

Portland State University - Oregon MESA

MESA EVERYDAY

Verification and Validation Document

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Introduction

MESA Everyday is a web app that gamifies the MESA experience for students who are part of the program. It will help MESA collect core data about student experiences and their MESA journey to give testimonials that are more concrete for grant funders as well as help students participate in more MESA sponsored activities and events that might allow them to get college credits for work that they have done. This document describes how the developers will conduct testing on the web app. This document discussing the strategy and code coverage for testing the user interface (UI), Unit Testing strategy and code coverage as well as the detailed test cases for each functionality provided by the web app including those for participants and administrators. The document will end with the strategy and code coverage for beta testing that will involves testing the app with actual end users.

Purpose and Scope

This document serves as a guide for how the developers will test different part of the web app during the development and after development is finalized. In this document, the target audience should be able to understand testing and have experience implementing web apps.

Target Audience

This document targets the developers of the web app as well as any feature team or person who would want to replicate the testing on the web app. General readers can read this document, but in-depth knowledge of the development process is necessary to understand how the web app is tested.

UI Testing

This section describes how the UI will be tested it will include the detailed strategy for the testing as well as the parts of the code that is covered under this testing.

Strategy

In order to test that the UI is working correctly all the different pages of the web app will be tested in multiple types of smart phone devices as well as desktop PC's. Furthermore, the web app will be tried in all the different famous browsers; these browsers include Internet Explorer, Edge, Firefox, Google Chrome, and Safari. All form fields will be tested to insure that they function as intended and display correctly in all the different browsers and screen sizes. Any field that displays validation for incorrect data will be tested to make sure that the messages it displays are visible and make sense. All images will be tested to make sure they display correctly and are sharp and clear. Finally, part of testing the UI involves trying all the different links to all the different pages. From each page, one must be able to access all other pages; including staying on the same page, when its link is clicked.

The testing for the calendar UI will be done manually, and not through automated testing. The calendar events and displays should mirror the events in the Google Calendar they are linked to. This means that the Names, Locations, Times, and Colors need to be pulled correctly into the Web App. Events will also need to be split into their respective colors so they can be added to the views in the /badge/ page.

Code Coverage

The testing will cover all front-end code. The pages that will be covered by the UI testing are `account_deactivate.html`, `admin_control.html`, `admin_settings.html`, `badges_layout.html`, `dashboard_layout.html`, `error.html`, `forgot_username.html`, `layout.html`, `reset_token.html`, `account.html`, `admin.html`, `badges.html`, `dashboard.html`, `earnstamps.html`, `events.html`, `landpage.html`, and `reset_request.html`. In addition, the code also covers multiple javascript files. The script files covered by the testing are `bootstrap.js`, `calendar.resize.js`, `gijgo.min.js`, `jinja.countdown.js`, `jquery.countdown.js`, `jquery.dataTables.min.js`, `mdbdashboard2.min.js`, `mdb.min.js`, `sideNavInit.js`, `bootstrap.min.js`, `dataTables.bootstrap4.min.js`, `image-picker.min.js`, `jquery-3.3.1.min.js`, `jquery.countdown.min.js`, `jquery-ui.min.js`, `mdb.js`, `popper.min.js`, and other scripts inside a folder named `vendor`. Beside the javascript and html pages, the following .css files are also covered under the front-end testing: `bootstrap.css`, `css-circular-prog-bar.css`, `gijgo.min.css`, `main.css`, `mdbdashboard2.min.css`, `bootstrap.min.css`, `dataTables.bootstrap4.min.css`, `image-picker.css`, `jquery-ui.min.css`, `mdb.css`, and `mdb.min.css`.

The testing will cover all of the code that interfaces with the Google Calendar lives inside of the `calendar_events.py` file. This information is used in `routes.py` to pass data into jinja forms in `dashboard_layout.html` to be inherited on other pages.

Unit Testing

Unit testing green-lights specific sections of the code. By separating the testing for each part, the security and reliability of the final product increases. These individual snippets of code should not rely on each other for functionality in order to carry out isolated testing.

Strategy

In MESA Everyday App, the main sections that require unit testing are related to user functionality. This includes user login and logout, stamp adding and removal, and badge leveling. The test functions build off flask's own Pytest library, allowing use of python's *assert* function for cleaner code. An initial testing configuration file (`confest.py`) sets up a separate testable application that uses the same database. Individual functions written separately assess the different actions a user can perform. These tests will pass or fail, signifying an issue in the code.

