Complete the Feline Adoption Agency App

Report Name	Project Outline
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1 Project description

This project is centred around the creation of an android mobile application (app), the main areas of work are based around the process by which the application is designed and how it is developed, as well as the final product being of high quality.

The app should follow a basic process for adopting or fostering cats, the adoption process inside of the app should take place in line with a current charity, such as Cats Protection [1], therefore it could easily be adapted for use by a cat (or pet) adoption charity. The app will be open-source and free to use under an Apache License 2.0 [2], for anyone to use for almost any purpose as long as copyright ownership is maintained.

This project entails the construction of a development tool-chain, mobile application prototyping, following good mobile design principles, utilising software engineering processes to provide a robust, stable and useful product. The tool-chain should include a fully automated testing, for unit tests, UI integration testing, and automatic code linting for errors, this tool-chain should use continuous integration software to allow for automated testing based on pushing to a GitHub [3] repository, some examples include, Jenkins [4], Travis [5], and Bitrise [6].

I have previously seen some code and an app from the Mobile Development: Android module, that was also focused around adopting cats and how it can be achieved. I do not feel that this other app will be useful to me.

2 Proposed tasks

1. Continuously write up notes and summarise how the interactions/meetings between myself and my supervisor progress. This would allow me to maintain a form of diary for recanting my progress during my final report.

2. Follow a light version of Scrumban, this is a combination of Kanban and Scrum, throughout the production of the app.

   (a) The aspects of scrum that would be useful in an individual process is the sprints and planning when necessary approach, it will allow me to focus on producing and delivering items of value on a regular basis. A sprint will consist of a 2 week block of time, where the next sprint will be planned at the end of the last sprint and processes will be improved as time continues.

   (b) The aspects of Kanban that will be employed is to utilise the Kanban board and the regular review process. The Kanban board will allow me to produce a list of tasks and ensure that I do not get overwhelmed by sticking to a Work in Progress (WiP) point limit for tasks, of 1 in progress, so only 1 task may be worked on at a time. Kanban also lends itself to a regular review process that allows for continuous process improvement.

3. Produce a fashionable unique logo for the app. The logo will allow the app to be recognised as for a specific purpose and I believe that a well made and designed logo can be used in many places and expand upon the quality of the app.

4. Create a defined process for which a user will adopt a cat, and add into the design and prototype this process. This may require contact with agencies that perform cat adoption, such as Cats Protection [1], should the websites provide too poor of a guidance.

5. Research how to ensure that the app has a back-end database that ensures information syncs across devices for a specific user that has logged into the app over an authentication

service (O-AUTH [7] using Google or Facebook as an example). The data stored here has to be compliant with EU law and GDPR [8].

6. Create a Working prototype of the app utilising prototyping software designed to be used with android, at worst case utilising presentation software with links based on buttons. This design should be heavily reliant on Material Design [9] principles and guidelines, however should the need arise I will differ from these guidelines if a justification can be made.

7. Work with user feedback to improve and upgrade the design and prototype. User feedback can be gathered in multiple ways including questionnaire and via interview, to be decided at a later date.

8. Create the app using the upgraded prototype in the form of an Android only native design. The app should be fully tested and built with continuous integration to perform Unit Testing, UI Integration Testing, and Code Linting built specifically for Android. The Tests should be delivered inside of the source code project alongside the actual application's source code.

9. The application should aim for a set test that covers everything. Creating tests that cover everything is unrealistic and too ambitious, however the tests should cover a vast majority of interactions between icons using specific workflows for every Activity.

10. Preparation for the mid-project demo should be completed, at this point a basic app must be created and the original prototype design and user feedback should have been gathered.

11. Preparation for the final project demo is one of the final tasks that needs to be completed, the app should be complete and stable, all features should be fully implemented for all users and a example database should be completed.

3   Project deliverables

The main deliverable that should be delivered is the feline adoption agency mobile application for Android. The app should be fully capable of accessing a remote server to ensure syncability of data across multiple devices based on OAUTH authentication. The app should allow a user to adopt a cat, potential from a foster-er or a centre, and an admin to do some basic administrative abilities such as remove a cat, reserving a cat or adding a cat. The delivered app should be stable, and feature complete. The app will be delivered as a apk that a user can install on their phone.

