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## Tested Criteria

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Requirement | Effectiveness & Efficiency | Results |
| EC02 | [3.2.2] Message Sending  *All registered users with a marist.vic.edu.au email who are a member of a stream will be able to send HTML formatted messages in that stream.*  **Can all users with a Marist email send HTML formatted messages in streams they participate in?** | **Effectiveness:**   * Can users easily send messages?   **Efficiency:**   * Are database connections only open when required? | * Users were able to send messages easily. * Database is only accessed on postback. |
| EC03 | [3.2.3] Notification Sending  *All registered users with a role level of 3 (admin) can send notifications with HTML formatting that will be pushed to all specified users and appear on their ‘alerts’ window in chronological order.*  **Can all administrators send HTML formatted messages to the ‘alerts’ window of all specified users?** | **Effectiveness:**   * Can administrators send messages to entire user groups with effective results? * Are users quickly notified of incoming alerts?   **Efficiency:**   * Are database connections only open when required? | * Administrators can send HTML formatted messages that are visible to selected user groups * New alerts appear at the top left of user’s screens, but they are not notified as such. * Database is only accessed on postback. |
| EC04 | [3.2.4] Inspection  *The solution will allow system administrators to inspect the messages that are sent, and keyword filters will auto-censor and alert them after multiple occurrences of inappropriate language in the same stream.*  **Can system administrators view message history? Are there real time functions that auto-censor and alert them?** | **Effectiveness:**   * Does the software, both automatically in simple cases and manually in others, allow administrators to be notified of and view inappropriate conversations?   **Efficiency:**   * Do automatic functions notify administrators quickly? * Can administrators quickly navigate through existing streams if required? | * The solution does censor inappropriate words and phrases as defined in BadWords.XML, and Administrators can view uncensored conversations. They are not notified of them, however. * There are no functions to alert administrators of inappropriate content at present. * Administrators can use the SQL Reader wizard to navigate existing messages / streams. |
| EC05 | [3.2.5] Classes  *All registered users with a role level of 2 (educator) or higher may create classes and add students to them.*  **Can all educators and admins create classes and add students to them?** | **Effectiveness:**   * Can all educators and admins create classes and add students to them using their usernames?   **Efficiency:**   * Do the classes write to the database immediately, and are they visible to all invited members immediately? | * All users with a role of 2 or higher can create classes and add students. * The classes do write immediately and are visible to all other users after their request is reloaded. |
| EC06 | [3.2.6] Message Streams  *The solution will automatically create a message stream that includes all class members on creation of a class, and should allow students to create further streams within each class. It will allow for multiple streams between the same peers in different classes.*  **When a class is created, does a stream automatically appear with all members joined? Can members add subsequent streams? Can multiple streams between the same people be created in different classes?** | **Efficiency:**   * Do the streams write to the database immediately, and can they be used by all members immediately? | * Streams are written to the database immediately and are visible to all other users after their request is reloaded. |
| EC09 | [3.3.2] Safety  *The software will include a sysadmin interface where backups and / or archives can be taken and stored offline.*  **Does the software include an interface available to sysadmins where backups / archives can be taken?** | **Efficiency:**   * Are the backups fast? | * Backups are generated onclick of a button above the gridView control that they are loaded in. They are downloaded immediately as they are created from the data on the page and don’t require additional database contact. |
| EC13 | [3.3.6] Data Validation  *The solution will search HTML message / notification body content for potentially hazardous strings including HTML “<script>” tags and un-escaped quotation marks. If found, the solution will censor, escape or remove these strings to prevent possible code injection. Solution will also censor inappropriate words or phrases sent by users in message streams as per EC04.*  **Does the solution prevent code injection? Does the solution censor rude text?** | **Effectiveness:**   * Does the solution successfully block all forms of code injection?   **Efficiency:**   * Is the function fast as to not keep a user waiting for a message to send? | * The solution does block all tested SQL and HTML injection. * The function produces no noticeable delay to message sending. |
| EC15 | [3.2.8] Password Reset  *The solution will allow users to securely reset their passwords if required.* | **Effectiveness**   * Does the solution provide methods for users to change their passwords if required?   **Efficiency**   * Is the function easy to find and use? | * The solution contains a password reset button on both the main login page and main interface. * The buttons are clearly visible and the function is uncluttered. |