Code Coverage

Unit testing covers three main categories. On the landing page, testing covers user registration and sign in. After logging in, tests cover user logging out, resetting password, username recovery, and badge and stamp viewing. Badge and stamp viewing includes needed and already obtained stamps. Additionally, badges are tested for adding and removing stamps, current level, current point tally, and remaining number of points until obtaining the next level. Finally, calendar functionality will also be tested.

Participants Tests

This section describes the different unit tests that will be conducted on all participants' functionalities that the web app offers including participant's session management, participants' tasks, and participants' calendar.

Participants' Session Management

This section discusses the detailed unit tests relating to participants' session management. They include the test cases for all the functionalities offered by the web app as well the expected results of the test cases and a Yes/No indicating if the results has been verified and thus the test passes.

Registration

Registration will be tested using the cases listed below and will be done manually.

UI-Testing Cases

Test Case(s)	Expected Results	Verified
Testing the happy path, everything is entered correctly. The password is all letters and includes exactly one symbol and one number.	User should see a green banner: "Your account has been created! You are now able to log in with the username: firstlastXXX" where first is first 8 letters of First Name, last is first 8 letters of Last Name, and a random three digits between 000 and 999.	Yes
Testing for a First Name and Last Name longer than eight characters	First and Last Name are truncated to eight characters and three random digits between 000 and 999 are appended	Yes
Testing for First Name and Last Name exactly eight characters	First and Last Name are preserved and three random digits between 000 and 999 are appended	Yes
Testing for First and Last Name less than eight characters	First and Last Name are preserved and three random digits between 000 and 999 are appended	Yes
Testing for First or Last Name more than eight while the others is exactly eight	Whichever is longer between first and last name will be truncated to eight character and the other will be preserved then three random digits between 000 and 999 are appended	Yes
Filling up the database with 1000 of the same name and trying to add the 1001st person.	The user will not be able to register an account with the web app. Name must be spelled differently.	Yes
Failure to Include First Name and Last Name in form, everything else filled	Display a message "Please fill out this field" for the first unfilled field, In this case First Name	Yes
Failure to Include Last Name in form, everything else including First Name filled	Display a message "Please fill out this field" for the first unfilled field, In this case Last Name	Yes
Including First Name and Last Name and leaving everything else blank or default	Display a message "Please fill out this field" for the first unfilled field, In this case Email	Yes
Filling everything except for an invalid email address, not of the form: "something@something.something"	Display a red text under the field Email "Invalid email address". Password fields will be blanked out	Yes
User fills everything correctly except for password fields. The passwords are matching but not of the correct length and complexity	The user will see a red text under the Password field: "Your password must be at least 8 characters. The string must contain at least 1 numeric digit and 1 symbol."	Yes
User fills everything correctly except for password fields. The passwords are matching and of the correct length but not correct complexity	The user will see a red text under the Password field: "The string must contain at least 1 numeric digit and 1 symbol."	Yes
User fills everything correctly except for password fields. The passwords are matching and of the correct complexity, but not correct length	The user will see a red text under the Password field: "Your password must be at least 8 characters."	Yes
User fills everything correctly except for password fields. The passwords are not matching and not of the correct length nor complexity	The user will see a red text under the Password field: "Your password must be at least 8 characters. The string must contain at least 1 numeric digit and 1 symbol."; In addition, user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
User fills everything correctly except for password fields. The passwords are not matching and are not complex but of the correct length	The user will see a red text under the Password field: "The string must contain at least 1 numeric digit and 1 symbol."; In addition, user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes

User fills everything correctly except for password fields. The passwords are not matching and not of the correct length, but are complex	The user will see a red text under the Password field: "Your password must be at least 8 characters."; In addition, user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
User fills everything correctly except for password fields. The passwords are not matching but are complex and of the correct length	user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
User fills everything correctly except for password fields. The password match length and complexity in Password field but not Confirm Password field.	user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
Registering a user with all correct information, but their password is only made up of numbers and one symbol and is of the correct length. Furthermore, the passwords in both Password and Confirm Password fields match.	The password should pass the restriction, the account will be registered, and user will see the success green banner seen in the first test of the registration section.	Yes
Filling everything correctly and changing the school name from the drop-down	All data in the form is valid so all restriction will be met and account will be registered	Yes
Filling everything correctly except for an e-mail address that is already taken	Display a red text under the field Email "That email is taken. Please choose a different one."	Yes

Functionality Testing Cases

Test Case(s)	Expected Results	Verified
Valid Data Entered	Registration should pass, and a user will exist in the database	Yes
Incorrect/Malformed Data Entered	Any incorrect information should cause the form to be rejected, and should redirect the user to the landing page and show the appropriate errors that caused the form to fail instead of registering them.	Yes

Signing In

Signing in will be tested using the cases listed below and will be done manually.

