

**Mitigation Report**

# **Functionality Testing**

| **Category** | **Problems** | **Possible Solutions** | **Solved [Yes / No]** | **Solutions Used** |
| --- | --- | --- | --- | --- |
| Links | 11 failed links | Remove unused or broken links | Yes | Removed unused and broken links |
| Forms | Sign in form - Allows input, but no validation or submission  Sign up form - Only validates email  Settings form - Allows input, but no validation or submission  Error message for incorrect email are shown after submission (sign up form, no other error messages are shown)  Empty text fields are accepted | Create a connection between the sign-in form and a live database  Allow submission of the sign-in form    Allow submission of settings form    Add validation and error messages to each input field to the sign-in, sign-up, and settings form    Do not allow submission of empty input fields | Yes | Removed all unnecessary forms |
| HTML/CSS | Ensure text remains visible during webfont load  Image elements do not have explicit width and height  Image elements do not have [alt] attributes  <html> element does not have a [lang] attribute  Heading elements are not in a sequentially descending order  Page lacks the HTML doctype, thus triggering quirks-mode, Document must contain a doctype  Browser errors were logged to the console  Serve images in next-gen formats  Reduce unused CSS  Tap targets are not sized appropriately | Leverage the font-display CSS feature to ensure text is user-visible while web fonts are loading    Set an explicit width and height on image elements to reduce layout shifts and improve CLS    Add [alt] attributes to all images    Add [lang] attribute to <html> element    Order heading elements in sequentially descending order    Add HTML doctype    Resolve console errors    Change image formats to WebP and AVIF    Reduce unused CSS    Appropriately size tap targets | Yes | Explicit width and height on image elements set  Added [alt] attributes to all images  Added [lang] attribute to <html> elements  Added HTML doctype  Resolved console errors  Changed image formats  Removed unused CSS  Tap targets sized appropriately |
| Cookies | 2 cookies are unclassified and need manual classification and a purpose description | Remove unnecessary cookies    Store login credentials for sign-in and sign-out | Yes | Removed unnecessary cookies |

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# **Performance Testing**

| **Page** | **Problems** | **Possible Solutions** | **Solved [Yes / No]** | **Solutions Used** |
| --- | --- | --- | --- | --- |
| Profile (Mobile) | Ensure text remains visible during webfont load  Image elements do not have explicit width and height  Serve static assets with an efficient cache policy - 7 resources found  Minimize main-thread work - 2.6 s  Avoid chaining critical requests - 5 chains found  User Timing marks and measures - 2 user timings  Keep request counts low and transfer sizes small - 12 requests • 455 KiB  Largest Contentful Paint element - 1 element found  Avoid large layout shifts - 5 elements found  Avoid long main-thread tasks - 14 long tasks found | Eliminate render-blocking resources  Reduce unused CSS  Serve images in next-gen formats  Enable text compression | Yes | Changed image formats  Explicit width and height on image elements set  Enabled text compression  Reduced unused CSS |
| Social (Mobile) | Ensure text remains visible during webfont load  Reduce the impact of third-party code - Third-party code blocked the main thread for 1,430ms  Does not use passive listeners to improve scrolling performance  Image elements do not have explicit width and height  Minimize main-thread work - 7.7 s  Serve static assets with an efficient cache policy - 38 resources found  Reduce JavaScript execution time - 3.1 s  Avoid chaining critical requests - 4 chains found  User Timing marks and measures - 4 user timings  Keep request counts low and transfer sizes small - 56 requests • 880 KiB  Largest Contentful Paint element - 1 element found  Avoid large layout shifts - 5 elements found  Avoid long main-thread tasks - 20 long tasks found | Reduce unused CSS  Eliminate render-blocking resources  Reduce unused JavaScript  Enable text compression  Use HTTP/2 | Yes | Changed image formats  Removed unused CSS  Removed unused JavaScript |
| Social (Desktop) | Ensure text remains visible during webfont load  Reduce the impact of third-party code - Third-party code blocked the main thread for 490ms  Does not use passive listeners to improve scrolling performance  Image elements do not have explicit width and height  Serve static assets with an efficient cache policy - 35 resources found  Minimize main-thread work - 6.1 s  Reduce JavaScript execution time - 2.0 s  Avoid chaining critical requests - 4 chains found  User Timing marks and measures - 4 user timings  Keep request counts low and transfer sizes small - 54 requests • 819 KiB  Largest Contentful Paint element - 1 element found  Avoid large layout shifts - 5 elements found  Avoid long main-thread tasks - 20 long tasks found | Reduce unused CSS  Eliminate render-blocking resources  Enable text compression  Use HTTP/2 | Yes | Removed unused CSS |

