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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.

Terms and Definitions

Term 1	Definition 1
Term 2	Definition 2

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

We will test the way every page looks in different screen sizes and how the UI shows up in different browsers including at minimum Firefox, internet explorer, Microsoft edge, and Chrome. We will also test all form fields to make sure they function as intended. Any fields that require user validation is tested to insure that the correct messages displays to the user so that they can correct their input mistakes. All links and URL in the website including all navigation bars will also tested. Finally we will check the clarity of all images in the software

Christopher

- Checking that calendar is working correctly and displaying correctly
- Check that events show up in a readable manner in the events section
- Check that all the related events to a badge show up as suggestions if they are coming up soon.

Code Coverage

Include all the types of file that are covered under this testing, that will be things like all files in templates folder as well as all files in static folder. Think of any other files.

Christopher

- Include all calendar related UI files.

Unit Testing

This section describes how we use unit tests to test our code. It will include our strategy for unit testing, as well as a list of the various unit tests we will create.

Strategy

To write our unit tests, we will be using python libraries designed for doing unit tests in python (**Do we know what libraries?**) We will be creating our unit tests as we are developing the code, and will be running the tests throughout development to ensure that our code still works as intended. Each developer will write their own unit tests for the section they are working on, although we will all be required to run each other's unit tests throughout.

Code Coverage

Our goal will be for our unit tests to cover 100% of our code. However, this may not be something we will have time to achieve, so we want to at a minimum cover 90% of our code.

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

In order to keep this function works properly, we need to create some test cases for the front end and back end.

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)
Check existing username	If username already in the system, error message for end user.	
Check the length of username	The length of username must greater than (TBD) number	
Check user input on required fields	If user doesn't input all required fields, message will pop up for user	

Signing In

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)
Sign in with username and password	check whether user can sign in or not with registered user and password or . Message will pop up if wrong username or password	

Signing Out

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)
User clicks on the sign out link	User will be sign out successfully and will bring to the landing page	

Resetting Password

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)
User clicks on the reset password link	reset password form will be displayed properly	
User inputs their username	An email will be sent to their email account	
User clicks on the link in their email account	Reset password form will be display includes password and confirmed password	
User input their new password and hit submit	Password has been updated successfully	

Forgetting Username

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)
User clicks on the reset username link	Reset username form will be displayed properly	
User inputs their email address	An email will be sent to their email account	
User clicks on the link in their email account	Reset username form will be display includes username and confirmed username	
User input their new username and hit submit	Username has been updated successfully	

Deactivating Account

Nugyen

Test Case(s)	Expected Results	Verified
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		(Yes/No)
User click on the DeActivate link in the landing page	An message will be pop up to ask whether they really want to deactivate their account. If they click on yes button, they will be automatically sign out and bring to the landing page	

Editing Profile

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

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

Test Case(s)	Expected Results	Verified (Yes/No)
Adjust the screen to different size	the content will also adjusted based on the size of screen	Yes

Adding Stamps

Test Case(s)	Expected Results	Verified (Yes/No)
Participant has not met the requirement of a stamp, and tries to add it.	The action will be refused.	
Adding a stamp that has been added.	The action will be refused.	
Participant has met the requirement of a stamp, and tries to add it.	The action will be accepted, the stamp will be added.	
Participant tries to add a stamp that has been deleted before.	The action will be accepted, the stamp will be added back.	

Viewing Currently Obtained Stamps

Test Case(s)	Expected Results	Verified (Yes/No)
Participant has not earned any stamps.	No stamps will be displayed on the page.	
Participant has earned a stamp that was before the most recent refresh date and is for the currently viewed badge.	The stamp will not be displayed on the page.	
Participant has earn a stamp that was after the most recent refresh date and is for the currently viewed badge.	The stamp will be displayed on the page.	
Participant has earned multiple stamps since the most recent refresh date (<11) that are for the currently viewed badge.	All of the stamps will be displayed on the page.	
Participants have earned more than 10 stamps since the most recent refresh date	Only the first 10 stamps will be displayed on the page, and there will be additional pages to click to see the rest	

that are for the currently viewed badge.	of them.	
Participants have earned a stamp since the most recent refresh date, but they are viewing a badge other than the one the stamp is for.	The stamp from a different badge will not be displayed.	

Viewing Needed Stamps

Test Case(s)	Expected Results	Verified (Yes/No)
Participant has not earned any stamps	all the stamps will be displayed	
Participant has earned all the stamps	no stamp will be displayed on the page.	

Viewing Current Level

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

Viewing Currently Accumulated Points

Test Case(s)	Expected Results	Verified (Yes/No)
No point has been earned	Shows 0 for the badge.	
add a stamp to another badge	shows 0 for the current badge.	
add a stamp to the badge after case 1.	shows the points for that stamp.	

Viewing Needed Points for Next Level

Test Case(s)	Expected Results	Verified (Yes/No)
No points has been earned	show the total point set for level 1 of that badge	
add a stamp to another badge	show the total point set for level 1 of that badge	
add a stamp to the badge after case 1.	shows: total points - the point of the stamp	

Removing a Stamp

Test Case(s)	Expected Results	Verified (Yes/No)
try to remove a stamp that the participant has not acquired	The action will be refused.	
try to remove a stamp that the participant has acquired	the action will be accepted, the stamp will be shown as "can be added"	
Try to remove a stamp twice.	The second action will be refused.	