UI-Testing Cases

Test Case(s)	Expected Results	Verified
Valid Username and Valid Password	User should be directed to their dashboard page	Yes
Valid Username but Invalid Password that doesn't even match password requirement	User should see a red banner: "Login Unsuccessful. Please check username and password."	Yes
Valid Username but Invalid Password that match password requirement	User should see a red banner: "Login Unsuccessful. Please check username and password."	Yes
Invalid Username but Valid Password	User should see a red banner: "Login Unsuccessful. Please check username and password."	Yes
Invalid Username and Password	User should see a red banner: "Login Unsuccessful. Please check username and password."	Yes
User tries to directly access the dashboard page via the URL	User should see a blue banner: "Please log in to access this page."	Yes

Functionality Testing Cases

Test Case(s)	Expected Results	Verified
Valid Information	User should be logged into the site, with their last login time added to the database.	Yes
Invalid Name or Password	User should see a red banner: "Login Unsuccessful. Please check username and password"	Yes

Signing Out

Signing out will be tested using the cases listed below and will be done manually.

Test Case(s)	Expected Results	Verified
A user is signed in, they hit Log Out to sign out of the web app.	User should be logged out of their account, and sent to the land page	Yes
No Signed in User	They shouldn't be able to access the dashboard page to sign out as they are not signed in to the app	Yes

Resetting Password

Resetting password will be tested using the cases listed below and will be done manually.

UI-Testing Cases

Test Case(s)	Expected Results	Verified
User enters an invalid email that does not exist in the system that is also not an email of the correct form.	Displays a red text under the field Email "Invalid email address. There is no account with that email. You must register first"	Yes
User enters an invalid email that does not exist in the system, but is an email of the correct form.	Displays a red text under the field Email "There is no account with that email. You must register first"	Yes
User enters a valid email address that does exist in the system.	User will be redirected to the landing page and see a blue banner that says, "An email has been sent with instructions to reset your password". They will also receive an email on the account they provided.	Yes
User checks the email they provided from the test above	User will see an email in their inbox with the title, "Password Reset Request" and in the body: "To reset your password, visit the following link: some_complicated_long_link".	Yes
User enters the following in password fields: The passwords are matching but not of the correct length and complexity	The user will see a red text under the Password field: "Your password must be at least 8 characters. The string must contain at least 1 numeric digit and 1 symbol."	Yes
User enters the following in password fields: The passwords are matching and of the correct length but not correct complexity	The user will see a red text under the Password field: "The string must contain at least 1 numeric digit and 1 symbol."	Yes
User enters the following in password fields: The passwords are matching and of the correct complexity, but not correct length	The user will see a red text under the Password field: "Your password must be at least 8 characters."	Yes
User enters the following in password fields: The passwords are not matching and not of the correct length nor complexity	The user will see a red text under the Password field: "Your password must be at least 8 characters. The string must contain at least 1 numeric digit and 1 symbol."; In addition, user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
User enters the following in password fields: The passwords are not matching and are not complex but of the correct length	The user will see a red text under the Password field: "The string must contain at least 1 numeric digit and 1 symbol."; In addition, user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
User enters the following in password fields: The passwords are not matching and not of the correct length, but are complex	The user will see a red text under the Password field: "Your password must be at least 8 characters."; In addition, user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
User enters the following in password fields: The passwords are not matching but are complex and of the correct length	user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
User enters a password that matches length and complexity in Password field but not in the Confirm Password field.	user will see a red text under the Confirm Password field: "Field must be equal to password"	Yes
User enters the following in password fields: password is only made up of numbers and one symbol and is of the correct length. Furthermore, the passwords in both Password and Confirm Password fields match.	The password should pass the restriction, the account will be registered, and user will see a green banner that says: "Your Password has been updated! You are now able to log in".	Yes
User trying their username and the password that	User will be able to login just fine and they will be redirected	Yes

they just reset	to their dashboard page.	
Clicking the Login button at the top right of the Reset Password page	User should be directed to the landing page where they can either register or login	Yes
Clicking the Login button at the top right of the Reset Password	User should be directed to the landing page where they can either register or login	Yes

