Save button will save whatever value is currently written in the input text box to our settings file on the raspberry pi as the Plot setting. If the input text box is empty, the settings file will retain whatever Plot setting was already set. In either scenario, clicking Save will ultimately navigate back to the Settings View
  + Clicking the Cancel button will navigate back to the Settings View

6. Operator View

* Layout
  + An input text box that, when selected, allows the user to type in the current Operator setting via a touch screen keyboard that will pop up. The value in the input text box when you first visit this view is whatever value for the Operator setting is currently stored in our settings file
  + Two buttons to select from: Save and Cancel
* Functionality
  + Clicking the Save button will save whatever value is currently written in the input text box to our settings file on the raspberry pi as the Operator setting. If the input text box is empty, the settings file will retain whatever Operator setting was already set. In either scenario, clicking Save will ultimately navigate back to the Settings View
  + Clicking the Cancel button will navigate back to the Settings View

7. Folder View

* Layout
  + An input text box that, when selected, allows the user to type in the current Folder setting via a touch screen keyboard that will pop up. The value in the input text box when you first visit this view is whatever value for the Folder setting is currently stored in our settings file
  + Two buttons to select from: Save and Cancel
* Functionality
  + Clicking the Save button will save whatever value is currently written in the input text box to our settings file on the raspberry pi as the Folder setting. If the input text box is empty, the settings file will retain whatever Folder setting was already set. In either scenario, clicking Save will ultimately navigate back to the Settings View
  + Clicking the Cancel button will navigate back to the Settings View

8. Notes View

* Layout
  + Three columns will be displayed holding different types of notes – Pre-Test Notes, Post-Test Notes, and Notes Bank. Each column will be filled with notes that are assigned to them based on data from our settings file
  + Two buttons to select from at all times: New Note and Back
  + Three additional buttons to select from when a note in the Notes Bank column is selected: Make Pre-Test Note, Make Post-Test Note, and Delete Note
  + One additional button to select from when a note in the Pre-Test Notes column is selected: Remove Note
  + One additional button to select from when a note in the Post-Test Notes column is selected: Remove Note
* Functionality
  + Clicking the New Note button will navigate to the New Note View
  + Clicking the Back button will navigate back to whatever view the application was on before the Notes View
  + Clicking the Make Pre-Test Note button will copy the selected note from the Notes Bank column into a note in the Pre-Test Notes column
  + Clicking the Make Post-Test Note button will copy the selected note from the Notes Bank column into a note in the Post-Test Notes column
  + Clicking the Delete Note button will delete the selected note from the Notes Bank column
  + Clicking the Remove Note button will remove the selected note from whichever column the note resides in

9. New Note View

* Layout
  + An input text box that, when selected, allows the user to type in a new note via a touch screen keyboard that will pop up. The input text box will initially be empty
  + Two buttons to select from: Save and Cancel
* Functionality
  + Clicking the Save button will save whatever value is currently written in the input text box to our settings file as a note in the Notes Bank. If the input text box is empty, no new note will be created. In either scenario, clicking Save will ultimately navigate back to the Notes View
  + Clicking the Cancel button will navigate back to the Notes View

10. Testing View

* Layout
  + The current Height, Plot, and Operator settings as retrieved from the settings file will appear here for the user to review before running a test. The current time will also appear here
  + The current Pre-Test Notes and Post-Test Notes as retrieved from the settings file will appear here for the user to review before running a test
  + Four buttons to select from: Update Notes, Start, Tests, and Back
* Functionality
  + Clicking the Update Notes will navigate to the Notes View
  + Clicking the Start button will navigate to the Test in Progress View
  + Clicking the Tests button will navigate to the Tests View
  + Clicking the Back button will navigate back to the Main Menu View

11. Test in Progress View

* Layout
  + Simply displays an information box indicating that a test is in progress. It is during this time that a user would perform strength tests on a stalk
  + One button to select from: Stop
* Functionality
  + Clicking the Stop button will navigate to the Testing Results View. All data from the test will be stored in arrays in the program to await confirmation from the user before being written as a file to the specified Folder (as chosen from the Folder setting stored in the settings file)

12. Testing Results View

* Layout
  + The stalk strength data as collected from the last test will be displayed graphically
  + Four buttons to select from: Update Notes, Break Height, Save, and Reject
* Functionality
  + Clicking the Update Notes button will navigate to the Notes View
  + Clicking the Break Height button will navigate to the Break Height View
  + Clicking the Save button will navigate to the Confirm Post Test Notes View
  + Clicking the Reject button will navigate back to the Testing View

13. Break Height View

* Layout
  + An input text box that, when selected, allows the user to type in height at which the stalk broke via a touch screen keyboard that will pop up. The input text box will initially be empty
  + Two buttons to select from: Save and Cancel
* Functionality
  + Clicking the Save button will save whatever value is currently written in the input text box to memory as the Break Height for the most recent test. If the input text box is empty, no Break Height will be saved. In either scenario, clicking Save will ultimately navigate back to the Testing Results View
  + Clicking the Cancel button will navigate back to the Testing Results View

14. Tests View

* Layout
  + A list of the past tests that have been run. This list will be formed based on whatever tests are found in the Folder specified by the Folder setting in the settings file
  + Three buttons to select from at all times: Back, Remove All, Export All
  + One additional button to select from when a test in the list is selected: Details
* Functionality
  + Clicking the Back button will navigate back to the Testing View
  + Clicking the Remove All button will delete all tests from the specified Folder
  + Clicking the Export All button will export all tests to a USB that is plugged into the device. If no USB is plugged in, nothing happens when this button is clicked
  + Clicking the Details button will navigate to the Test Details View associated to the selected test

15. Test Details View

* Layout
  + A graphical representation of the data associated with the specified test
  + Three buttons to select from: Back, Remove Test, Export Test
* Functionality
  + Clicking the Back button will navigate back to the Tests View
  + Clicking the Remove Test button will remove the specified test from the specified Folder. This will also navigate back to the Tests View
  + Clicking the Export Test button will export the specified test to a USB that is plugged into the device. If no USB is plugged in, nothing happens when this button is clicked

16. Live Feed View

* Layout
  + Shows all data: Temperature, Humidity, Location, Time, and all Sensor data
  + Two buttons to select from: Back and Start/Stop
* Functionality
  + Clicking the Back button will navigate back to the Main Menu View
  + Clicking the Start/Stop button will toggle between the following states:
    - The data on the screen is constantly being updated based on sensor data being read in
    - The data on the screen is frozen and will not change, so as to allow for examination

17. Exit View

* Layout
  + Four buttons to select from: Back, Exit, Restart, and Shut Down
* Functionality
  + Clicking the Back button will navigate back to the Main Menu View
  + Clicking the Exit button will navigate to the Desktop View (which is just the native Desktop for Raspbian)
  + Clicking the Restart button close the application, then restart it and navigate back to the Main Menu View
  + Clicking the Shut Down button will navigate to the Power Off View (which is just the device in a powered off state)

18. Desktop View

* This view is not really an application view. Rather, it is the native Desktop for Raspbian

19. Power Off View

* This view is not really an application view. Rather, it represents the state of the device when it is completely powered off

20. Flowchart

