

A personal diary app with an emphasis on individual and canine health

Initial Plan

CM3203 One Semester Individual Project
40 CREDITS

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1. Project Description.

Smartphones have become an integral part of individuals' daily lives. Individuals have a desire to access everything at their fingertips and through advancements in ubiquitous computing this is now possible. In 2019, 45% of the world's population owned a smartphone (2019), this has risen dramatically from 2016 when the figure was just 33% [1].

People are using their smartphones to enhance every aspect of their daily life including personalised alarm systems, online connected calendars and personal dairies. Smartphone applications are gathering copious amounts of PII (personal identifiable information), and it is important to use this information for a positive effect on the individual's life and their surroundings. As part of human nature, we like to journal parts of our lives; such as activities that were undertaken that day, places we visited, how this made us feel and who we went with. This can include our daily routines, such as exercising and walking our dogs. Research has shown that journaling can have a profound effect on a person's well-being and personal growth. Psychologists have found that by writing about your feelings, it can leave you feeling happier [2]. Journaling can also boost memory capacity and improve cognitive processing [3].

The vast amount of highly accurate data which can be automatically obtained from smartphones could be harnessed to give a detailed collection of memories, which will not be obscured by human error – as we tend to forget details. Humans like to track and evaluate aspects of their lives. To be able to see progress in mental state, physical activity or even just what you were doing this time last year is beneficial for the individual. One heavily used application is Apple's 'Health' App, which has a feature that tracks and monitors individuals' steps. It monitors how many steps the individual takes each day and compares the number to the previous month/year. This allows individuals to have a longer term view of their health statistics and allow them to set goals.

One important and very prevalent aspect of many lives is our pets. According to research carried out by the PDSA, 88% of dog owners agreed that having a pet makes them mentally healthier. We currently have many tools to assess and evaluate our personal progress, however not so many which tie in with our passion for our pets, in particular, our dogs. There are not many applications out there which gives owners a visualisation on the human's day and emotion, as well as our dog's day (including walks) and health.

It would be beneficial for dog owners to be able to have more visualisation and data on their dogs. This idea can be brought into fruition through the use of an online personal diary, which has a focus on the dog. One of the most central parts of being a dog owner, is walking your dog. Walking the dog has a vast amount of health benefits not only for the owner, but the dog. This is something which could be tracked over time, allowing the user to set goals (quantitative and qualitative) while having more visualisation on the dog's wellbeing and health. Research found that 'Dog owners are 34% more likely to hit exercise targets as they walk their pets regularly' [5], this lowers the chances of obesity as well as lowering the chance of canine obesity.

Merging in the idea of journaling with our passion for dogs could have many benefits for individuals and the dog itself. An electronic diary could have enhanced features to track and evaluate the individuals and dogs progress, including but not limited to:

- Using geotagging and user location tracking to track walks with the dog. Including:
 - Places the owner and dog visited together.
 - Routes taken: parks/dog parks they attended.
- Tagging images taken on the user smartphone to each walk in order to have visualisation and memories of that day.
- Track and analyse not only the user's emotions, but the user's perception of the dog's emotions. This would allow for insight over time, analysing patterns in behaviour and emotion.
- Track health statistics such as how many steps/what distance was covered each day by the user with their dog, displayed through a dashboard. The dashboard could present data over time, providing useful insights into how the user's habits are progressing.
- To be able to work towards personal goals set by the user for their dog and recommended steps for the user.
- A secure backup of the diary so that the information is not lost, as well as the protection of the personal PPI stored within the application.

2. Project Aims and Objectives.

2.1. Aims:

To design and develop an Android mobile application that allows the user to track walks automatically and dynamically through the use of geolocation tracking and emotional tags. The mobile application will give the user the ability to track not only their experiences and emotions, but also their dogs.

This will offer the ability for a detailed statistical analysis over time, which will be highly accurate due to the data which can be obtained from smartphones automatically, to track progress in their mental and physical wellbeing with relation to how they spend their day with their dog.

