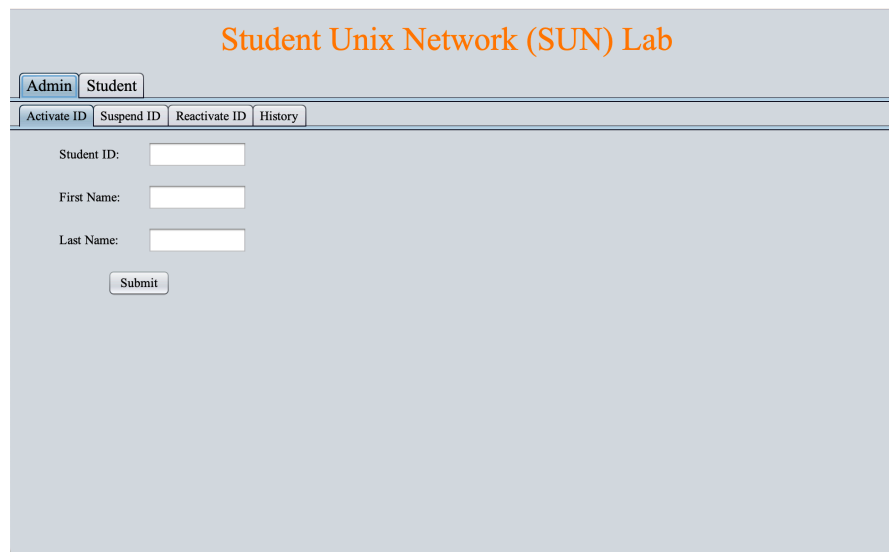# Engineering Requirements - Implementation

IMPORTANT NOTE: The password for the database is cmpsc487W.
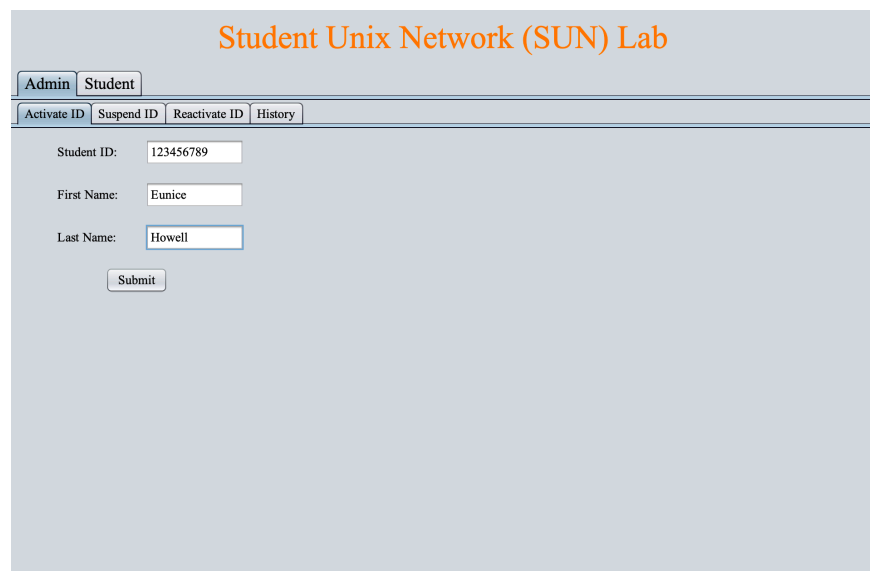
When the code is first run, the picture to the right is displayed. This is under the Activate ID tab of the Admin tab.

Admin Tab
Activating a Student ID

To activate a student ID, the admin must navigate to the "Activate ID" tab. Once the user is on the tab, three blank text boxes will be displayed. To activate a student ID, the user must input a student ID, the student's first name, and the student's last name. The student must not yet be in the system to activate an ID.

Once the information is completed, the user must click the "Submit" button, displayed below the text boxes. After "Submit" is clicked, the text boxes will be reset and a message will appear saying the student's ID has been activated.

