User Manual

EECS 2311 Z – *Software Development Project*

Group 15: Aya Abu Allan, Gianluca Corvinelli, Mark Savin

Table of Contents

Section 1 - Getting Started

1.1: *Authors*

Contact us:
Aya Abu Allan aya72@my.yorku.ca
Gianluca Corvinelli corv9@my.yorku.ca
Mark Savin mark831@my.yorku.ca

1.2: *About Braille*

Braille is a form of written language for the visually-impaired in which characters are represented by patterns of raised pins that are felt and interpreted with the fingertips.

Braille symbols are formed within units of space known as braille cells. A full braille cell consists of eight pins arranged in two parallel columns each having four pins. The pin positions are identified by numbers from one through eight. Two hundred and fifty-five combinations are possible. A single cell can be used to represent a letter from the English alphabet, a number, or a punctuation mark.

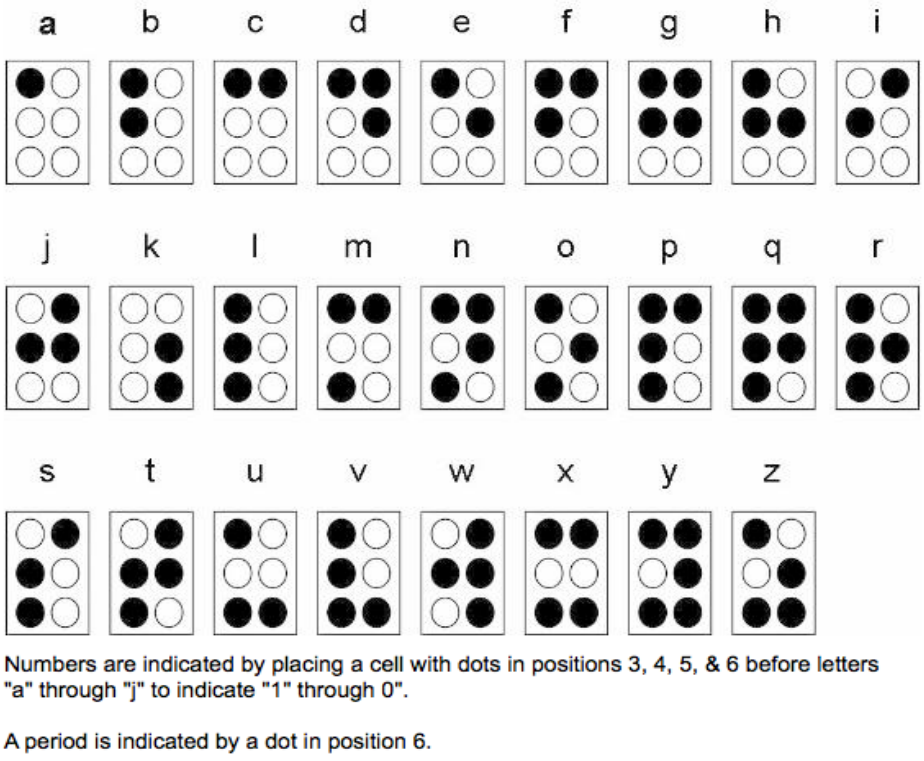

Figure 1.0: Braille Cells Displaying the Letters of the English Alphabet [1]

The letters of the English alphabet only use up to six of the eight pins. Other expressions, like representing an empty string, use all eight pins of a braille cell.

1.3: *What is the Authoring App?*

The Authoring App is a tool for visually impaired and visually capable users to teach braille to visually impaired students. This is done by the teacher creating teaching scenarios for the student in which they decide the flow of each scenario as well as edit them at any time. They can also edit or load an existing scenario as well as refer to our sample scenarios which are provided as guidelines for how to use functions present in the app. Many other options for the student as well as the teacher can be found in greater detail in the following sections.

1.4: *Installation Instructions*

1.4.1: *Screen Readers*

The Authoring App supports the use of screen readers for those who are visually impaired. For Windows users, we recommend the NVDA screen reading software available at https://www.nvaccess.org/. For Linux users we recommend the ORCA screen reading software available at https://wiki.gnome.org/Projects/Orca.

1.4.2: *The Authoring App*

The download for our application can be found at https://github.com/ayaAllan/2311. Locate the runnable jar file called AuthoringApp.jar in the version 1.0.0 release. This should also contain the *FactoryScenarios* folders where your audio/scenario files will be stored.

Section 2 - Main Menu

2.1: *Options for Visually Impaired Users*

Upon opening the *MainAuthoringApp*, a pop-up window will appear. It asks if the user is *Visually Capable* or *Visually Impaired*. If the user is visually impaired a screen reader will be integrated into the system. It is recommended for those who are visually impaired to download and use a screen reader (see section 1.4.1). Our app is fully functional with the most popular screen readers. We recommend you use the NVDA screen reading software because we have tested the app using this screen reader.

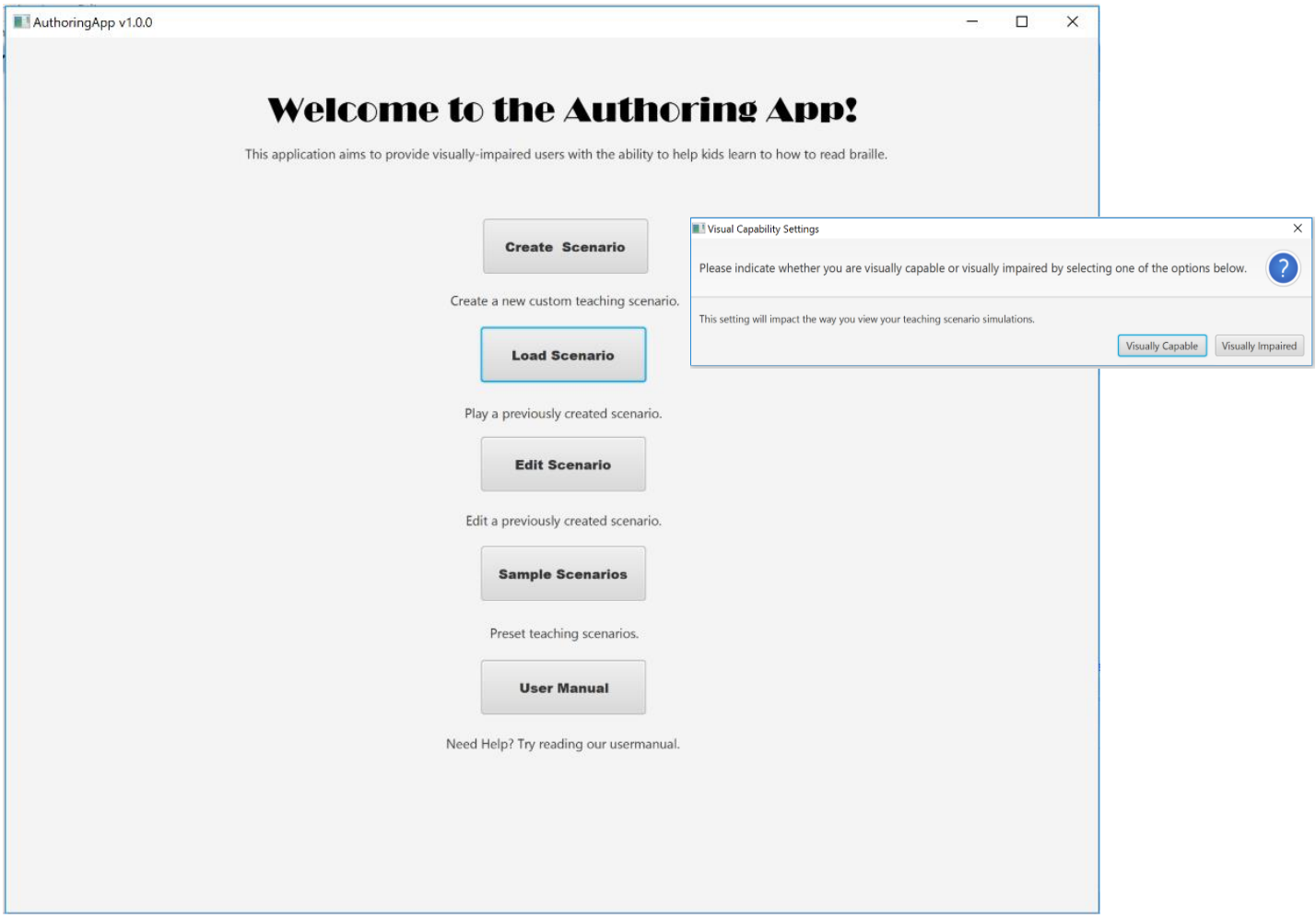

Figure 2.0: the Main Menu of the Authoring App

2.2: *Button Functionality*

1. **Create Scenario:**
   This button is the first step towards creating a new scenario. A scenario is a collection of lessons, which we refer to as scenes. A scene contains information or questions that the user would like to share with their students. The user can think of the scenario as a lesson they want to teach their students and each scene is a small step in that lesson, where each scene can teach a new concept. Clicking here leads the user to the *Scenario Setup*. This prompt window requests three parameters: name of new scenario, number of braille cells, and number of buttons. More on this in Section 3.