## Development phase testing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Function tested | Test Data | Expected Result | Actual Result | Solution implemented |
| Writing classes | IT0331A & Mr. V’s Softdev | Class & Stream is created | Error due to quotation mark | Run everything through a function that adds an extra quotation mark to the string |
| Reading classes | IT0331A, ELA031B | Both classes appear in gui | Nothing appears | Found that -1 is True in Access, and 0 is False, instead of 1 and 0 like I thought. Changed reader.getInt() to reader.getBoolean(). |
| Reading classes | IT0331A, ELA031B | Both classes appear in gui | Two empty buttons appear | Implemented reader.getName() to get the column names. |
| Writing messages | G’Day | Message writes to database | Message writes to database | N/A |
| Add stream | [asharkey268@marist.vic.edu.au](mailto:asharkey268@marist.vic.edu.au), [csharkey1687@marist.vic.edu.au](mailto:csharkey1687@marist.vic.edu.au) | Stream writes to database | Stream fails to write with both users, as the string doesn’t split by commas properly | Added dropdowns to add users instead of CSVs |
| Send notifications | Role group 3 (administrators) | Stream visible to administrators | Stream visible to nobody | Recreated notification role structure |
| Add urgent notifications | This one is urgent | Notification appears in tbl\_notifications, appears in gui with urgent sticker | Urgent sticker does not appear | Worked on CSS, added z-index, location and display properties to pseudo ::after elements. |
| Timer tick | Sent a message | Pnl\_messages near instantly updates | Tons of javascript errors in console | Played around with updatepanels and scriptmanagers in a test aspx page until I made it work |
| Enter click in message textbox | Keycode 13 (enter) | Message sends | Message sends | N/A |
| Open first stream | Click stream button | Stream Opens | Javascript errors | Remove useSubmitBehaviour=true, side-effect results in enter keypress no longer working |

## Usability testing conditions

The conducted usability test took place on Friday 26/07/19 between 9:28 and 11:04 AM. An empty testing database was loaded prior to the test, and each of the six users was provided with initial login credentials.  
The users included five 3/4 Software Development students and one educator. The educator was given an administrator role, and the students’ role was unchanged from the role that the app generated on user creation.  
Each user was tasked to test the evaluation criteria listed previously in this document. A testing table was provided that included expected results, but users were requested to come up with their own ‘real world’ test data. The users then gave overall feedback and listed any bugs or wonderings they had come across that did not fit into the tested criteria.

The document sent to users is attached to this submission and attached below. Their results and feedback can be found on the following page.  
  