Since the student ID is unique to each student, if an inputted student ID already exits in the system, then a message will display saying the ID is already activated, regardless of the name. This is to ensure that two different students are not mistakenly entered into the system with the same ID.
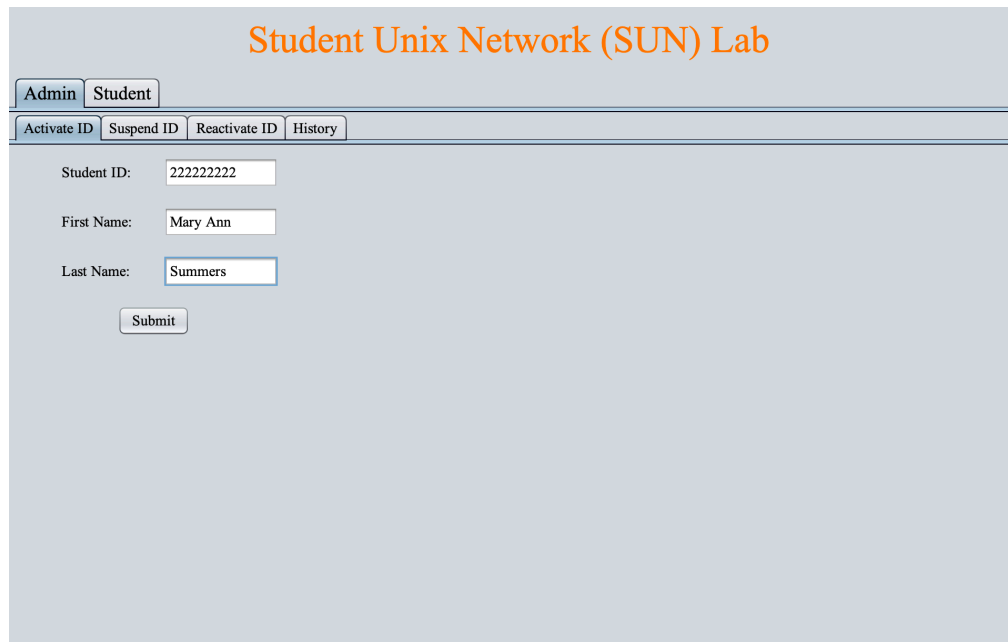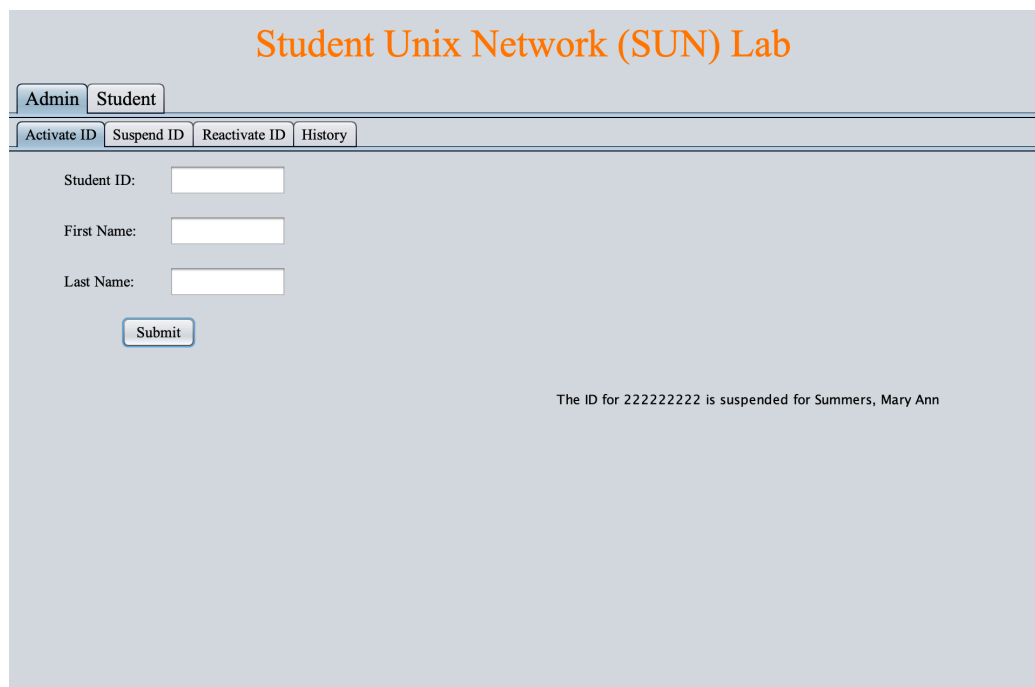
If a student ID matches that of a student who has a currently suspended ID, then a message