2. **Load Scenario:**
   Clicking this button prompts a file selection window where the user can browse their scenario library. They can select from either the pre-made factory scenarios or any scenario they have previously created. More on loading existing scenarios in Section 4.1.

3. **Edit Scenario:**
   The *Edit Scenario* button allows the user to revise a scene in an existing scenario. This button reroutes to the *Scenario Builder* with the selected scenario open for editing. The user can use the *Scenario Builder* as usual (see: Section 3), editing current scenes, creating new scenes or deleting old ones. However, the user cannot change the number of braille cells or buttons, since those are decided in the *Scenario Setup* at the initial creation of the scenario. More on editing existing scenarios in Section 4.2.

4. **Sample Scenarios:**
   This button redirects the user to a list of pre-made *Sample Scenarios* aimed to familiarize them with the mechanics and capacity of this application. We encourage our users to go through all three scenarios as they provide some fundamental concepts to creating your own scenario.

5. **User Manual:**
   This button redirects the user to this document; a detailed breakdown of the program and how to use it.

Section 3 - Creating a Teaching Scenario

3.1: *Intro*

This section provides a detailed description of how to create a scenario in the *MainAuthoringApp*. This system is laid out in a user-friendly style that simplifies the process of creating scenes and condensing them into a scenario. Moreover, it allows the user flexibility in specializing each scene by having a malleable format. To start, click '*Create scenario'*, the first button in *Figure 2.0*.

3.2: *Scenario Setup*

This preliminary step requires the user to name their scenario and decide how many braille cells and button they would like; this cannot be changed in editing. The user must provide a scenario name, or they will not be allowed to continue to the *Scenario Builder* as seen in the *Figure 3.0*. For the number of braille cells and buttons, the user can choose up to twelve cells and buttons from the drop-down window (*Figure 3.1*). After providing these three parameters, the user can continue to the *Scenario Builder*.

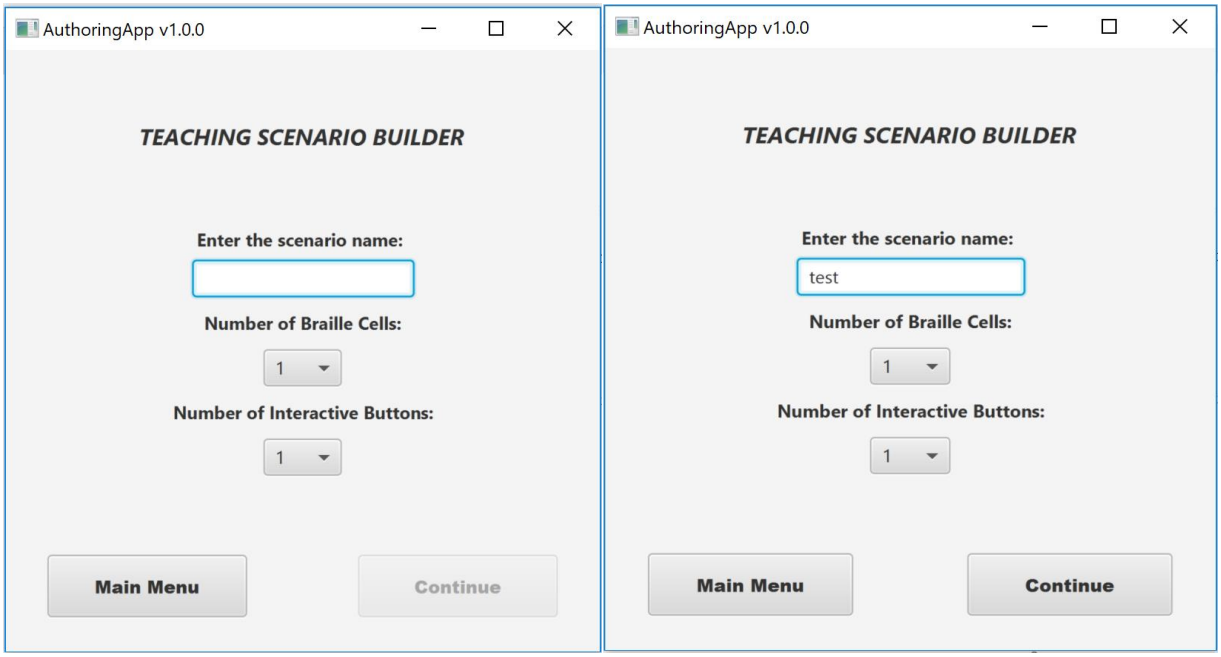

Figure 3.0: The 'Continue' Button is enabled only after a scenario name is provided

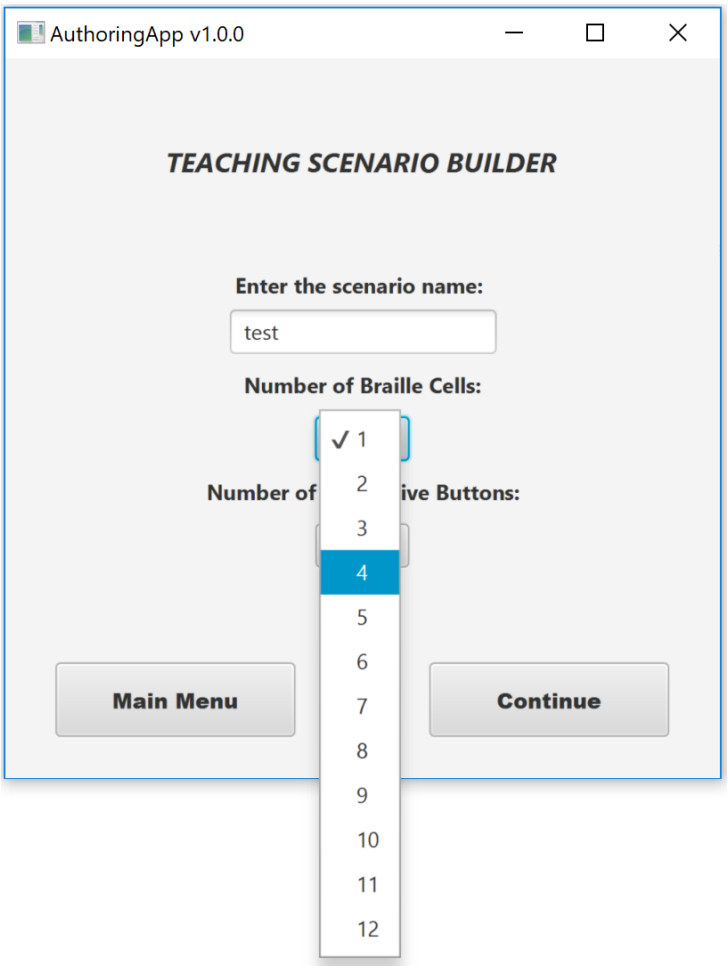

Figure 3.1: Select from the drop-down menu up to 12 braille cells and button with the default being 1 cell

3.3: *Navigating the Scenario Builder*

Step One- Name your scene. This is important because it allows the user to distinguish between different scenes in a scenario and be able to go back to it in case they wish to edit.