## Usability test results

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| User | JVandomburgh | JHooke | HSheahan | LAllison | WHammill | HHumeCook |
| **EC02 (Message sending) Results** | 1.Screen refreshed with an alert notification, but not message. Clicked on the message stream in the left nav panel again and then the screen refreshed with the message posted as expected. Perhaps this is due to the message being the first in the stream. Subsequent message post required. Message text entry input not cleared of message text.  2.Message posted as expected, input box cleared, message posted in sequence under first. | The messages all came through fine, albeit with a slight delay | Messages that have been input into the message box successfully write to the database, although images don’t appear in the messages even with appropriate HTML formatting. | Messages send properly, after a short delay. Sending emojis and text works fine, however images will not send, or write properly | Message was sent to other users | Sends a delayed message to other students and educators you are in the same chat/stream as successfully |
| **EC03 (Notification sending) Results** | 1.Alert saved to db (verified by downloading and viewing the db, as I retain server access), unable to publically view as my login is admin. As expected I cannot see the alert.  2.Alert received as expected, publically viewable to expected groups |  | I cannot send notifications due to not being able to access the feature. |  |  |  |
| **EC04 (Inspection) Results** | 1.Query rendered as table as expected  2.Query rendered as table as expected  3.Exported to HTML and subsequently inspected (opened in Google Chrome) as expected. | No inspection function could be found as I am a student, which was the expected result | I cannot inspect messages as a student as I cannot access the feature | Students can inspect chat, but once a chat inpsection is expanded it closes itself. |  |  |
| **EC05 (Classes) Results** | Class created.  Classwide stream created in db, however did not appear as a stream under the class |  | The class that was created by an educator showed up after refreshing the app. |  |  |  |
| **EC06 (Streams) Results** | Manually creating the message stream created as expected. The message stream name appears to be a concatenated list of users in the stream. I expect this is by design, perhaps requires clarification in the new stream wizard interface. | Created streams worked as expected. Anyone involved in the streams could send and read messages, and anyone who was not in the streams could not read or write messages | Upon the creation of a new stream, only the people invited to the stream were able to send and receive messages as expected. | I have the class wide message stream. I can also create a new stream, and add multiple people, however I cannot change the name of the stream. | Message sent and stream was created with classmates as part of it | Creates a new stream/chat room that only invited users can access, making other users that aren’t invited able to join |
| **EC09 (Safety) Results** | No test results |  | N/A |  |  |  |
| **EC10 (Login) Results** | 1.Sign in successful as expected  2.Sign in unsuccessful as expected | It did not let me log in without both a correct username and a correct password | Using the incorrect password resulted in not being able to access the system, therefore correct login details must be used to access the system. | I got my password wrong and it denied entry, then got it correct and was allowed entry. | Program did not allow log in due to capital letters in username/email, problem later fixed and log in was allowed | Logging in with an incorrect password does not allow the User to login, and it prompts them to enter another password and double check the username, but using the correct password enables the user to successfully login |
| **EC13 (Data validation) Results** | SQL reader shows raw text as entered (ideal for moderation). Publically displayed text is censored. | All swear words written in their intended spelling were censored out by the program. However using lowercase L’s instead of uppercase i’s like with SHlT is not censored. | These messages were censored and therefore invisible to all users including the one who sent it. | Many words were tried, and were censored out with astrixes. There are ways to bypass the filter by changing letters with keys that are similar, such as changing O to 0, or capital I to lower case l. | Profanity replaced with dots such as \*\*\*\* instead of actual text | Filters all, if not most inappropriate language, but there is easy ways to bypass the filter by adding spaces, substituting letters, etc. |
| **EC15 (Password reset) Results** | Reset password email received. Followed link, set new password, signed in successfully with new password. |  | The function performed correctly. |  | Password reset email received, password changed and used to log in successfully | Allows the user to reset password when logged out by pressing the Forgot Password? A link is sent to the email containing a link to create a new password The new password the user has created works to login to the users account |
| **Qualitative Feedback** | Looking great. Vast body of work. Perfect example of the value of a well designed useability test as the solution is relatively complex in features (in a good way) which would generally result in user testing being shallow and not targeted to the detailed EC you have set.  Some of the testing has uncovered some glitches, again a good thing that often are not discovered as the developer as you tend to test your own development exactly as you’ve intended it to function, which is a different reality from end users. Do not take any feedback personally, the results table is a professional transaction between a test user and the software, it is not a personal critique. As a personal aside, magnificent effort, valuable skill development, kudos to you, your vision and your ability to deliver. | **Here are some things that I have noticed upon using your application:**   * When I first logged into the program I was unsure of where I was meant to start, A brief explanation of functionality when you log in would be helpful in getting a user more quickly acquainted with the functions of the software * Streams cannot be created using any other name than the default name given for whatever reason * It was difficult at first to work out how to add people to a stream as when I made my first stream it had no people in it and I consulted Mr V for help but mostly coz I’m a dummy * You can add multiple copies of the same person to a stream, although it has no adverse effects. It may be good to remove the ability to do that * Pressing the enter key both sends the message in the text box and takes you back to the main menu. It also leaves the text sent in the typing area at the bottom instead of clearing it   **Some suggestions for added functionality are (and I say these without knowing how difficult they would be to implement):**   * The ability to delete messages after they are sent as I regret saying “Lachlan drinks bathwater” in such an open setting * The ability to create streams with different names than what is initially given * The ability to leave streams after you are added to them * The ability to block Lachie because he keeps inquiring about bathwater and I am quite uncomfortable (or any other user) * The ability to use the enter key as a method of sending messages | Just about all the functions work as expected. Just a few things such as allowing images to be sent within messages and possibly a quality of life issue such as when pressing the enter key having it stay on the stream rather than returning to the first stream. |  | Great program but still has a few images considering how students can get around the filter by writing profanity ways such as f uck, images don’t work either apart from emojis. Mobile version also needs few tweaks particularly in the layout since the bar to enter text covers some messages. If possible you may want to work on the ping as well | Tried to switch streams, came up with this error, so tried to do it again, and it worked fine    When creating a New Stream, users can be added, but any users left out can’t be added in to the New Stream  There is no other option to change password except to click “Forgot Password?” when logged out (Maybe add an option to be able to change password when logged in) |