tells the user the student has a suspended ID. If the user wants to reactivate a student's ID, the user must use Reactivate ID (implementation will be covered later). This is to ensure that the user wants to reactivate a suspended student's ID and that the user is not mistakenly activating an ID for someone who is not supposed to have access to the SUN Lab.
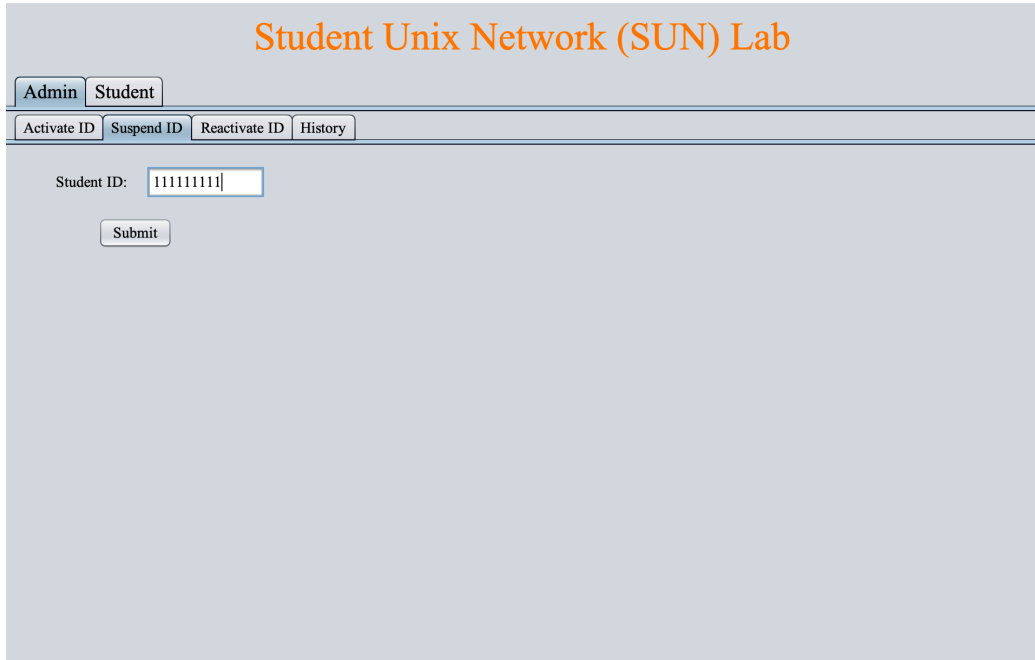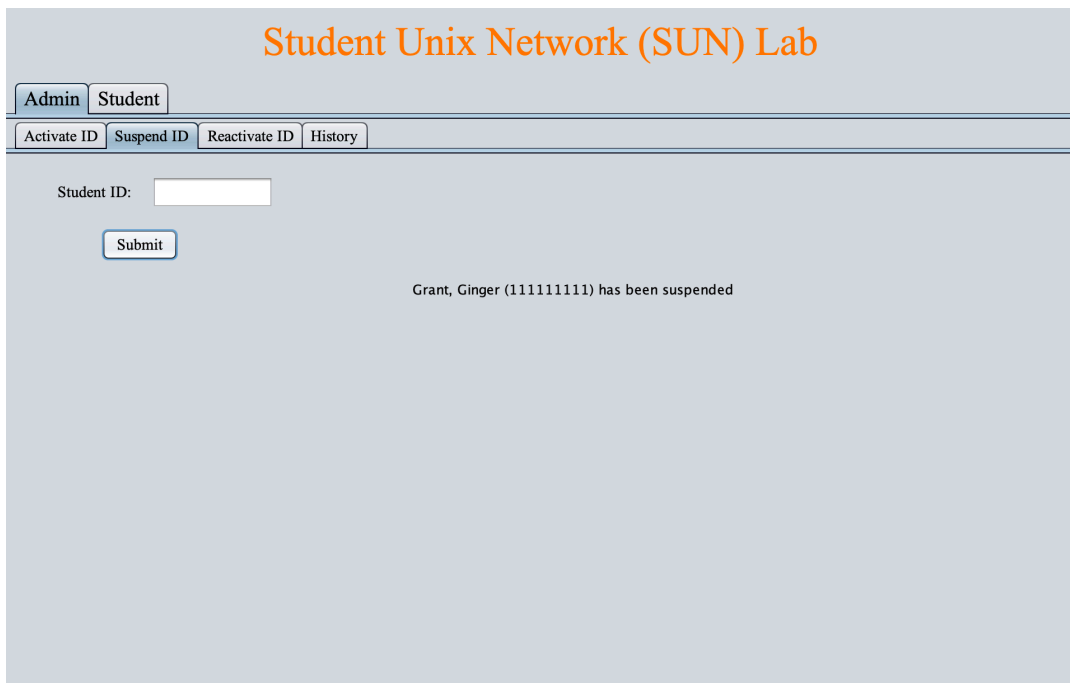
Suspending a Student ID