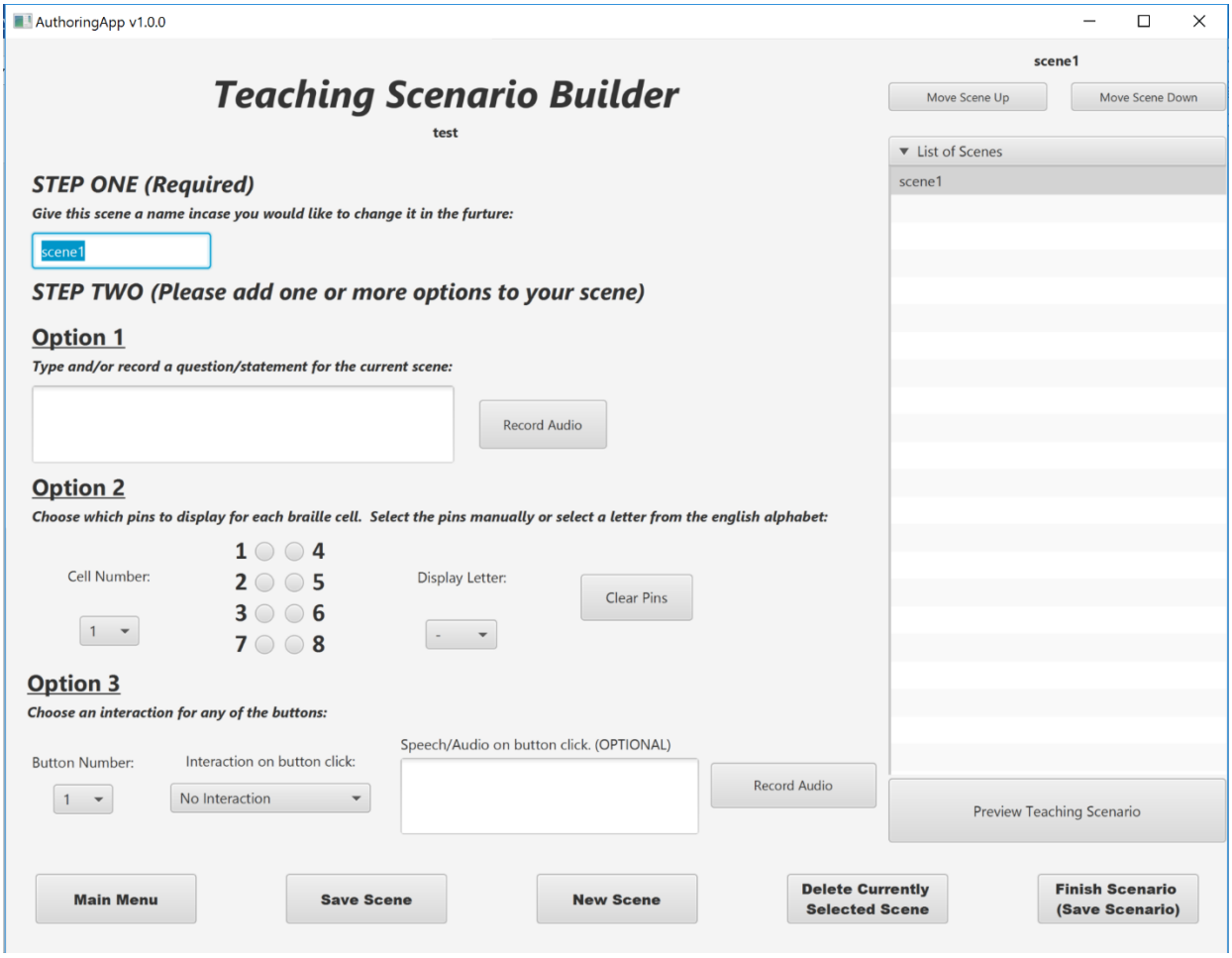

Figure 3.2: Provide a name to each new scene created

Step Two- The user is presented with 3 options to allow flexibility in customizing individual scenes. The user can choose to implement only one option, all three options, or any combination they wish.

> **Option 1:** This option allows the user to form questions and comments, typed or they can record an audio file using the '*Record Audio*' button. For the scene we're building in *Figure 3.3*, we would need to implement options 2 and 3, whereas in *Figure 3.4*, we can simply implement option 3 for a '*Continue*' button.

Figure 3.3: Here we're using option 1 to pose a question and provide multiple choices

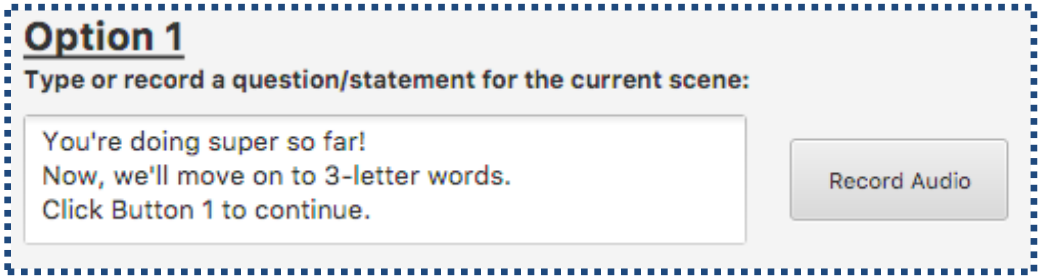

Figure 3.4: Using option 1 to merely provide a comment

Option 2: This option is where the user can develop braille cells for their student. Depending on how many buttons the user indicated they wanted in the *Scenario Setup* window, they'll be able to select any cell and display any collection of pins they wish. Firstly, choose which cell you wish to implement from the drop-down menu. Secondly, choose pins to display in one of two methods: **1)** manually by selecting pins from the sample braille cell (*Figure 3.5*) or **2)** using the second drop-down menu and browsing for an English language letter (*Figure 3.6*). The '*Clear Pins*' button resets the sample braille cell.

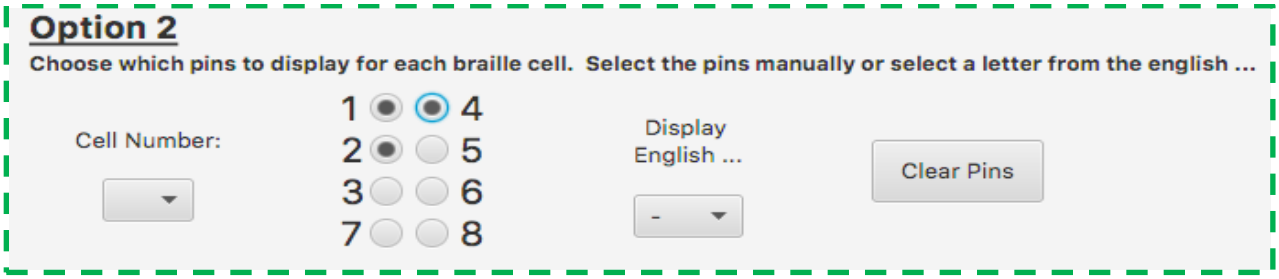

Figure 3.5: Manually selecting pins on the sample braille cell

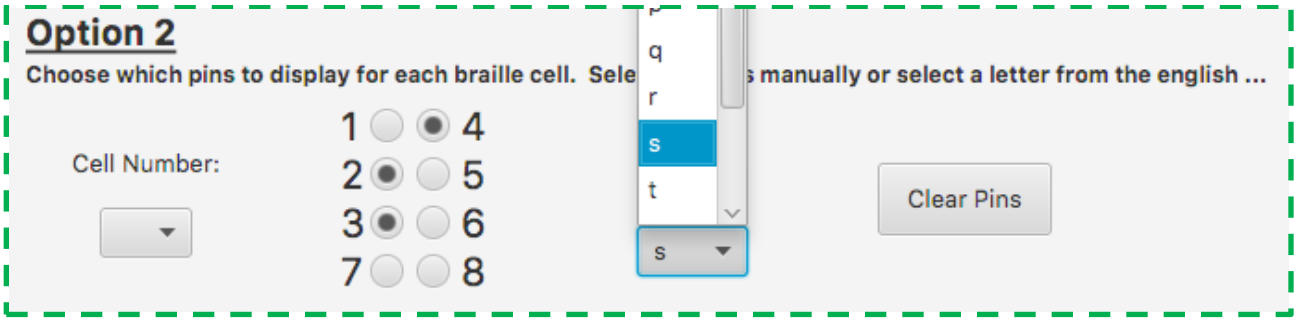

Figure 3.6: Selecting letters from the drop-down menu

Lastly, the user can go back to the '*Cell Number*' drop-down menu to implement the rest of the cells they requested.

Option 3: The last option presented are the *interaction* buttons, which are likely to be used in a variety of scenes. As in option 2, the user must select a button from the drop-down menu to implement; the number of buttons in the menu will also correspond to the number the user specified in the *Scenario Setup*. Secondly, the user must categorize the type of interaction the selected button will perform. There are five types of interactions available (*Figure 3.7*) for the user to choose from:

1) *'No Interaction'*: this setting is defaulted to all buttons
2) *'Play Correct Audio Clip'*: this setting should be assigned to the button that corresponds to the correct answer, for it plays a short affirmative sound clip. In *Figure 3.3*, if the answer was 'a', Button 1 would have this type of interaction.
3) *'Play Wrong Audio clip'*: this setting should be assigned to the button that corresponds to any wrong answer, it plays a short negative sound clip. In *Figure 3.3*, if the answer was 'a', Button 2 would have this type of interaction.
4) *'Repeat Question Text'*: this setting repeats the text in option 1. In *Figure 3.3*, Button 3 would have this type of interaction.
5) '*Skip to Next Scene*': this setting skips forward towards the next scene. In *Figure 3.4*, Button 1 would have this type of interaction.