## Solutions implemented / proposed

Solved issues (black) | Issues that could be solved in the next version (orange) | Cannot replicate issue / Can’t do anything about it (blue)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Users | JVandomburgh | JHooke | HSheahan | LAllison | WHammill | HHumeCook |
| **EC02 (Message sending) Solutions** | Initial issue found to be due to enter keypress instead of send button click. Turned usesubmitbehaviour on for all sidebar buttons and disabled quotation marks in stream button IDs to mitigate the issue. I also had to prevent key 13 (enter) from opening any wizard controls, as they are opened by client-side buttons. |  | Found that issue was related to SQL command that was not escaping quotation marks (eg. “img src=”x.png” />”) | |  |  |
| **EC05 (Classes) Solutions** | Class created with only 6 ID characters.  Class stream did not appear. Could be an issue with bool\_classwide logic? |  |  |  |  |  |
| **EC06 (Streams) Solutions** | Added label to clarify what stream names would look like in stream creation wizard |  |  | Stream name cannot be changed by design. No solution implemented, however in future versions this may be changed. |  | Future versions may allow additional users to be added to streams after creation? |
| **EC09 (Safety) Solutions** | Do I need to clarify somehow that this is the ‘Export to HTML’ button that was found in EC04 testing? |  |  |  |  |  |
| **EC10 (Login) Solutions** |  |  |  |  | Found issue was due to case insensitivity of textbox clashing with case sensitivity of database. Solved by running textbox contents through String.ToLower() before submitting. |  |
| **EC13 (Data validation) Solutions** |  | Noted that profanity filter is easily bypassed – this will be an issue of any profanity filter, and the system will simply have to adapt over time as extra words are added to badwords.xml by system administrators. | | | | |
| **EC15 (Password reset) Solutions** |  |  |  |  |  | Added link to change password from logged in interface |
| **Extended feedback responses** |  | * Consider adding placeholder buttons if there are no current streams, classes, etc. * Made ‘Load lists’ button more clearly describe what it does * Would really like to remove users from dropdowns after they are loaded, however can’t do it without postbacks * Perhaps your messages could be linkLabels that when clicked run a command to delete them? * Possibly add ‘leave stream’ button near logout button? |  |  | Did some testing on other mobile devices – found no issue, however javascript does not auto-scroll as expected, which may have led to some confusion. Apparently this is a bug that has been around since Android 3 – not much we can do about it. | Could not recreate exception – I think it was a one-off. |