To suspend a student ID, the admin must navigate to the "Suspend ID" tab. Once there, a blank text box will be displayed. To suspend a student, the user must input the student's ID. The student must have a currently activated or reactivated ID in order to be suspended.

Once the student ID is inputted, the user must click "Submit" to suspend the student's ID. A message with the student's ID, and the name associated with that ID, will appear, saying the student has been suspended.

If the inputted student ID matches that of an already suspended student, a message tells the user the student was already suspended.
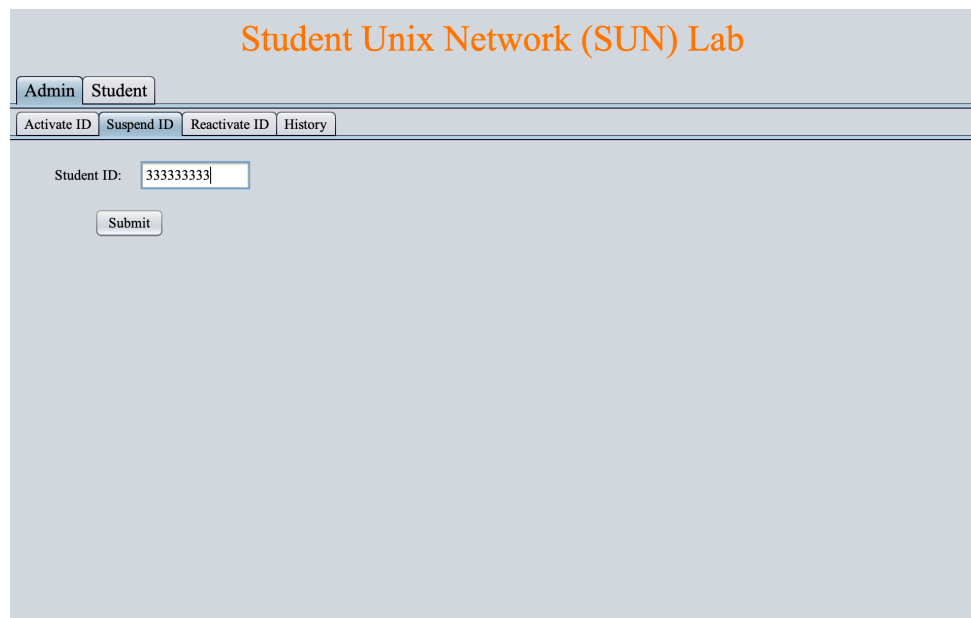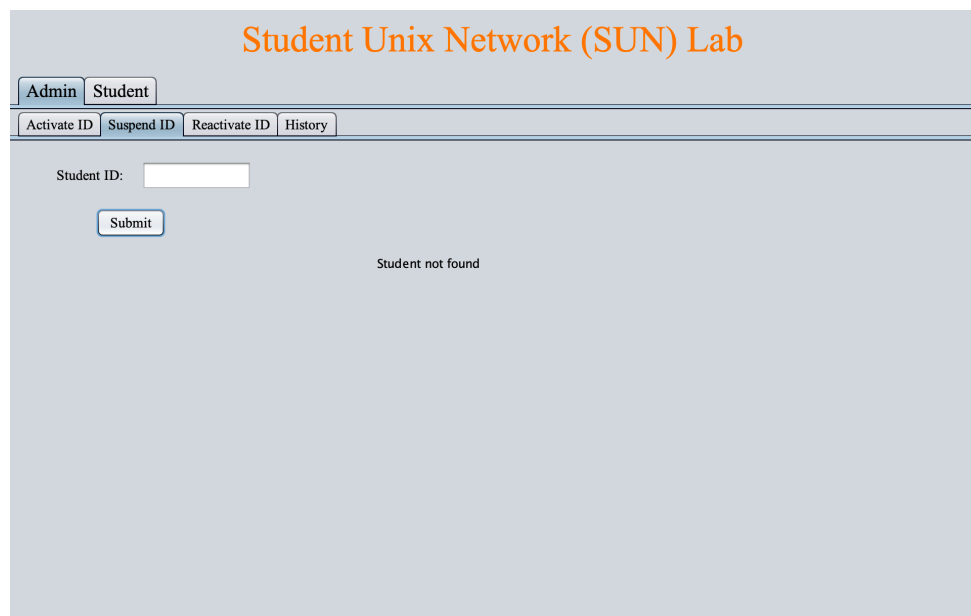
If the inputted student ID does not match any student in the system, a message will tell the user that the student is not in the system.