A complete and open source code base with a build system that will ensure every commit is built and ensure that any form of regression to the open source code base's functionality that is properly tested will be traceable.

I will deliver a final report which consists of the project process, detailed information on the tool chain, the design process, the app implementation, and any issues that came with all of these processes. The report should be complete and contain all information required in the final report brief.

Annotated Bibliography

[1] C. Protection, "Adopt A Cat," https://www.cats.org.uk/adopt-a-cat, accessed 04/02/2020.

   The cat protection agency is a leading charity for re-homing cats and finding prospective new owners a cat. It also aims to provide a good home to cats and kittens, this is similar to what the mobile app I am creating should do. The agency also provides multiple other services to do with cat protection and health.

[2] T. A. S. Foundation, "Apache License 2.0," https://www.apache.org/licenses/LICENSE-2. 0, 01 2004, accessed 04/02/2020.

   This is the license that I intend to use with my open source development project for the MMP. It allows anyone to use the software for free for everything, however you must maintain the copyright of the files and source code that is used inside of your code base, as well as a further notification to all places that the code is distributed that this license is used and what is used under.

[3] GitHub, "Built for Developers," https://www.github.com, accessed 04/02/2020.

   GitHub is the website from which I will host the application's source code, and provide it to prospective users under the Apache 2.0 License for open source software. It provides multiple useful features including project boards to allow for simulation of a light kanban approach, also other features that allow for integration with Continuous Integration tools.

[4] Jenkins, "Jenkins User Documentation," www.jenkins.io/docs, accessed 04/02/2020.

   Jenkins is a free and open source continuous integration software that allows for building, testing, and deployment of applications utilising pipelines and your own hardware. Build agents and slaved to a master server that allows multiple machines to work on the same pipelines for continuous builds. Builds will need to be tested using UI integration testing, this would require a running emulator which is complicated to create.

[5] Travis, "Test and Deploy with Confidence," https://travis-ci.org/, accessed 04/02/2020.

   Travis like Jenkins is free for me to use on private repositories as I am a student and it is provided under the GitHub student pack, as a cloud provided continuous integration tool it uses containers. The containers produce an issue when UI testing as it is not possible to use the most up to date version of emulators inside of a container as Android SDK 29 emulators run on x86 chips and require hardware acceleration to run. UI Testing for Android SDK version 29 is not possible as far as I am aware on Travis making this not acceptable.

[6] Bitrise, "Continuous Integration and Continuous Delivery for Mobile apps," https://www. bitrise.io/, accessed 04/02/2020.

   Bitrise is a website and company that provides cloud based continuous integration solution for mobile phone applications. It provides a quick and simple way to test and deploy software. It is easier to use under an open source model as more build time, and more builds are afforded for free, as a student this is a limiting factor. The way Bitrise gets around it's container issue is by utilising Google Firebase as a method for performing UI testing, without the need for hardware acceleration in a container.

[7] A. Parecki, "RFC 8252: OAuth 2.0 for Mobile and Native Apps," https://oauth.net/2/native-apps/, accessed 05/02/2020.

> OAuth is a open standard protocol that allows for sharing of data between sites or platforms, in this case the aim would be to confirm identity utilising OpenID, this would allow a user to secure their access to information through the app without the project requiring extra effort to produce a secure login system.

[8] I. Consulting, "Art. 1 GDPR Subject-matter and objectives," https://gdpr-info.eu/art-1-gdpr/, accessed 05/02/2020.

> GDPR is an EU regulatory legislation that aims to provide security and limit shady practices and the usage of a natural persons personal data for any data that can be used to identify that individual. Sticking within these pieces of legislation whilst important may not be necessarily required as a student project but an ethical question of how data should be stored and used by the project.

[9] Google, "Material Design Guidelines," https://material.io/design/guidelines-overview/, accessed 05/02/2020.

> The Material Design Guidelines are a guide on how most Android applications, and applications in general, should be designed. The idea is to utilise realistic metaphors to ease users into navigating and utilising the application. Material Design will be very useful in the creation of the app prototype and design and may be absolutely crucial to my project.