Functionality Testing Cases

Test Case(s)	Expected Results	Verified
Entering in valid information and hitting Request Password Reset button and entering valid information for the reset password page and hitting Reset Password button	The user will be sent an email with instruction to reset their password. Then when they enter valid information in the reset password page that was emailed to them, they will be able to sign in with their username and new password and access their dashboard.	Yes
Entering in invalid information and hitting Request Password Reset button and/or entering invalid information for the reset password page and hitting Reset Password button	The user will be prompted on how to fix their inputs and then if they do things correctly, they will be able to gain access to their account.	Yes
User sends a request for their password to be reset but they do not click the link within 30 minutes of sending it.	The link should expire and user will not be able to use the link to reset their page. The page that use to show the reset password form will now redirect the user to the sign in page and display a yellow banner that says, "That is an invalid or expired token". User should still be able to log-in just fine, if they remembered their password and username	Yes
Users send themselves a new link after the link that was expired and access it before the 30 minutes.	The new link resets the timer and gives them additional 30 minutes, since they accessed within 30 minutes, they should be able to reset their password. The user will see a green banner that says: "Your password has been updated! You are now able to log in"	Yes
Signing in with the new password that was just reset	This should give the same message and redirect as a successful login test.	Yes

Forgetting Username

Forgetting username will be tested using the cases listed below and will be done manually.

UI-Testing Cases

Test Case(s)	Expected Results	Verified
User enters an invalid email that does not exist in the system that is also not an email of the correct form.	Displays a red text under the field Email "Invalid email address. There is no account with that email. You must register first"	Yes
User enters an invalid email that does not exist in the system, but is an email of the correct form.	Displays a red text under the field Email "There is no account with that email. You must register first"	Yes
User enters a valid email address that does exist in the system.	User will be redirected to the landing page and see a blue banner that says, "An email has been sent with your username". They will also receive an email on the account they provided.	Yes
User checks the email they provided from the test above.	User will see an email in their inbox that is titled "Username Reminder" and the body contains: "Hi Firname Your username is firstlastxxx".	Yes

Functionality Testing Cases

Test Case(s)	Expected Results	Verified
Entering in valid information and hitting Request User Name button and entering valid information for the reset password page and hitting Reset Password button	The user will be sent an email with instruction to reset their password. Then when they enter valid information in the reset password page that was emailed to them, they will be able to sign in with their username and new password and access their dashboard.	Yes
Entering in invalid information and hitting Request User Name button and/or entering invalid information for the reset password page and hitting Reset Password button	The user will be prompted on how to fix their inputs and then if they do things correctly, they will be able to gain access to their account.	Yes

Deactivating Account

Deactivating account will be tested using the cases listed below and will be done manually.

UI-Testing Cases

Test Case(s)	Expected Results	Verified
User hits deactivate account button from Edit Profile link	A Deactivate Account Form will show in top of the page with the message: " You are about to deactivate your account. This will erase all your information and they will be unrecoverable. If you are sure you want to deactivate your account please fill the form below and hit the deactivate button". The Form would ask for First Name and Last Name and a Deactivate button	Yes
User enters in First Name Only in the Deactivate Account form and the First Name is correct	The Deactivate button should not be active	Yes
User enters in Last Name Only in the Deactivate Account form and the Last Name is correct	The Deactivate button should not be active	Yes
User enters in a First Name that is correct with wrong Last Name and try to go through the whole process of deactivating the account	The user will be able to get through the whole process just fine, but it will not succeed as the name doesn't match and thus instead of getting redirected to landing page and having all their data deleted they will get a red banner saying: "Account does not match. Please check First Name and Last Name!!"	Yes
User enters in wrong First Name with a correct Last Name and try to go through the whole process of deactivating the account	The user will be able to get through the whole process just fine, but it will not succeed, as the name does not match and thus instead of being redirected to landing page and having all their data deleted they will get a red banner saying: "Account does not match. Please check First Name and Last Name!!"	Yes
User enters in wrong First and Last name	The user will be able to get through the whole process just fine, but it will not succeed, as the name does not match and thus instead of being redirected to landing page and having all their data deleted they will get a red banner saying: "Account does not match. Please check First Name and Last Name!!"	Yes
User enters in correct First and Last Name	A pop up would show to the user: "Are you sure to delete this account?"	Yes
User enters in correct First and Last Name and they get the pop-up but then they hits "Cancel" as they changed their mind	The pop up should disappear and the Deactivate Account form will still be visible	Yes
User enters in correct First and Last Name and they get the pop-up then they hit "Ok" as they do want to cancel their account	The user will be signed out and redirected to the landing page	Yes
User tries to enter their credentials after deactivating their account.	The user will see a red banner saying: "Login Unsuccessful. Please check username and password"	Yes
User tries to recover their deactivated account by typing in their email address to get their username	The user will see a red text saying: "There is no account with that email. You must register first"	Yes
User tries to recover their deactivated account by typing in their email address to reset their password	The user will see a red text saying: "There is no account with that email. You must register first"	Yes
User hits deactivate account button from Edit Profile link, but the hit it by mistake so they click away	The Deactivate Account form should disappear	Yes