IMPORTANT NOTE: If a student is currently checked into the SUN Lab, then the student is given temporary access to the SUN Lab. Once the student checks out of the SUN Lab, the student will have a suspended ID and will not be able to reenter the SUN Lab without a reactivated ID.
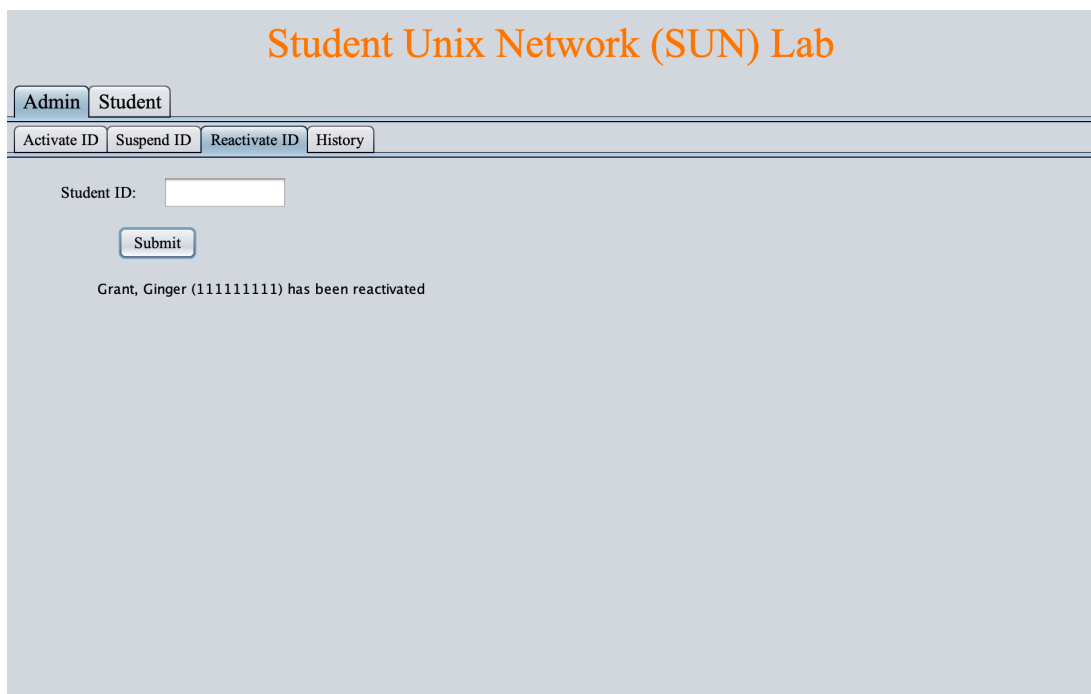
Reactivating a Student ID

To reactivate a student ID, the Admin must navigate to the "Reactivate ID" tab. Once there, the user will see a blank text box. To reactivate an ID, the user must input a student ID of a student with a currently suspended ID.

Once the student ID is inputted, the user must click "Submit" to reactivate a student's ID. A message with the student's ID, and the corresponding name, will appear, saying the student't ID was reactivated.

If the inputted student ID is currently activated or reactivated, then a message telling the user will appear.

If the inputted student ID does not match any student ID in the system, then a message tells the user the student does not exist in the system.