For each button, the user can also choose to write out or record a comment as seen in *Figure 3.7* on the right.

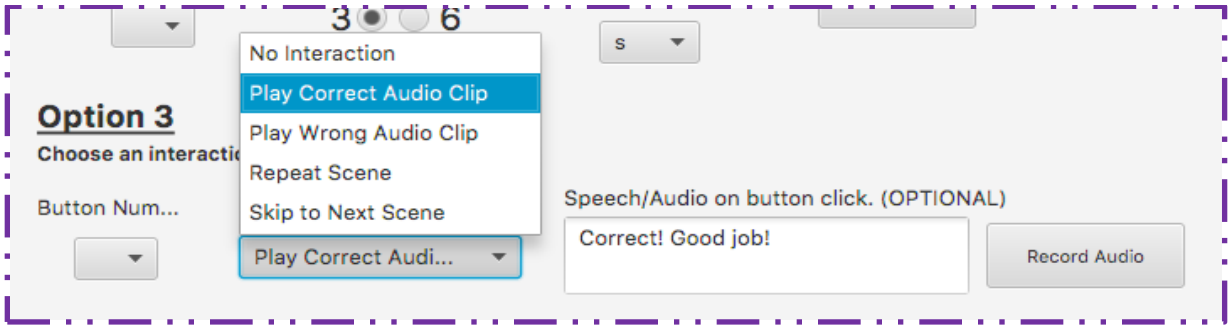

Figure 3.7: Five interaction settings available and a comment box

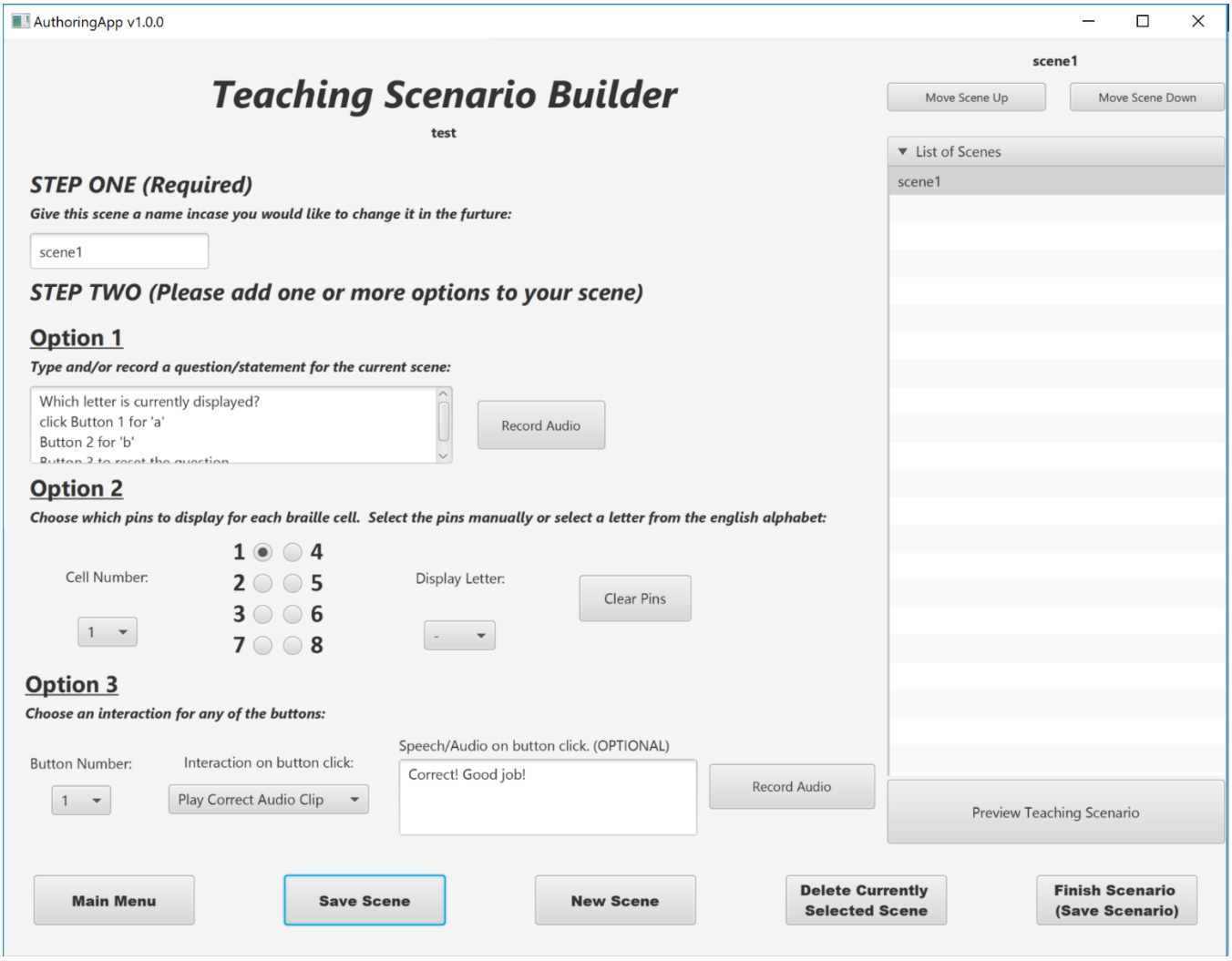

Figure 3.8: Saving a scene enables all buttons and adds it to the List of Scenes panel on the right

Step Three- Lastly, the user must save each scene before they can move on or exit. Note in *Figure 3.2*, the '*New Scene*' and '*Delete Currently Selected Scene*' are not enabled because the scene has not been saved yet. After saving the scene, those buttons become enabled as seen in *Figure 3.8*.

Now, the user can create a new scene using the ‘New Scene’ button or finish and save scenario by clicking the ‘Finish Scenario (Save Scenario)’ button.

3.4: *Creating and Accessing Scenes*

Picking up from *Figure 3.8*, the user can create another scene by clicking ‘*New Scene*’. This redirects to a cleared *Scenario Builder* where the ‘*Save Scene*’ and ‘*New Scene*’ buttons are not enabled (*Figure 3.9*).