Functionality Testing Cases

Test Case(s)	Expected Results	Verified
User enters in valid first and last name	The Deactivate button should be clickable	Yes
User enters in invalid or incomplete data	The user would be able to continue through the whole deactivation process, but they will get an error message in a red banner that says: "Account does not match. Please check First Name and Last Name!!"	Yes
User enters in valid first and last name and hits Ok in the pop-up	The user will be signed out and redirected to the landing page and will not be able to login, reset password or be sent their username	Yes
User enters in valid first and last name and hits Cancel and then click away from the deactivate form button	User should see the form disappears and they should be back to the same page they were at before hitting Deactivate Account	Yes

Editing Profile

Editing Profile will be tested using the cases listed below and will be done manually.

UI-Testing and Functionality Testing Cases

Test Case(s)	Expected Results	Verified
User enters in a Valid Email, and enters in valid but different information for all the other forms, then only hits the Update Email button	I will see a green banner that says "your account has been successfully updated" and then First and Last name that are already visible are back to their old values, I can login with the same password and my school stays the same	Yes
User enters in an Invalid Email, and enters in valid but different information for all the other forms, then only hits the Update Email button	The user will see a red text under email that says: "Invalid email address" and the email will go back to what it was originally before entering the invalid email. First and Last name that are already visible are back to their old values, I can login with the same password and my school stays the same	Yes
User hits Forgot Username after updating their email and puts in their old email	The user should not have any email sent to them. They will see a red text that says: "There is no account with that email. You must register first". However if another user took the email account. Then that user will get the email.	Yes
User hits Forgot Password after updating their email and puts in their old email	The user should not have any email sent to them. They will see a red text that says: "There is no account with that email. You must register first". However if another user took the email account. Then that user will get the email.	Yes
User hits Forgot Username after updating their email and puts in their new email	The user should get the same username that used to be sent to their old email and that was sent when they created their account with the old email in their new email	Yes
User hits Forgot Password after updating their email and puts in their new email	The user should get the reset link that will allow them to login with the same username and with the new password that they updated, but that reset link will be sent to their new account. They will be able to login with same username and their new password and they will have their new email the same if they go and check the deactivate account page.	Yes
User updates their email address with an email that already exists in the database. The email is already taken by another user.	The user should not be able to update their email to an email of another user. They will get a red text saying: "That email is taken. Please choose a different one". The email should stay the same as before the invalid change	Yes
User updates both First and Last Name to new values and enters in valid but different information for all the other forms, then only hits the Update Name button	The user will get a green banner that says, "Your account has been successfully updated!". Both their first and last names will be changed. The updates should persist after logging out and logging back in.	Yes
User only want to update their First Name and they leave Last Name as is	The user will get a green banner that says, "Your account has been successfully updated!" Only their first name will be updated while their last name will stay the same.	Yes
User only want to update their Last Name and they leave First Name as is	The user will get a green banner that says, "Your account has been successfully updated!" Only their last name will be updated while their first name will stay the same.	Yes
User only wants to update their First Name and they blank out their Last Name	The user will get a green banner that says, "Your account has been successfully updated!" Their first name will be whatever	Yes