History of SUN Lab Access

If the Admin wants to see who has accessed the SUN Lab, the user must navigate to the "History" tab. Before the user has browsed or searched the history, this is displayed.

The bottom drop-down box ("—") has no options until a choice is selected from the top drop-down box ("- Select One -"). The choices are "Student ID", "Date", and "Time Range".

History: Student ID Sort

First, we will see how the choice "Student ID" is implemented. When the user clicks, "Student ID" from the top drop-down box, the bottom drop-down box fills with two choices: "Ascending" and "Descending".

When the user selects "Ascending", then clicks "Sort", all the students are displayed in the table, sorted by student ID in ascending order.

When the user selects "Descending" then clicks "Sort", all students are displayed in the table, sorted by student ID in descending order.

IMPORTANT NOTE: To increase expandability, the student ID type is a string, meaning the student ID can be made up of numbers or letters. The examples only use numbers, but in the future, if it is more optimal for each student ID to consist of letters and numbers, the system can handle the switch for new students without needing to be updated.

History: Date Sort

Next, we will see how the choice "Date" is implemented. When the user clicks, "Date" from the top drop-down box, the bottom drop-down box fills with two choices: "Most Recent" and "Oldest".

When the user selects "Most Recent", then clicks "Sort", all the students are displayed in the table, sorted from the most recent to the oldest dates of the timestamp.

When the user selects "Oldest", then clicks "Sort", all the students are displayed in the table, sorted from the oldest to the most recent dates of the timestamp.

Student Unix Network (SUN) Lab

| Admin | Student |

| Activate ID | Suspend ID | Reactivate ID | History |

Sort by: Date ▼   Sort

Oldest ▼

Student	Student ID	Timestamp
a, a	1	2024-09-15 14:52:30.089
a, a	1	2024-09-15 14:52:30.742
r, w	44	2024-09-22 12:25:09.524
u, t	88	2024-09-22 12:26:18.132
u, t	88	2024-09-22 12:26:26.083
Grant, Ginger	111111111	2024-09-22 17:04:33.627
Summers, Mary Ann	222222222	2024-09-22 17:05:00.946
Summers, Mary Ann	222222222	2024-09-22 17:05:04.517
Howell, Thurston	333333333	2024-09-22 17:05:23.903
Grumby, Jonas	444444444	2024-09-22 17:06:02.032
Grant, Ginger	111111111	2024-09-22 17:06:16.35
Grumby, Jonas	444444444	2024-09-22 17:06:22.601
Howell, Thurston	333333333	2024-09-22 17:06:26.61

History: Time Range Sort
Finally, we will see how the choice "Time Range" is implemented. When the user clicks, "Time Range" from the top drop-down box, the bottom drop-down box fills with three choices: "Year", "Month", and "Day".

When year is selected, two new drop-down boxes appear (From: "- Select Year -" and to: "- Select Year -"). The choices of these drop-down boxes are the past 5 years and the current year. Since the system deletes any entries that are older than 5 years, the drop-down boxes only give year choices that can exist in the database. Since this is 2024, the only choices are "2024", "2023", "2022", "2021", "2020", and "2019".

When the user selects a choice for each drop-down box, then clicks "Sort", only the students with timestamps within the time range, including the years selected will display. From there, the students are listed chronologically. For the example, we'll first choose From: 2024 to: 2024.

Since the current database has no entries for 2022 to 2023, if we choose these options for the example, there will be no entries in the table.

When the user selects "Month", four drop-down boxes (From: "- Select Month -" and "- Select Year -" and to: "- Select Month -" and "- Select Year -") will appear in addition to the the two original drop-down boxes. The choices for the "- Select Month -" drop-down boxes are the 12 numeric representations for the months (ex. 1 is January, 2 is February, etc.). The choices for the "- Select Year -" are the last 5 years and the current year. The user must select a choice from all of the new drop-down boxes in order to sort the entries.

When the user selects the months and years, then clicks "Sort", the table will display all the entries with timestamps that are within the range, including the start and end dates. For the example, we'll use from February 2023 (2/2023) to September 2024 (9/2024).

