Evaluation

The aim of this project was to create a location-sharing application to help students and staff of the University of Portsmouth connect on graduation day. In order to do this I have developed an app for both iOS and Android using Flutter with a server hosted on AWS. I have thoroughly tested each feature implemented to ensure it is bug free.

In this section I will evaluate my artefact against the requirements that I set out to implement. I will go through each requirement listed in the requirements section of this document and analyse whether it has been accomplished or not. I will then evaluate to what extent the aim of this project has been achieved based on the completed requirements.

In the tables of requirements below I have coloured in the rows of the completed requirements green, of the non-completed requirements red, any requirements where it is unknown whether it has been met shall be coloured orange, and finally any requirements where it has been partially met will be coloured blue and discussed further below.

Functional

Must Have

|  |  |
| --- | --- |
| ID | Description |
| 1 | A map that is rendered on screen showing Portsmouth |
| 2 | The user’s current location displayed on the map when the user has location enabled |
| 3 | The ability for other users current locations to be displayed on the map to the user |
| 4 | The ability to manage who has permission to see your current location |
| 5 | The ability to manage who you have permission to see their current location |
| 6 | Users login with their university emails (@myport.ac.uk and @port.ac.uk) by having a code sent to their email that they will then enter into the app |
| 7 | All requests sent to the server encrypted using HTTPS |
| 8 | All requests sent to the server once a user had logged in being authenticated using a JWT(Json web token) generated by the server when the user is logging in |
| 9 | Designated graduation zones to appear on the map, only in which will users locations be shared |

Should Have

|  |  |
| --- | --- |
| ID | Description |
| 10 | Users locations only being shared on graduation days(8am – 2am the next day) |
| 11 | The ability for users to add their name to their account |
| 12 | The ability for users to add their faculty to their account |
| 13 | The ability for users to add their school to their account |
| 14 | The ability for users to add their course to their account |
| 15 | The account type (Student/Staff) saved to an account based on the email address that they used to login |
| 16 | The ability for users to select which graduation zones they must be in for their location to be shared |
| 17 | The ability to search for other users, when managing location permissions, by their email address |
| 18 | The ability to search for other users, when managing location permissions, by their name |
| 19 | The ability to search for other users, when managing location permissions, by their faculty |
| 20 | The ability to search for other users, when managing location permissions, by their school |
| 21 | The ability to search for other users, when managing location permissions, by their course |
| 22 | The ability to search for other users, when managing location permissions, by their account type |

Could Have

|  |  |
| --- | --- |
| ID | Description |
| 23 | The ability to tap users you can see on your map to display the information they have added to their profile |
| 24 | The ability to tap users you can see on your map and tick a box to say you have already seen this person and so to stop that user from continuing to display on your map |
| 25 | The ability to filter the users that appear on your map by faculty |
| 26 | The ability to filter the users that appear on your map by school |
| 27 | The ability to filter the users that appear on your map by course |
| 28 | The ability to filter the users that appear on your map by email |
| 29 | The ability to filter the users that appear on your map by name |
| 30 | The ability to filter the users that appear on your map by graduation zones |
| 31 | The ability to filter the users that appear on your map by account type |
| 32 | A checklist of what students need to do on graduation day such as picking up their gown, attending their ceremony, going to the reception and collecting their certificate |
| 33 | Markers on the map showing the key locations for graduation (Guildhall, Ravelin Sports Centre, Gun House Green) |
| 34 | The above mentioned markers clickable to display information about what is happening at these locations |

Non-Functional

Must Have

|  |  |
| --- | --- |
| ID | Description |
| 40 | The ability to run on the latest version of Android(Android 14) |
| 41 | The ability to handle 50 concurrent users without denying any of them service(Returning Service Unavailable when a user’s client calls an endpoint on the server) |
| 42 | A users location update on other users devices at most 30 seconds after the users client get an update of its own location (assuming all users have a good connection to the internet) |
| 43 | The JWTs that are generated by the server for users to login be valid for 24 hours |
| 44 | The login codes sent to users emails should be valid for 5 minutes |

Should Have

|  |  |
| --- | --- |
| ID | Description |
| 45 | The ability to run on the latest version of iOS(iOS 17) |
| 46 | The ability to handle 500 concurrent users without denying any of them service(Returning Service Unavailable when a user’s client calls an endpoint on the server) |

Could Have

|  |  |
| --- | --- |
| ID | Description |
| 47 | The ability to handle 2000 concurrent users without denying any of them service(Returning Service Unavailable when a user’s client calls an endpoint on the server) |

As you can see from the above tables, all but one of the requirements I marked as a must have requirement, have been successfully implemented. Further, all of the functional should have requirements have also been implemented. However, none of the functional could have requirements have been met. For the non-functional requirements in the should have and could have categories, the server has failed to meet expectations and cannot handle the maximum expected number of concurrent users.

However, note that for requirement 45, this requirement has been marked as unknown as although the app has been built using Flutter and only contains packages that can be used on iOS, in order to actually compile and so test the software on iOS, you require an apple computer which I have been unable to acquire. Due to this the software most likely works on iOS but is completely untested and so this requirement cannot be verified.

For requirement 6, this has been partially met however does not fully work as intended. The system correctly only allows for accounts to be made using university emails. However, the server uses AWS Simple Email Service to send emails, and whilst the code I have written works currently to send the email, my AWS account is restricted to only being able to send emails to reverified email accounts. In other words, I can send emails to myself and only myself. I have looked into alternative email services however I do not believe any of them would allow me to use them.

Conclusion

Graduation Gathering does successfully allow for seamless location sharing between up to 70 concurrent users on Android devices. It also does this securely encrypting and authenticating all requests made to the server. Users are also able to efficiently manage who they want to have permission to see them and who they have permission to see. Finally users are also able to customise their profile if they wish. This is a major success and should not be understated as this means that Graduation Gathering has achieved the goal it set out to achieve.

However, it lacks some quality of life features that would make it easier to use, such as being able to filter who displays on your map at a given time and being able to tap users on the map to see who they are.

Graduation Gathering’s UI is also not the prettiest, this is not something that can be judged by requirement. Whilst it does stick to a nice colour scheme based off of the University of Portsmouth’s colour, the look of the buttons and text is not the nicest in places.

Finally, the server does not meet expectations. It does allow for the must have required 50 concurrent users which does make the app usable under its current state. However, if Graduation Gathering were ever to be rolled out to actually be used and endorsed by the graduation team at the University of Portsmouth, it would need to be far more capable than it currently is.

Overall, this project is a success, however too many requirements were taken on for the time frame given. The main problem was unforeseen events affecting production far more than I anticipated.