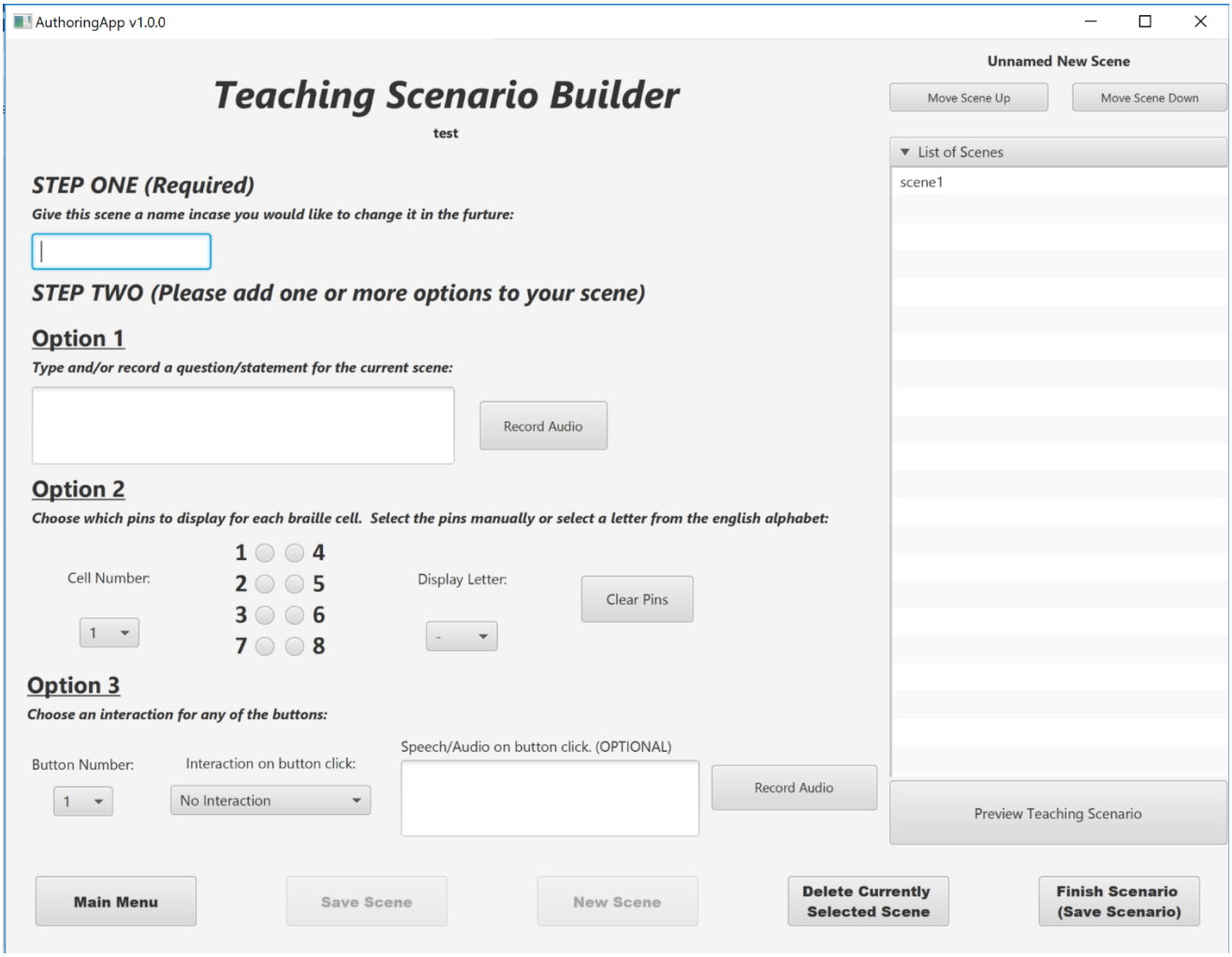

Figure 3.9: The Scenario Builder is reset for a new scene after the first one was saved

After the user implements their second scene, they can switch back to the first one if they wish to edit it only after saving their current scene. This is done be selecting the scene you want in ‘*List of Scenes*’ drop-down menu displayed in *Figure 3.10*.

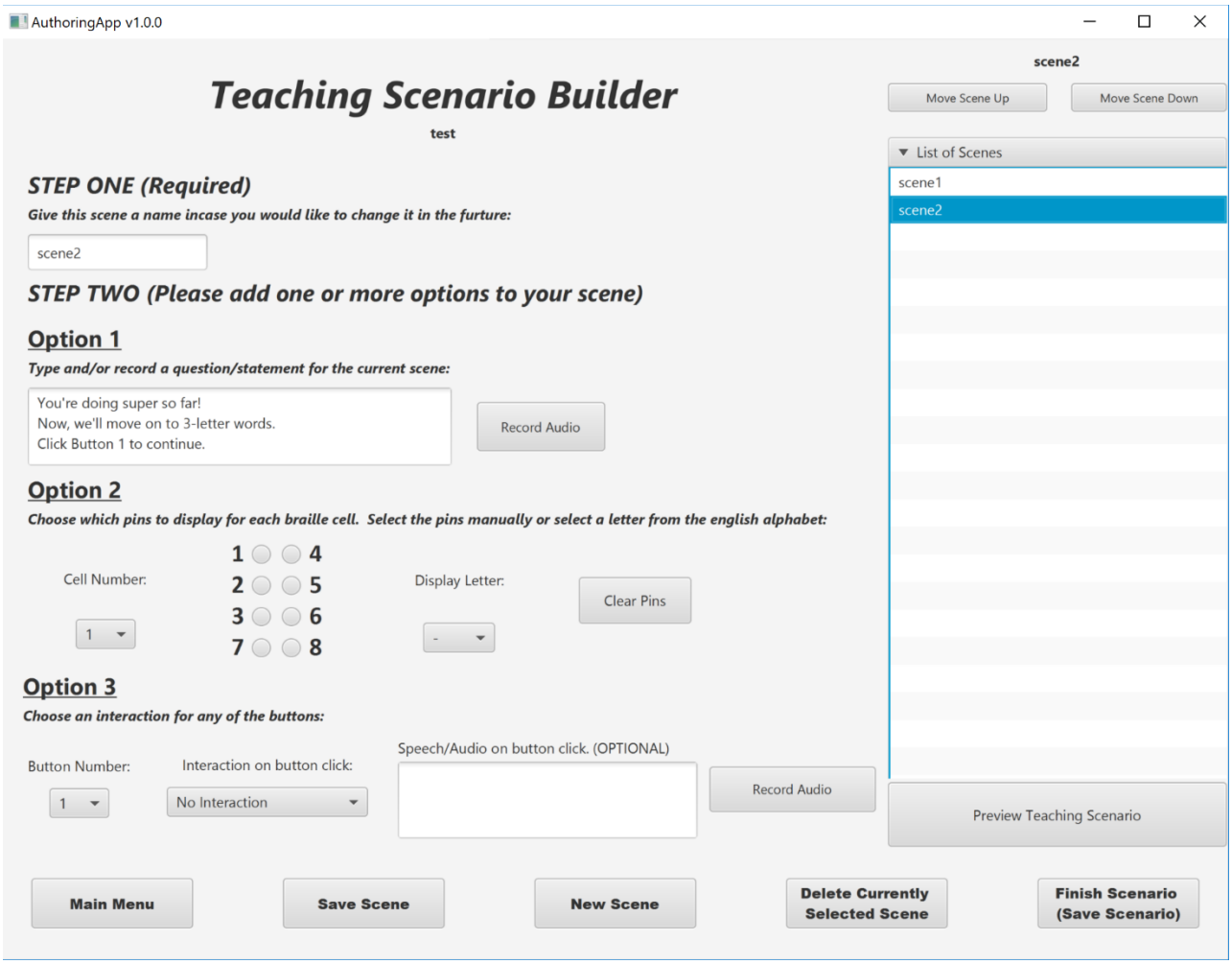

Figure 3.10: Saving a new scene adds it to the List of Scenes panel, where the user navigate through scenes they have created

Lastly, the user can reorder the sequence of the scenario by moving scenes using the '*Move Scene Up*' and '*Move Scene Down*' buttons located above the '*List of Scenes*' drop-down menu.

Once the user has created all the scenes they wanted, they can now click '*Finish Scenario (Save Scenario)*' button to save the scenario and return to the main menu.

Section 4 - Existing Scenarios

4.1: *Navigating and Loading Existing Scenarios*

The purpose of the *Load Scenario* button is to allow the user to view their fully implemented scenario. When you click on the *Load Scenario* button a window will appear prompting the user to select a scenario they have created. Upon selecting the desired scenario, a simulation of the teaching scenario will appear. This is the same braille cells and buttons that the students will use to answer questions the teacher has created.