	they changed it to and their last name will be blank	
User only wants to update their Last Name and they blank out their First Name	The user will get a green banner that says, "Your account has been successfully updated!" Their last name will be whatever they changed it to and their first name will be blank	Yes
User enters in a Their real old password, and type in their new password and confirm it correctly. User then enters valid but different information for all the other forms, then only hits the Update Password button	The user will get a green banner that says, "Your account has been successfully updated!" Everything will go back to the old value except the password field will be blanked out again	Yes
Users logs out and then logs in with their old password from before the password change	The user will see a red banner that says, "Login Unsuccessful. Please check username and password"	Yes
Users logs in with the password they just changed	The user will be able to hit their own dashboard page	Yes
User doesn't put in their old password and then just fill the New Password and Confirm Password field with valid information	The user will see a red text under old password that says: "Old password is not correct"	Yes
Users logs out and then logs in with their old password from before the password change	The user will be able to login just fine as their password change from the test above didn't go through	Yes
User puts in their old password wrong and then put a valid new password	The user will see a red text under old password that says: "Old password is not correct"	Yes
Users logs out and then logs in with their old password from before the password change	The user will be able to login just fine as their password change from the test above didn't go through	Yes
User enters their valid and correct Old Password. They enter correct New Password and Confirm Password that meet the length and complexity requirement but they are not the same	The user will see a red text under the new password field that says, "Field must be equal to password."	Yes
User enters their valid and correct Old Password. They enter correct New Password and Confirm Password that meet the length but not complexity requirement and they are the same	The user will see a red text under the password field that says, "Field must be equal to password." The string must contain at least 1 numeric digit and 1 symbol"	Yes
Users logs out and then logs in with their old password from before the password change	The user will be able to login just fine as their password change from the test above didn't go through	Yes
User enters their valid and correct Old Password. They enter correct New Password and Confirm Password that meet the complexity but not length requirement and they are the same	The user will see a red text under the password field that says, "Your password must be at least 8 characters."	Yes
Users logs out and then logs in with their old password from before the password change	The user will be able to login just fine as their password change from the test above didn't go through	Yes
User enters their valid and correct Old Password. They enter correct New Password and Confirm Password that meet neither the length nor complexity requirement but they are the same	The user will see a red text under the password field that says, "Your password must be at least 8 characters. The string must contain at least 1 numeric digit and 1 symbol "	Yes
Users logs out and then logs in with their old password from before the password change	The user will be able to login just fine as their password change from the test above didn't go through	Yes
User picks a different school from the drop down menu. User then enters valid but different information for all the other forms, including changing their password, then they only hits the Update School Button	The user will get a green banner that says, "Your account has been successfully updated!" Everything will go back to the old value except the password field will be blanked out and the school will now show the new value that got picked from the dropdown	Yes
Users logs out and then logs in with their correct credentials	The user will be able to login just fine as their password change from the test above didn't go through in addition they should see that their change of school persists	Yes
User clicks on the Change Profile Picture Button	The user will see a form that will pop-up titled Select an Avatar and has options for different avatars for users to pick from	Yes
User decided to not do any change and click on part of the page that is not part of the form	The form will disappear and the user will still be able to see the Edit Profile page.	Yes
User decided to pick the same image, not change it and hit Update Avatar	The user will see a green banner saying, "Your account has been updated!" The image would stay the same	Yes
User decided to pick a different image, but then hits the cancel button.	The image will stay as is; the new change will not make it through. The user will still be able to see the Edit Profile page	Yes
User picks a different image and hits the update	The user will see a green banner saying, "Your account has	Yes

avatar button while also filling out all the different forms in the Edit Profile page	been updated!" The image will be changed, all the other fields in all the forms in edit profile page will stay the same	
Users logs out and then logs in with their correct credentials	The user will be able to login just fine as their password change from the test above didn't go through in addition they should see that their change of profile picture persists and it should also be visible when they hit the user icon on the top right of any page.	Yes

Participants Tasks

This section discusses the detailed unit tests relating to participants' tasks. They include the test cases for all the functionalities offered by the web app as well the expected results of the test cases and a Yes/No indicating if the results has been verified and thus the test passes.

Overall Visibility

Overall Visibility will be tested using the cases listed below and will be done manually.

Test Case(s)	Expected Results	Verified
User hasn't added any stamps	All stamps visible in needed stamp list	Yes
User adds a stamp	Added stamp visible in obtained. Rest of stamps still visible in needed list.	Yes
User added all stamps for a badge	All stamps visible in obtained stamp list. No stamps left in needed stamp list	Yes
User removes a stamp	Stamp removed from obtained stamp list and added to needed stamp list.	Yes
User removes all stamps for a badge	All stamps visible in needed stamp list. No stamps left in obtained stamp list	Yes

Adding Stamps

Adding Stamps will be tested using the cases listed below and will be done manually and also is part of the automated unit testing.

Test Case(s)	Expected Results	Verified
User select the stamp, date and submit	The stamp is added to the database. Points are added to the associated badge.	Yes
User select the stamp, and click the submit without selecting date	Pop up notification warning that it's a required field	Yes
User selects the stamp, date, and click the submit of another form	Pop up notification warning that missing required field	Yes
User submits the same stamp and date for multiple times	Not possible	Yes

Viewing Currently Obtained Stamps

Viewing Currently Obtained Stamps will be tested using the cases listed below and will be done manually.