2.2. Objectives:

- To gain an understanding of the background to the problem.
 - I will carry out research into the use of personal diaries, not only for individuals but for pets.
- To gain an understanding of the market and potential end users.
 - I will research into how my application can add value and be distinguishable between competitor's applications.
- Design and develop a user interface allowing the user to:
 - Track and log walks that are taken with their dog.
 - Track specific details of each walk, such as: route taken, time taken, distance covered, and steps taken.
 - Journal the individual's emotions and how the walk made them feel.
 - Journal the individual's perception of the canine's emotions.
 - Add details to each walk, such as any places which they visited. E.g., a dog café.
 - Attach pictures of the walk to each walk log.
- Develop a dashboard feature, allowing the user to:
 - View past walks in chronological order.
 - View a particular day – being able to see how many walks were taken that day, the emotions felt and any pictures of the walks.
 - Provide statistics regarding how many steps/distance the user has covered in a given time period (day/month/year).
 - Provide average statistics for each week, such as average time spent on a walk and average distance.
 - Provide information about the routes or locations which are associated with a particular emotion for both the user and their dog.
 - Present this information in a user friendly manner with charts and graphs, allowing the user to see personal progress.

- Provide the user with useful notifications, encouraging them to continue logging, such as:
 - Daily walk target/distance hit (if reached).
- Develop a 'goals' feature, allowing the user to:
 - Create personal goals which can be tracked through the application. E.g. Walk 10,000 steps a day.
 - Create goals for their dog which can be tracked through the application. E.g. to be walked for 2km each day.
- Test the application on real users to ensure thorough user interface testing.

If time permits, the application could also have the following feature:

- Suggest certain routes to the user based on the emotions logged of both the user and the dog.

2.3. Initial requirements and constraints:

The mobile application will:

- Be developed for the Android Platform.
- Have access to the user's location.
- Store personal data such as: location history, emotion history, steps, time/date of each walk in a database.
- Automatically store walk entries with the time and date associated with each 'walk'.
- Allow the user to add an emotional tag for themselves and their perception of the dogs, pictures or text to each walk.
- Present the information in a user friendly manner – to show statistics of previous walks through the use of visual aids such as graphs and charts.
- Allow the user to:
 - Analyse the frequency of their walks over a given length of time.
 - Analyse the range of emotions felt by themselves and their dog – and show correlations between their walks and emotions.
 - View an analysis of chronological, locational and emotional data.

3. Work Plan.

My chosen software development approach is Agile. I have no previous experience in Android mobile application development; therefore, I believe this approach is best suited to this project. It will allow me to adapt and improve existing requirements and continuously acquire feedback in order to aid the development of the application.

The plan may be modified over time after research is completed into the best approaches to develop the mobile application and the effective use of location and emotion tagging. The work plan splits the development into several sections with deliverable milestones to ensure the completion of the final product on time. I plan to have a strong communication with my supervisor with regular meetings to ensure the tasks are detailed and refined to meet my milestones and deliverables. Documentation will be written and completed alongside the development of the project in order to maintain steady progress throughout the time frame.

Overview of deliverables:

Deliverable	Due date
Initial Report	03/02/2020
Project Report	07/05/2020
Application Source Code	07/05/2020

Week 1 (27th – 2nd Feb):

- Research Android mobile application development principles; assemble ideas and expectations for the project
- Write up the following for the **Initial Report**:
 - Project Description
 - Project Aims and Objectives
 - Work Plan
 - Gantt Chart
 - References
- Research and begin suitable Android development courses on websites such as Udemy to support learning for the development of the project

Deliverable: Initial Report (3rd Feb)

Week 2 (3rd – 9th Feb):

- Continue Android development courses
- Research the following:
 - Existing solutions and related work
 - Android applications and standards
 - Set of tools to be used to solve the problem
 - Data storage, emotive analysis, fundamental workings of an Android application and location tracking/services within the Android space
- Begin documentation of the **Project Report** – setting out structure.
- Write up the following for the **Project Report**:
 - Project Introduction & Background

- Scope of Project
- Existing Solutions
- Project Justification

Week 3 (10th – 16th Feb):

- Continue Android development courses
- Research the following:
 - Common users of proposed application
 - Objectives/needs for the proposed application from common users
 - Functional and non-functional requirements for the system
 - Carry out user based research to discover needs of the system
 - Use of emotional tagging within diary entries
- Write up the following for the **Project Report**:
 - Personas of the system
 - Functional and non-functional requirements
 - Use Cases
 - Begin: Approach to solve the problem
- **Milestone:** Complete Introduction, Background, Functional, Non-Functional Requirements and Use Cases.