Step One- Load the Authoring App and select the *Load Scenario* button

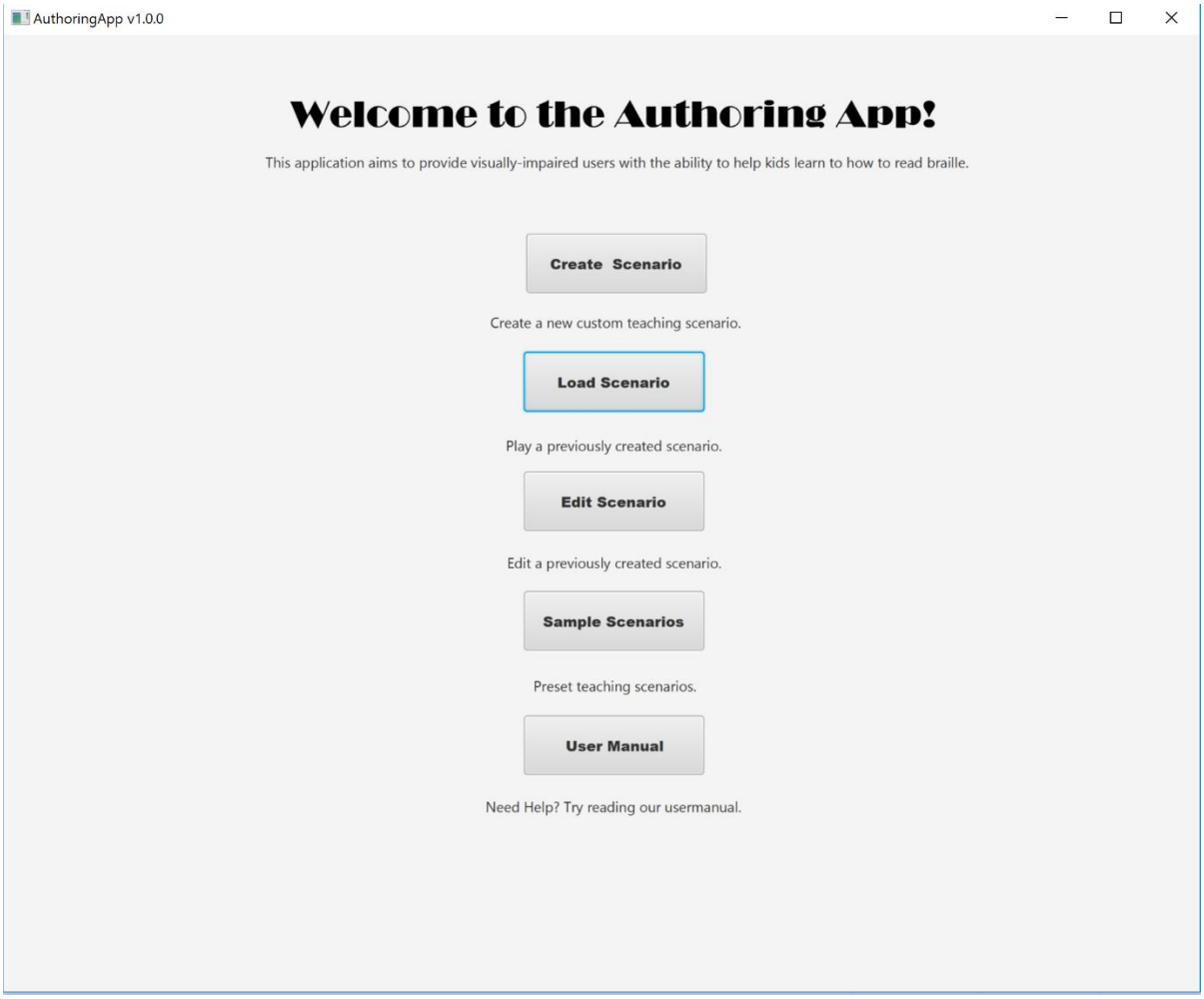

Figure 4.0: Main Menu

When the user selects the *Load Scenario* button, a file selection window called *Factory Scenarios Selection* will appear. From here, the user can browse their created scenarios library.

They can then select from either the pre-made factory scenarios or any scenario they have previously created.

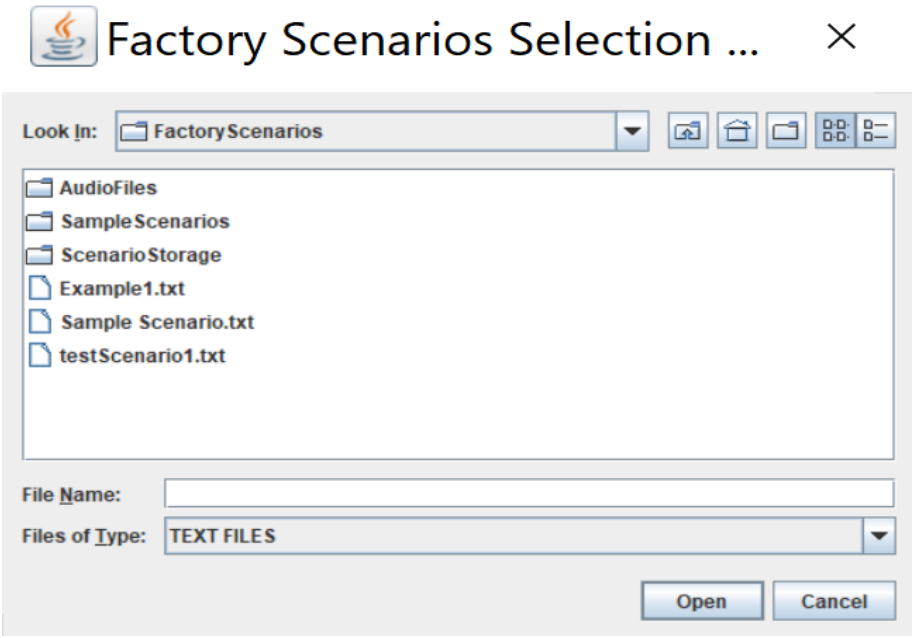

Figure 4.1: Factory Scenarios Selection Screen

Step Two- Select the scenario you would like to load and click open

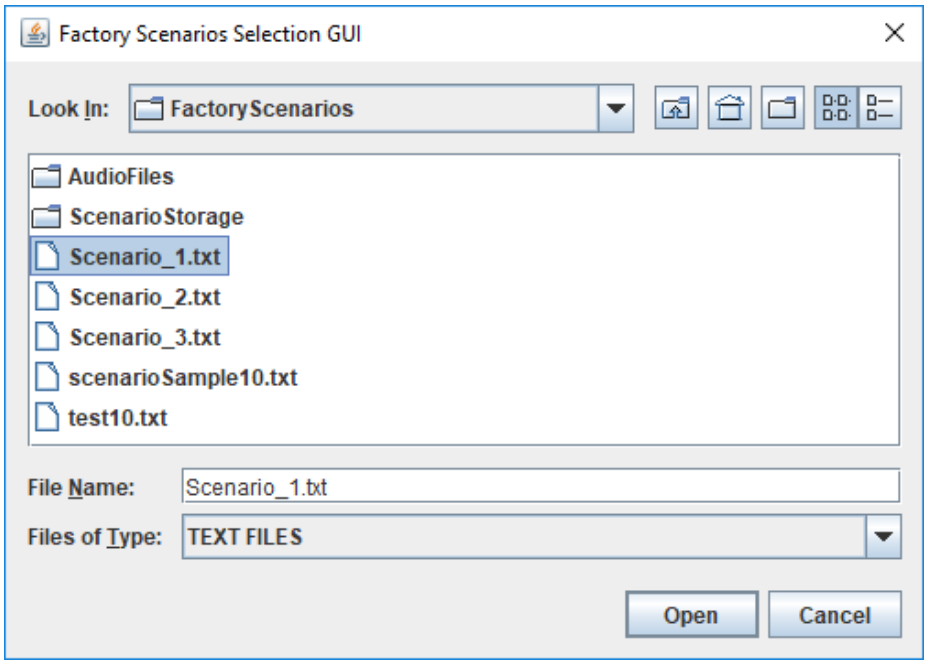

Figure 4.2: Selecting Scenario_1.txt

Step Three: Begin your teaching lesson

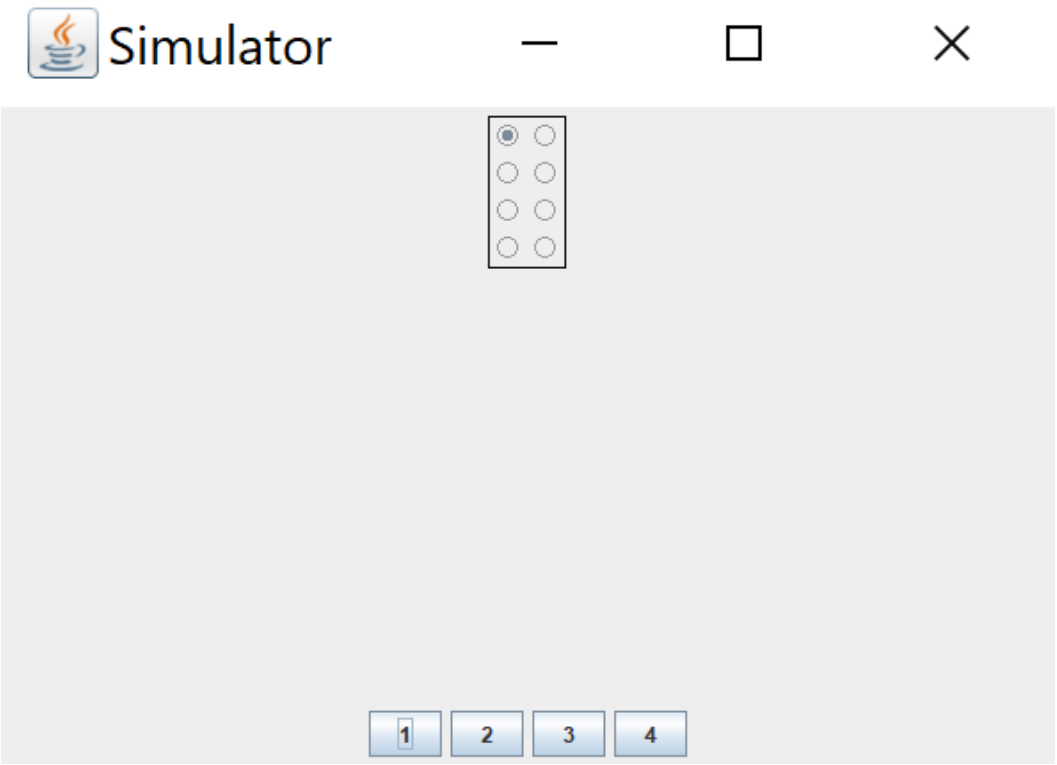

Figure 4.3: Interactive Simulator is activated

Note: listed second in *Figure 4.1*, the *Sample Scenarios* file contains three examples of what a scenario could look like. The user can select from three pre-made scenarios called *Sample Scenario 1*, *Sample Scenario 2*, and *Sample Scenario 3* as seen in *Figure 4.4*. These samples give the user a brief tutorial on how they could structure their scenarios when they create their own. Alternatively, the *Sample Scenarios* can also be accessed from the *Main Menu*, the fourth button in *Figure 4.0*.