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# **Usability & Accessibility Testing**

| **Location** | **Problems** | **Possible Solutions** | **Solved [Yes / No]** | **Solutions Used** |
| --- | --- | --- | --- | --- |
| Home | Some content displayed is outdated, such as “current semester” and the calendar hyperlink  Unnecessary information on the Home/Dashboard page | Update outdated content with current and relevant content  Condense some of the information displayed to only show what is important for an everyday user | Yes | Updated page content with current and relevant information  Condensed page information to include 5 of the most important sections |
| All pages | Only having a left-side navigation bar can make the efficiency of the site to be low and can remove space of the site’s content  The site is a keyboard trap, meaning that keyboard users are actually stuck on an infinite loop in the navigation bar and can not access the other elements in the site  Limited contrast - there seems to be some issues with the contrast in most of the pages where some colors clash or are too similar to distinguish  Different font sizes and fonts  Poorly padded text and spaces | Create an improved navigation solution that will improve the user’s flow and efficiency of the site  Fix the loop trap to allow keyboard users to access the rest of the site  Created a stronger contrast in elements and colors of background and/or text to help with readability  Change the sizing of the fonts and font style to be consistent throughout the site  Give a bit more padding to the text in the boxes and throughout the site to improve readability. | Yes | Left-side navigation bar is visible on large screens but becomes a hidden menu on small screens to allow space for content  All finished site elements can be easily accessed  Created stronger color contrast between text, backgrounds, and color blocks  Changed font size and style to be consistent throughout the site  Increased padding between elements and text |
| Navigation bar | Dark and light mode toggle being on the navigation bar | Toggling dark and light mode should be a toggle option in the setting page of the site and shouldn’t be displayed on the navigation bar to be easily switched | Yes | Dark and light mode preference moved to settings page |

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# **Interface Testing**

| **Area of Concern** | **Problems** | **Possible Solutions** | **Solved [Yes / No]** | **Solutions Used** |
| --- | --- | --- | --- | --- |
| Hyperlinks to other pages within site | Website displays a generic 404 page when the “urls” table is not reachable | Instead of a generic 404 page, the website could display a more descriptive error message, such as: “We’re having trouble reaching that page at the moment. Please try again in a few minutes.” | Yes | Broken links removed from site completely |
| Dark mode toggle | Dark mode preference is stored in the SQL database. When the database is unreachable, the website defaults to light mode and the toggle does not work | The dark mode preference could instead be stored as a cookie to remain accessible in the event that the database is down | Yes | Dark and light mode preference stored as a cookie |
| Creating an account | HTTP 500 error displayed if “users” table is unreachable in the database | Perform error handling in the PHP file that handles the form submit request to check if the database connection was successfully established - if not, fail gracefully and let the user know that their account was not able to be created at this time | Yes | Account creation functionality removed |
| Logging in | Sign in button does nothing when interacted with | Set the button’s type attribute to “submit” to automatically submit the login form for backend processing | Yes | Login functionality submits login form for backend processing |
| Resetting an account’s password | The reset password page does not exist and results in a 404 page | Create the reset password page | Yes | Reset password link redirects to external reset password page |
| General database interfacing | Website becomes inoperable if database server connection cannot be established | Perform error checking in the event that a connection to the database is not established - if a connection is not established, the website should still be able to function, albeit in a reduced capacity | Yes | Website can continue functioning without establishing a connection to the database |

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# **Database Testing**

| **Table** | **Problems** | **Possible Solutions** | **Solved [Yes / No]** | **Solutions Used** |
| --- | --- | --- | --- | --- |
| URLs | No significant problems | Include more relevant links to pages such as UCF’s Financial Aid page | Yes | Deleted irrelevant links  URLs are linked within the PHP files, instead of utilizing the database |
| Users | Sign in button does not connect with database  Unable to sign in using registered credentials | Connect the sign in button to the database for users to be able to see their information reflected back on the screen | Yes | Connected the sign in button to the pre-registered database |
| Preferences | Uses the database just to activate dark mode | Remove from database and implement Javascript/CSS to activate dark mode | Yes | Used Javascript to activate dark mode (Visual Appearance Settings) |

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# **Compatibility Testing**

| **Device Type** | **Problems** | **Possible Solutions** | **Solved [Yes / No]** | **Solutions Used** |
| --- | --- | --- | --- | --- |
| Mobile/ Desktop | Screen sizes smaller than 1100 pixels face issues with h1 sizing and menu clickability | Better utilize grids and flexboxes recognized by all browsers to make pages more responsive to different screen sizes | Yes | Grids maintain site responsive and specific styling is now incorporated for all aspects of the site in relation to screen size |
| Safari Browser & Mobile Platforms | Text in text boxes does not appear within respective menus | Use alternative text structures understood by all browsers to ensure the proper text appears on all formats of the site | Yes | Used OTF font types to ensure consistent display and webkit code for Safari styling compliance |
| All Browsers | Fonts in Dark Mode do not match the UCF style guide | Focus on implementing a successful design on the mobile side, and then migrate focus to adjusting CSS stylings for desktops affected by font issues | Yes | OTF fonts used to create a synonymous look on all modes of the site. Mobile now utilizes all available screen space |
| Mobile Devices | Mobile screen width underutilized due to large UCF logo and menu taking space | Redesign menu to be less intrusive and available when the user needs it rather than available consistently | Yes | Navigation menu now exists in a condensed form on smaller-width screens |