Week 4 (17th – 23rd Feb):

- Supervisor meeting. Plan to discuss current progress, methods selected and refine requirements/design ideas as well as Implementation plan.
- Create a user interface design for the system, including all functionality and interactions of basic functions
- Create Implementation Plan for the project – taking into account all that has been learnt so far. This may change from expectations that are set out in this Work Plan if encountered issues or change in requirements. A more detailed Implementation plan will be decided upon after Supervisor meeting in Week 5
- **Implementation begins:** A basic skeleton of the system should begin to be created. Create data storage method and ensure connection of back end to front end
- Write up the following for the **Project Report**:
 - Approach to solve the problem:
 - Data storage method to be used
 - Location tracking method to be used to attain user's location
 - Emotive scale to be used and conclusions from research
- **Milestone:** Complete Android development courses
- **Milestone:** Data storage, location tracking method and emotive scale to be used is decided
- **Milestone:** Implementation begins

Week 5 (24th – 1st Mar):

- Continue Implementation of primary functionalities
- Write up the following for the **Project Report**:
 - Update and make changes from the outcome of the meeting

- User Interface Design
 - Including all functionalities and screens
- UML Class Diagram
- **Milestone:** Complete user interface design of application with all main functionalities

Week 6 (2nd – 8th Mar):

- Continue Implementation of primary functionalities
- Write up the following for the **Project Report**:
 - Testing of Use Cases
 - Test Cases

Week 7 (9th – 15th Mar):

- Supervisor meeting. Plan to discuss current progress and reflect on current state of the project, refine implementation plan
- Continue with Implementation of basic prototype – primary functionalities: simple walk entries, including emotion tracking, location tracking and user goals

Week 8 (16th – 22nd Mar):

- Continue Implementation of primary functionalities
- Development of the statistical views of the user's data should be running as a basic functionality
- Research the following:
 - Secondary features – justification for use, evaluate possibility of these features
- **Milestone:** Basic prototype should be running. A MVP (Minimum Viable Product) should be created. A walk can be tracked and submitted for a date, including emotion tagging and users can view their previous walks

Week 9 (23rd – 29th Mar):

- Complete Implementation of primary functionalities
- Supervisor meeting. Plan to discuss current progress and reflect on current state of the project, allow supervisor to use MVP and gain feedback. Discuss secondary features and evaluate the possibility of implementation
- Depending on outcome of meeting, begin secondary functionality implementation
- **Milestone:** All fundamental implementation of the system should be complete at the end of this week. The system must run as one, with dashboard and statistical views working correctly.

Week 10 (30th – 5th Apr):

- Continue all implementation (secondary and any enhancements to primary)
- Write up the following for the **Project Report**:
 - Begin: Implementation of the System

Week 11 (6th – 12th Apr):

- Finish the implementation of secondary functionalities. Ensure **all** functions are running to a high standard and the application runs smoothly
- Testing system begins:
 - Testing system functionality against test cases
 - User testing
- Write up the following for the **Project Report**:
 - Implementation of the System
- **Milestone**: Implementation of entire system completed.

Week 12 - 14 (13th – 3rd May) – Easter break:

- Continue to test system:
 - Testing system functionality against test cases
 - User testing
- Write up the following for the **Project Report**:
 - Implementation of the System
 - Testing results and user testing results
 - System evaluation
 - Conclusions
- **Milestone**: Implementation of system written up for Project Report.
- **Milestone**: The bulk of the Project Report completed. Including all testing outcomes and evaluations

Week 15 (4th – 7th May):

- Complete any final tweaks of the report, checking the formatting and complete references
- Final proofread of report

Deliverable: Project Report (7th May)

Deliverable: Application Source Code (7th May)

4. Risk Plan.

Below is a risk plan for the project.

Risk	Probability of Occurrence	Impact on Project	Mitigation Response
Inadequate time to complete all functional and non-functional requirements.	Low	High	Follow my work plan. Discuss any issues with my supervisor in order to refine requirements if time becomes an issue.
Inadequate time to complete Project Report.	Low	High	Follow my work plan – which details milestones for the report. Continue writing documentation as progressing throughout the time frame.
Loss of Data.	Low	High	Backups of application source code, documentation and other materials should be done on a regular basis.
Illness.	Low	Medium	The impact of this should be manageable, ensuring to be in contact with supervisor and can rework my work plan.