Test Case(s)	Expected Results	Verified
User clicks a badge in "view progress" (left sidebar)	The page displays all the earned stamps of that badge under "earned stamps for <badge name>"	Yes
User tries to check the obtained stamps of a badge for which he earned no stamps	The list reads "no data available in table"	Yes
User earns a stamp in that badge and try to check the obtained stamps again	The earned stamp appears in the earned stamps list	Yes
User tries to check the obtained stamps of a badge for which he earned all the stamps	The page lists all stamps under earned stamps list	Yes

Viewing Needed Stamps

Viewing Needed Stamps will be tested using the cases listed below and will be done manually.

Test Case(s)	Expected Results	Verified
User clicks a badge in “view progress” (left sidebar)	The page displays all the unearned stamps of that badge under “unearned stamps for <badge name>”	Yes
User earns a stamp in that badge and try to check the needed stamps again	The earned stamp disappears from the needed stamps list	Yes
User tries to check the needed stamps of a badge for which he earned all the stamps	The page displays “all stamps earned”	Yes
User tries to check the needed stamps of a badge for which he earned no stamps	The needed stamps lists contains all stamps for that badge	Yes

Viewing Current Level

Viewing Current Level has been tested using the following unit test cases

Test Case(s)	Expected Results	Verified
Add a 5-pt worth stamp to the badge 1	Current level = 0	yes
Add a 3-pt worth stamp to the badge 1	Current level = 1	yes
Add a 3-pt worth stamp to the badge 1	Current level = 1	yes
Delete a 3-pt worth stamp from badge 1	Current level = 1	yes
Delete a 3-pt worth stamp from badge 1	Current level = 0	yes
Delete a 5-pt worth stamp from badge 1	Current level = 0	yes

Viewing Currently Accumulated Points

Viewing Currently Accumulated Points has been tested both manually and through some unit-testing cases

Test Case(s)	Expected Results	Verified
The points shown on the page are the same as the ones in db	User should expect to see that both are the same	yes
The points shown in dashboard are the same as the ones in view progress	User should expect to see that both are the same	yes
User has not earned any stamp.	Shows 0 for all badges	yes
User earns a stamp for a badge	Shows the point of that stamp for that badge	yes
Add a 5-pt worth stamp to the badge 1	Currently accumulated pts = 5	yes
Add a 3-pt worth stamp to the badge 1	Currently accumulated pts = 8	yes
Add a 3-pt worth stamp to the badge 1	Currently accumulated pts = 11	yes
Delete a 3-pt worth stamp from badge 1	Currently accumulated pts = 8	yes
Delete a 3-pt worth stamp from badge 1	Currently accumulated pts = 5	yes
Delete a 5-pt worth stamp from badge 1	Currently accumulated pts = 0	yes

Viewing Needed Points for Next Level

Viewing Needed Points for Next Level has been tested both manually and through some unit-testing cases

Test Case(s)	Expected Results	Verified
The points shown in dashboard are the same as the ones in view progress	User should expect to see that both will end up being the same	yes
User hasn't earned any stamp.	Shows the required pts to lv1 for all badges	yes
Add a 5-pt worth stamp to the badge 1	Needed pts = max pts to lv1 - 5 = 2	yes
Add a 3-pt worth stamp to the badge 1	Needed pts = max pts to lv2 - 8 = 4	yes
Add a 3-pt worth stamp to the badge 1	Needed pts = max pts to lv2 - 11 = 1	yes
Delete a 3-pt worth stamp from badge 1	Needed pts = max pts to lv2 - 8 = 4	yes
Delete a 3-pt worth stamp from badge 1	Needed pts = max pts to lv1 - 5 = 2	yes
Delete a 5-pt worth stamp from badge 1	Current level = max pts to lv1 = 7	yes

Removing a Stamp

Removing a Stamp has been tested both manually and through some unit-testing cases

Test Case(s)	Expected Results	Verified
User removes a stamp they have.	Stamp removed from obtained stamp list and added to needed stamp list. Points are removed from the badge based on stamp point value.	Yes
User removes a stamp they don't have.	Stamp lists unchanged.	Yes

Participants Calendar

This section discusses the detailed unit tests relating to participants' calendar. They include the test cases for all the functionalities offered by the web app as well the expected results of the test cases and a Yes/No indicating if the results has been verified and thus the test passes.