When the user selects "Day", six drop-down boxes (From: "- Select Day -", "- Select Month -", and "- Select Year - " and to: "- Select Day -", "- Select Month -", and "- Select Year - ") will appear in addition to the two original drop-down boxes with a message prompting the user to first select a month and year. The choices for the "- Select Month -" drop-down boxes are the 12 numeric representations for the months. The choices for the "- Select Year -" are the last 5 years and the current year. After a month and year are selected, the "- Select Day -" drop-down boxes fill with choices for all the possible days in the chosen month (ex. if the user chooses 2 (February) and 2023 for the From: month and year, the choices for From: "- Select Day- " will be from 1 to 28, while 2 (February) and 2024 would display choices from 1 to 29).

When the user selects a From : day, month, and year, and a to: day, month, and year, then clicks "Sort" all the entries with timestamps within the range, including the start and end dates, are displayed in the table. For the first example, we'll use April 4, 2023 (4/4/2023) to September 15, 2024 (9/15/2024). Only two entries are shown in the table because these are the only entries from within this range.

To further illustrate the "Day" choice, we'll show another example to show all entries from a specific day. To find all the entries from a specific day, make the start and end dates equal. In this example we'll use September 22, 2024 (9/22/2024) to September 22, 2024 (9/22/2024).
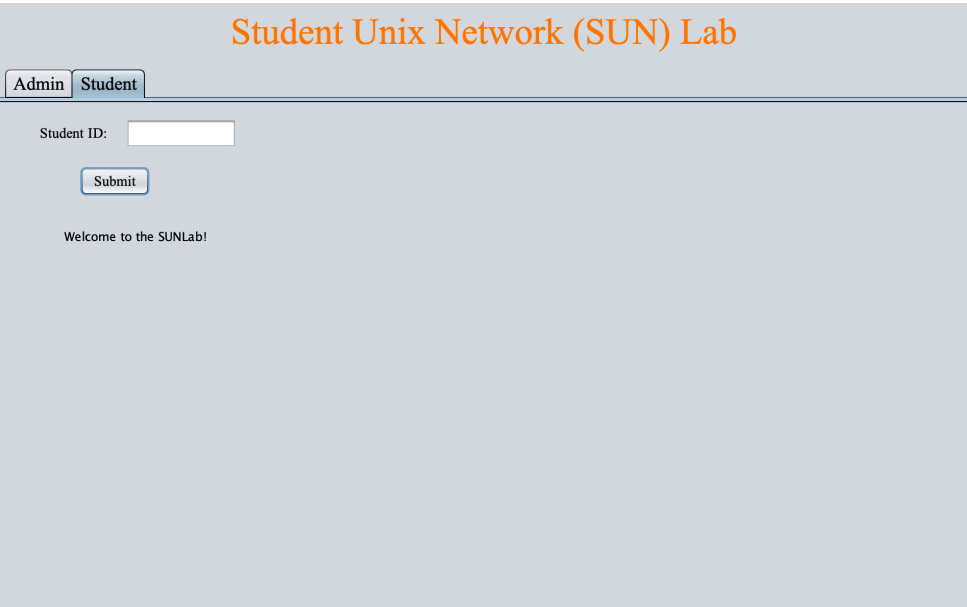
Student Tab

The system has two tabs at the top: "Admin" and "Student". Previously, we have only seen the implementation of the "Admin", which will only be used by an authorized person. The "Student" tab is to be used by students. The purpose of this tab is to both emulate students swiping their cards to access the SUN Lab and to show the system can be extended in the future to support multiple users. When navigating to this tab, the user will see a text box to enter a student ID. Entering a student ID is meant to simulate a student swiping their card to enter and exit the SUN Lab.