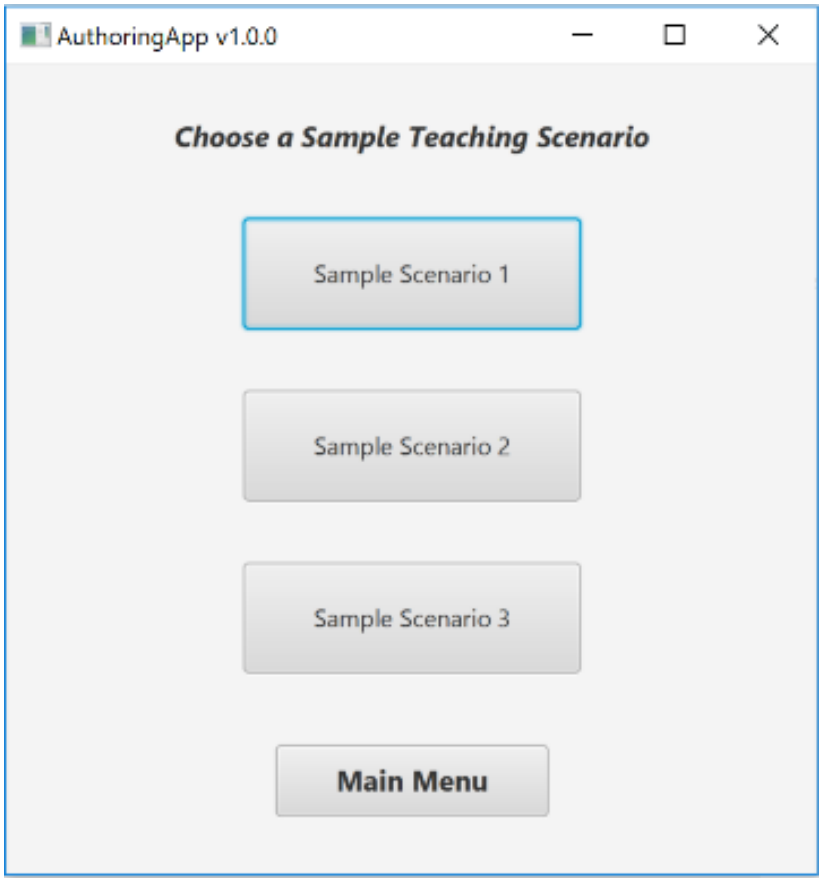

Figure 4.4: Choose a Sample Teaching Scenario

When the user selects the *Sample Scenario* button, the *Chose a Sample Teaching Scenario* menu will appear, as shown above in *Figure 4.4*. Again, we encourage our readers to examine all three sample scenarios, so they can develop a better understanding of what it is like to create a scenario.

4.2: *Editing Existing Scenarios*

This section instructs the user on how to edit an existing scenario. Note that the *Edit Scenario* button does exactly what the *Create Scenario* button does except it skips the *Teaching Scenario Builder* and loads a file created by the user. To learn more about the *Create Scenario* button see Section 3.

Step One- Load the *MainAuthoringApp* and select the *Edit Scenario* button

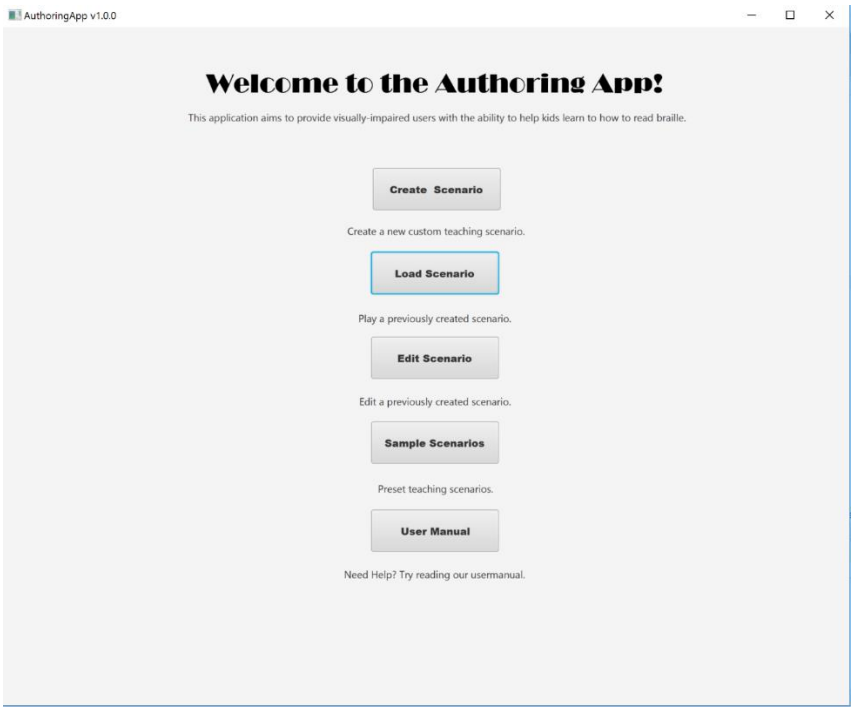

Figure 5.0: Main Menu

Step Two- The *Edit Scenario* window will pop up, select *Choose Scenario*

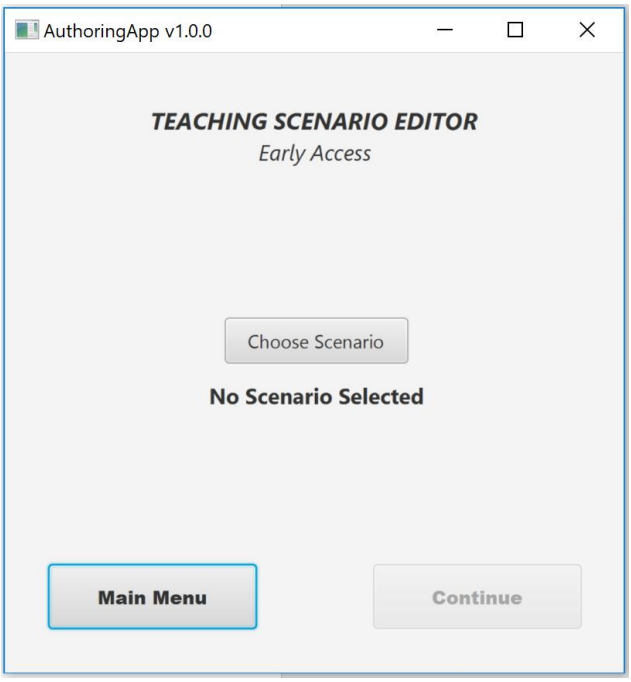

Figure 5.1: The Teaching Scenario Editor Screen, note the Edit Scenario button is unavailable