Viewing Current Month's Calendar

The current month's calendar will be tested visually as follows

Test Case(s)	Expected Results	Verified
Does the calendar displays correctly across all different pages of the web app both in user-side and admin-side	I expect to see the same calendar on each web app page for both the user and admin side. The calendar would be the same size in all pages.	Yes
Does the events in the calendar to the left side of the web app, match the actual Google calendar events.	Since we are using the same calendar in both the left-side and the actual Google calendar, they must match	Yes
When clicking on events in the calendar extra details about the events are displayed without breaking the look and size of the calendar.	I expect to see the extra details pop-up box showing in the space for the calendar without extending out of the container for the calendar.	Yes
Clicking all the different buttons in the calendar does not break the calendar or change the way it looks so that it does not fit the container.	No matter what buttons or options I change, the calendar should never extend outside the container or otherwise get parts of it cut off.	Yes

Viewing General Upcoming Task for Current Week

The general upcoming tasks for current week will be tested visually as follows

Test Case(s)	Expected Results	Verified
Checking the events in the Upcoming tasks section of the web app would show all events with less than 7 days away	Checking at the beginning of the week and having events for the next 10 days, I only see events that are due in 7 days or less	Yes
Checking that the upcoming events table of all upcoming events does not extend outside the container	When I open the web app on multiple devices, I see that the events do not extend out of the container.	Yes

Viewing Countdown for Three Important MESA Dates

The countdown for three important MESA Dates will be tested visually as follows

Test Case(s)	Expected Results	Verified
Adding the three different events to the calendar at different times	Each of the three events coming up would have a countdown that is constantly updated.	Yes
Waiting until the first event expire	One should see that the event that expired would show "No Upcoming Event", the other two events would continue the countdown regularly	Yes
Waiting Until all the events expire	One should see that all the events ha "No Upcoming Event" message without breaking the app.	Yes

Viewing Upcoming Tasks Based on Badge

The upcoming tasks per badge would be checked as follow:

Test Case(s)	Expected Results	Verified
Going to a badge with no upcoming events	The calendar icon at the top container for the badge page shouldn't have a number on it	Yes
Clicking the calendar image from a badge page where there is no events	The calendar should direct the user to the end of the page where they will see an empty table for upcoming events	Yes
Going to a badge with X upcoming events	The calendar icon at the top container for the badge page should have a red circle with a number X on it reflecting the number of upcoming events for that badge	Yes
Clicking the calendar image from a badge page where there are events	The calendar should direct the user to the end of the page where they will see a table for upcoming events for the badge and it would show information about that event(s)	Yes

Administrator Tests

This section describes the different unit tests that will be conducted on all administrators' functionalities that the web app offers including administrators' session management, and administrators' tasks.

Administrator Session Management

This section discusses the detailed unit tests relating to administrators' session management. They include the test cases for all the functionalities offered by the web app as well the expected results of the test cases and a Yes/No indicating if the results has been verified and thus the test passes.

Registration

Admin account is built in to the app and there is no registration procedure for it and thus there is no testing needed.

Signing In

Signing In will be tested using the cases listed below and will be done manually.

Test Case(s)	Expected Results	Verified
Same as user side	Same expected results	Yes

Signing Out

Signing Out will be tested using the cases listed below and will be done manually.

Test Case(s)	Expected Results	Verified
Same as user side	Same expected results	Yes

Resetting Password

Resetting Password will be tested using the cases listed below and will be done manually.

Test Case(s)	Expected Results	Verified
Same as user side	Same expected results	Yes

Forgetting Username

Forgetting Username will be tested using the cases listed below and will be done manually.

Test Case(s)	Expected Results	Verified
Same as user side	Same expected results	Yes

Administrator Tasks

This section discusses the detailed unit tests relating to administrators' tasks. They include the test cases for all the functionalities offered by the web app as well the expected results of the test cases and a Yes/No indicating if the results has been verified and thus the test passes.

This section has not been formally tested like user-side, but it has been tested during development to make sure it has the intended behavior. Might need more thorough testing.

Beta Testing

This section describes how Beta testing will be conducted on the web app. It includes the detailed strategy for the testing as well as the parts of the code that is covered under this testing.

Strategy

After developing and unit testing conclude, the client will pick certain participants in the MESA program to do beta testing on the app by actually using it and interacting with it. Based on feedback from MESA representative, and the opinion of the participants who tested the app on beta, a list of things that needs to be fixed will be created. The developers will spend whatever time they have left in capstone fixing as many of the issues that they can based on their criticality. Any things that have not been fixed will be submitted to the client at the end so that future developers could pick up that list and fix those things.

In the case, that we cannot test the app with actual student, the developers will create accounts for themselves and try to find ways to break the app or see how it displays on different screens.

Code Coverage

Beta testing will cover all the functionalities offered by the web app for participants and thus all the code that deals with those functionalities. Beta testing will also be conducted on administrators' functionalities, but only if such feature is delivered as part of the final project. In the case that beta testing is conducted on administrators' functionalities, then all the code that deals with those functionalities will be tested.