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

Text

Bartlett

Test Case(s)	Expected Results	Verified (Yes/No)
Pulling Calendar Events from Google Calendar	Multiple return values of the query should be the same, or functionally similar	

Viewing General Upcoming Task for Current Week

Text

Bartlett

Test Case(s)	Expected Results	Verified (Yes/No)
Events for the week show up correctly	The results will appear in the right section and would be for the right week. This will be verified by making sure that all events that show up for the week in the monthly calander are shown in the upcoming task with correct countdown to the deadline	

Viewing Countdown for Three Important MESA Dates

Text

Bartlett

Test Case(s)	Expected Results	Verified (Yes/No)
Pulling events from a Google Calendar	Queries should return the correct amount of days before all events	
Adding events to google calendar	Queries should return the correct events before and after adding when compared with the Google Calendar	
Removing events to a google calendar	Queries should return the correct events before and after adding when compared with the Goolge Calander	

Viewing Upcoming Tasks Based on Badge

Text

Bartlett

Test Case(s)	Expected Results	Verified (Yes/No)
The right events go with the right badge	If an event of the color x matches the badge for the color x then it should show up as an upcoming event for that section	

Calendar Security

Text

Bartlett

Test Case(s)	Expected Results	Verified (Yes/No)
Trying to add events to the calendar after being authenticated	I shouldn't be able to add events	

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

Test Case(s)	Expected Results	Verified (Yes/No)
Admin enters an invalid email	Warning text will ask for a valid email	
Admin enters a valid email	Username should be generated and sent to the email	

Signing In

Test Case(s)	Expected Results	Verified (Yes/No)
Admin enters an invalid username	Warning text will ask for a valid username	
Admin enters an invalid password	Warning text will ask for a password that matches the entered username	
Admin enters a valid username and matching password	A successful login will redirect them to their dashboard page	

Signing Out

Test Case(s)	Expected Results	Verified (Yes/No)
Admin clicks on the sign out button	Successfully signs out the admin and redirects them to the landing page	

Resetting Password

Test Case(s)	Expected Results	Verified (Yes/No)
Admin enters an invalid email	Warning text will ask for a valid email	
Admin enters a valid email	Password reset form should be sent to the email	
Admin enters an invalid password on the reset form	Warning text will ask for a valid password that follows all the requirements	
Admin enters confirmation password that does not match the new password	Warning text will ask for the confirmation password to match the new password. A full reset of the form may be appropriate.	
Admin fills out password reset form correctly	Admin will be notified that their password has been successfully reset and can now login with it.	

Forgetting Username

Test Case(s)	Expected Results	Verified (Yes/No)
Admin enters an invalid email	Warning text will ask for a valid email	
Admin enters a valid email	Username should be sent to the email	

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.

Adding Schools

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

Adding Extra Badges

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

Adding Extra Stamps

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

Altering Points Required for Badge Levels

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

Altering Badges Max Level

Test Case(s)	Expected Results	Verified (Yes/No)
Admin choose to change a badge's max level to the level it is already at.	No changes are made.	
Admin chooses a max level but doesn't choose a badge.	No changes are made. An error message is displayed to the admin.	
Admin chooses to increase a badge's max level (from n to m, where n is a number from 3 to 9, and m is a number from 4 to 10 and $m > n$).	The row for the badge in the "badges" table is altered change each level column from $n + 1$ to m to no longer be null and instead 1 more point than each levels previous points.	
Admin chooses to decrease a badge's max level (from n to m, where n is a number from 4 to 10, and m is a number from 3 to 9 and $m < n$).	The row for the badge in the "badges" table is altered change each level column from $m + 1$ to n to be null.	
Admin chooses to change a badge's level to	Number should be in the range 3-10.	

any number		
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Viewing Single Student Detailed Progress

Test Case(s)	Expected Results	Verified (Yes/No)
Admin does not select any thing to search for a student.	No results are shown. Instead,an error message is displayed.	
Admin searches for a student that does not exist in the database	No results are shown. Instead,an error message is displayed.	
Admin enter a search criteria that only matches one result in the database.	Only the one student is displayed.	
Admin enter a search criteria that matches multiple students in the database.	Multiple students are displayed on the page.	
Admin clicks on a student from the search results.	Detailed description of the students progress is displayed.	

Viewing top three scores for each badge

Test Case(s)	Expected Results	Verified (Yes/No)
There's no score for a badge.	show an empty list for that badge	
A badge has 1/2/3 top scores	show 1/2/3 student names for that badge.	
multiple students with the same top score for a badge.	all of them will be listed for that badge.	

Removing Schools

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

Removing Badges

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

Removing Stamps

Text

Nugyen

Test Case(s)	Expected Results	Verified (Yes/No)

Exporting Data to Excel Sheet

Test Case(s)	Expected Results	Verified (Yes/No)
Admin presses the button when there is no data in the database.	An empty excel file is made and sent to the admin's download folder.	

Admin presses the button when there is data in the database.	The data from the database is placed to an excel file and the file is sent to the admin's download folder.	
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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.

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.