Step Three- Choose a scenario

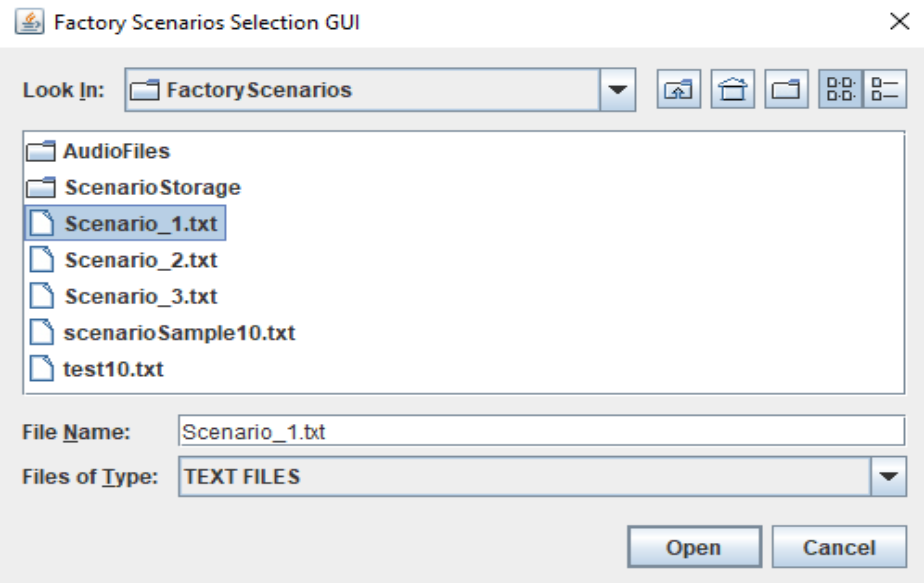

Figure 5.2: Factory Scenarios Selection Window

Step Four- Select the newly-enabled *Edit Scenario* button

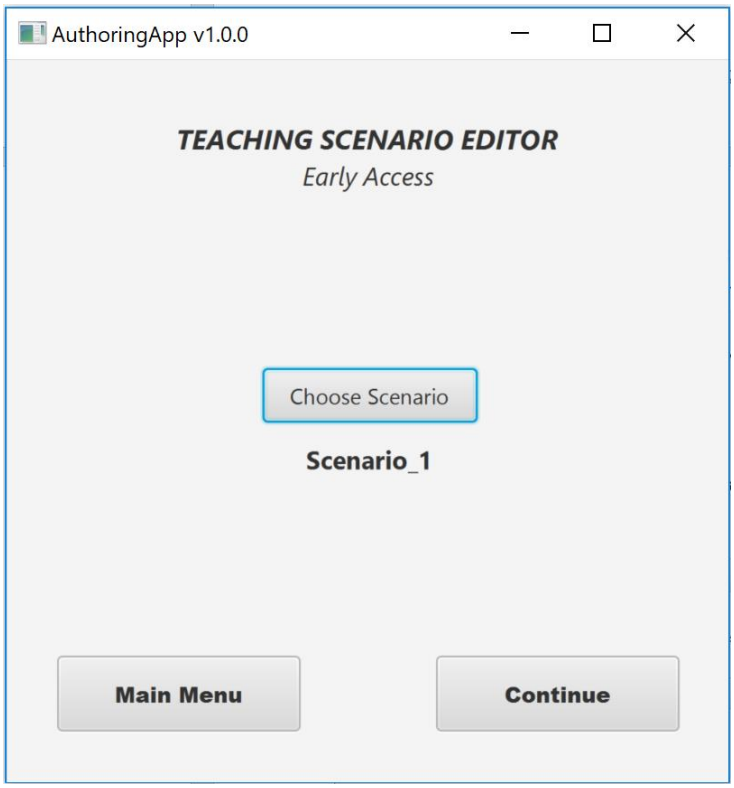

Figure 5.3: Select the Edit Scenario button

Step Five- *Edit Scenario*. This window works identically to the *Scenario Builder* discussed in Section 3

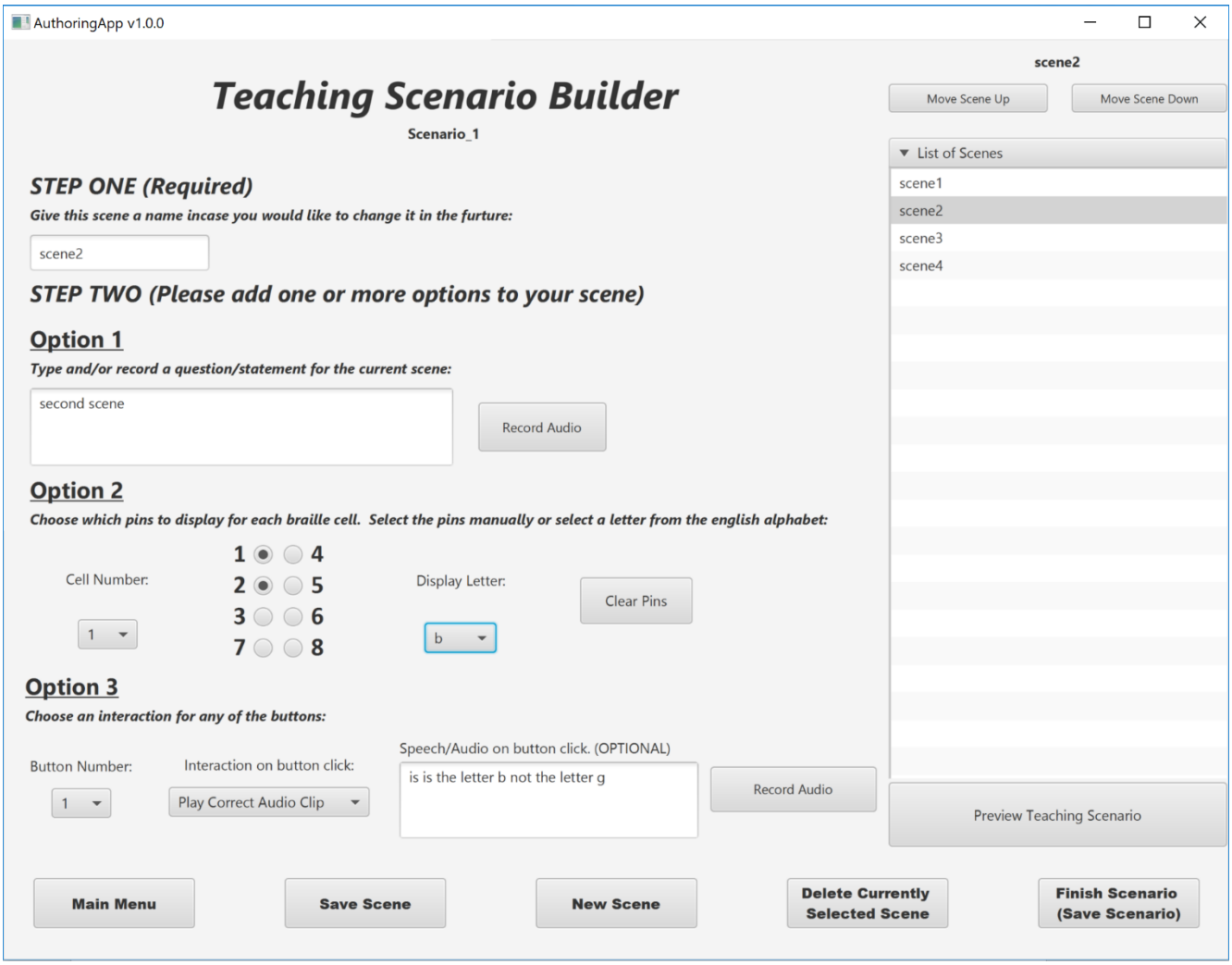

Figure 5.4: Scenario Editor

Now that the user is in the *Scenario Editor* window, they can edit any scene they would like. Once the user is satisfied with their changes, select the *Save Scene* button and then select the *Finish Editing Scenario* button to save these changes.

Section 5 - Keyboard Shortcuts

A keyboard shortcut is a key or combination of keys that provide quick access to a function within a computer program. The following is a list of keyboard shortcuts with a brief explanation of what they do and where to use them.

Main Menu:

- Create New Scenario: Ctrl + N
- Load Scenario: Ctrl + L
- Edit Scenario: Ctrl + E
- Sample Scenario: Ctrl + T
- User Manual: Ctrl + M

Create Scenario Opening Window (TEACHING SCENARIO BUILDER):

- Continue: Ctrl + N
- Return to main menu: Ctrl + M

Edit Scenario Opening Window (TEACHING SCENARIO EDITOR):

- Continue: Ctrl + N
- Return to main menu: Ctrl + M

Create & Edit Scenario Main Window (TEACHING SCENARIO BUILDER/SCENARIO EDITER):

- Return to main menu: Ctrl + M
- Save Scene: Ctrl + S
- New Scene: Ctrl + N
- Delete Currently Selected Scene: Ctrl + D
- Finish scenario: Ctrl + F
- Preview Scenario: Ctrl + P

Sample Scenarios Window:

- Sample scenario 1: Ctrl + 1
- Sample scenario 2: Ctrl + 2
- Sample scenario 3: Ctrl + 3
- Return to main menu: Ctrl + M

Section 6 - Bibliography

[1] "Barrier-Free World Vision - Braille", *Sterlingfrazer.com*, 2018. [Online]. Available: http://www.sterlingfrazer.com/BFW/Vision/Braille. [Accessed: 17- Mar- 2018].