When a student with an activated or reactivated ID inputs their ID into the text box to enter the SUN Lab, a message welcomes them to the SUN Lab.
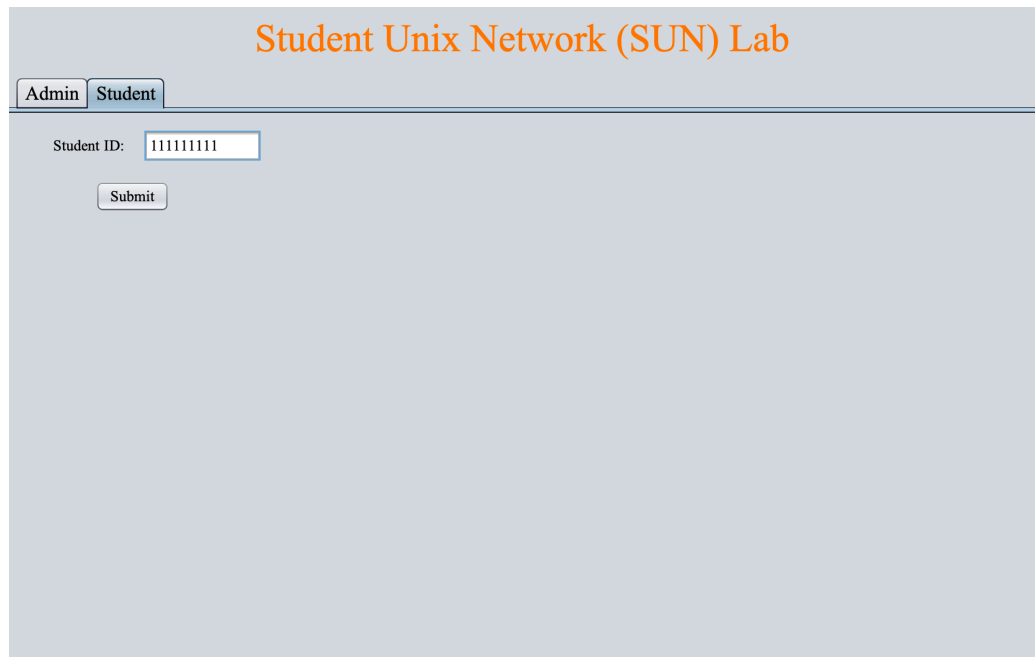
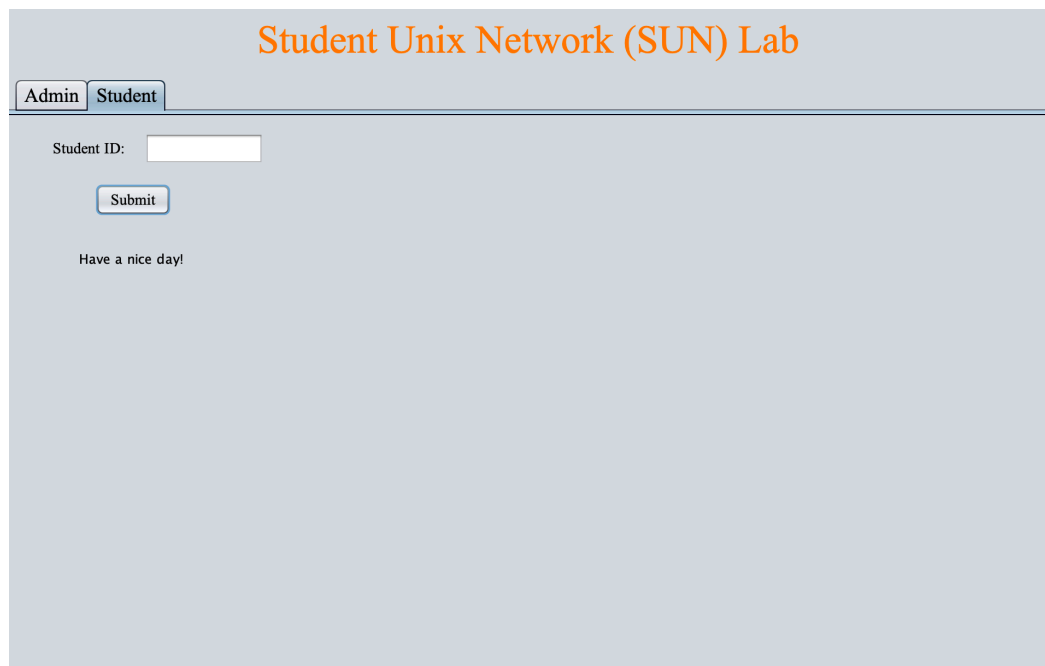When a student inputs their ID into the text box to exit the SUN Lab, a message wishes them a nice day.

If a suspended student or a student not in the system tries to access the SUN Lab by inputting their student ID, a message will appear telling the student they do not have access to the SUN Lab.

If a student is suspended while they are in the SUN Lab, they will be given temporary access so they can exit the SUN Lab. After exiting, the student's ID will be suspended and they will not be able to reenter the SUN Lab.