## Functional and Non Functional requirements

|  |  |
| --- | --- |
| Requirement | Feature |
| 3.2.1 – User Registration | Registration page available from landing page. (<http://mca.maristapps.com/Register.aspx>) |
| 3.2.2 – Message Sending | HTML format-able text input available from <http://mca.maristapps.com/web.aspx> |
| 3.2.3 – Notification Sending | HTML format-able notification wizard available when signed in as an administrator from <http://mca.maristapps.com/web.aspx> |
| 3.2.4 – Inspection | SQL Reader wizard available when signed in as an administrator from [http://mca.maristapps.com/web.aspx](https://mca.maristapps.com/web.aspx) |
| 3.2.5 – Classes | Class creation wizard available when signed in as an administrator or educator from [http://mca.maristapps.com/web.aspx](https://mca.maristapps.com/web.aspx) |
| 3.2.6 – Message Streams | Stream creation wizard available when signed in as a student, educator or administrator from [http://mca.maristapps.com/web.aspx](https://mca.maristapps.com/web.aspx). Classes creation wizard automatically builds classwide streams. |
| 3.2.8 – Password Reset | Reset password buttons available from both signed in interface at [http://mca.maristapps.com/web.aspx](https://mca.maristapps.com/web.aspx) and from logged out interface at [http://mca.maristapps.com/Default.aspx](https://mca.maristapps.com/Default.aspx) |
| 3.3.2 – Safety | SQL reader wizard at <http://mca.maristapps.com/web.aspx> capable of taking offline copies of database tables |
| 3.3.3 – Security | Encrypted passwords stored in database. They are required for login at <http://mca.maristapps.com/Default.aspx> |
| 3.3.5 – Non Domain emails | Accounts created without @marist.vic.edu.au email addresses are only allowed to view simplified alerts interface when viewing <http://mca.maristapps.com/web.aspx> |
| 3.3.6 – Data Validation | CleanHTML, MakeSQLSafe and CensorText functions censor harmful code and inappropriate language |

## Project Plan Evaluation

### Present all adjustments to the Gantt Chart



### Reflect on what made the Gantt Chart effective and suggest its limitations.

As a concept, Gantt Charts are very helpful for visualising the timeframe that parts of the project are able to take up, and to keep track of progress. My Gantt Chart was handy to because it allowed me to see the current date, the estimated completion percentage and how far away the two lines were – It helped me to stay on track and keep my work progress in front of the current date.

That said, I looked at my calendar more. The Gannt chart software we used required logging in to an ugly, ‘free version’ website that *always* popped up with notifications about how I could ‘use the software better with my team’, whereas my personal calendar is sitting on my phone’s home screen, reminding me what I’ve set as goals for the end of the day. It’s on my second monitor all the time at home, and sitting a click away on my school laptop. It was a process that I was already familiar with and already had set up. I think that this Gannt chart lacked the intuitive, integrative, easy-to-use features that other software provides, which is probably the reason why so many of my peers have neglected it entirely.

### Present all recording techniques made during the developments stage: emails, blog, hand written notes etc.

During development I made periodical adjustments to the project SRS, and wrote development progress information (git commit messages). Both documents have been included in this submission and attached below:



### Produce a clear conclusion about the usefulness of the initial plan and its adjustments in monitoring the progress of the entire project

I believe that the initial planning stage was very helpful to seeing through the development of the software solution. While admittedly I did not manage to incorporate every feature defined in the SRS, the document was an extremely helpful tool to look back to when I had to work out how specific functions interacted. It also was a key item for the creation of the usability tests and evaluation criteria.  
During development, there were some requirements and structures that were modified, created and / or removed in the SRS, including a slight modification to database structure, the addition of EC15 (Functional Requirement 3.2.8) based on user feedback, and the omission of various requirements regarding push notifications which were not able to be implemented given the time constraints and platforms of the project. I also found that the use of ASP.NET meant that the server could not run code by itself without a user triggering a postback, so functions such as automatic archival (3.3.4 *Maintainability*) were removed.