5. Gantt Chart.

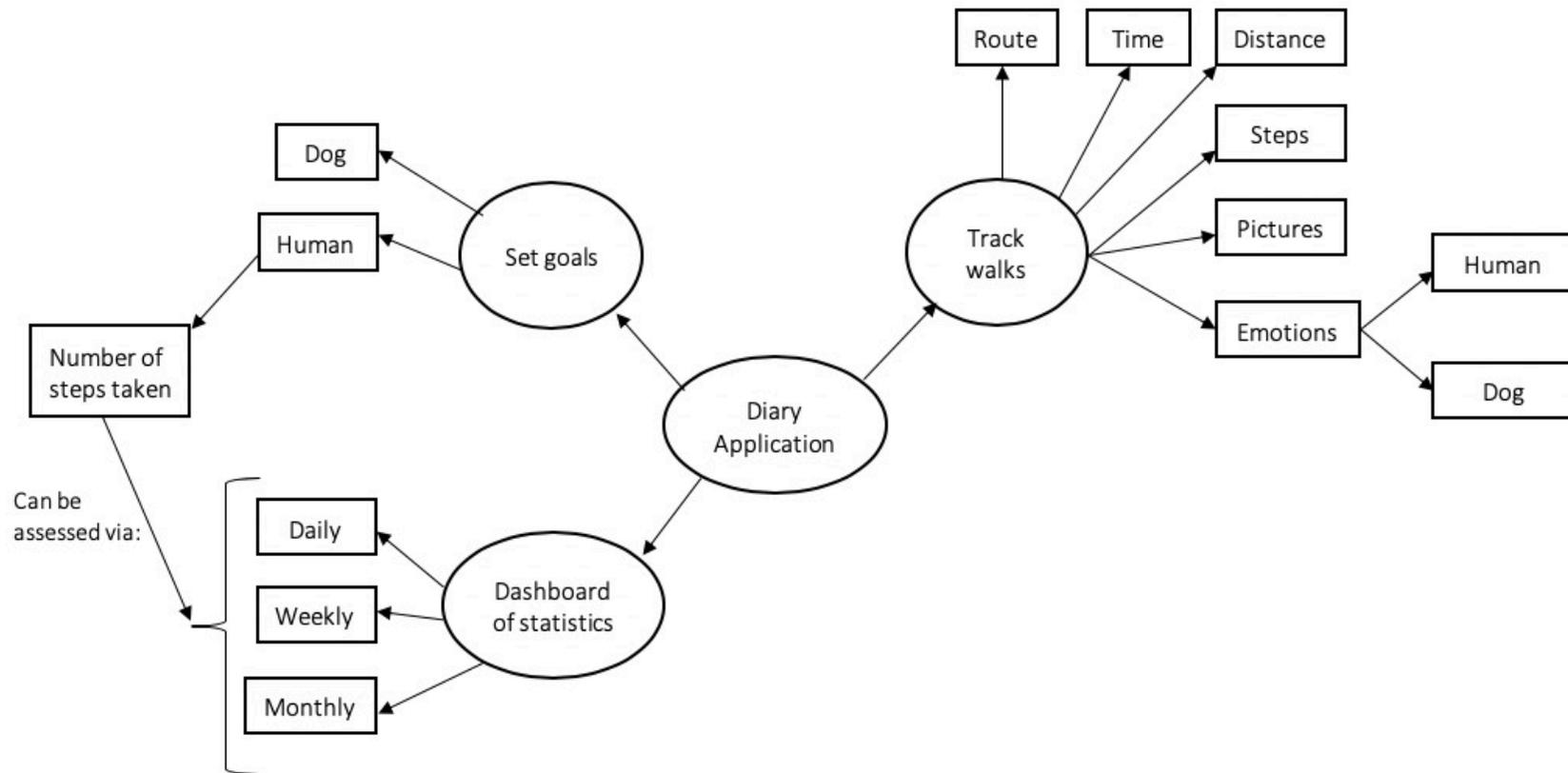
Below is a Gantt Chart detailing my work plan.

Personal Diary App: Emphasis on Dog Walking Gantt Chart																							
Task ID	Task	Start Date	End Date	Duration (weeks)	1	2	3	4	5	6	7	8	9	10	11	12 (Easter)	13 (Easter)	14 (Easter)	15				
					27th Jan	3rd Feb	10th Feb	17th Feb	24th Feb	2nd Mar	9th Mar	16th Mar	23rd Mar	30th Mar	6th Apr	13th Apr	20th Apr	27th Apr	4th May				
1	Initial Plan	27th Jan	3rd Feb	1																			
1.1.	Write up Project Description	27th Jan	3rd Feb	1																			
1.2.	Write up Project Aims and Objectives	27th Jan	3rd Feb	1																			
1.3.	Write up Initial requirements and constraints	27th Jan	3rd Feb	1																			
1.4.	Write up Work Plan	27th Jan	3rd Feb	1																			
1.5.	Write up Risk Plan	27th Jan	3rd Feb	1																			
1.6.	Write up Gantt Chart	27th Jan	3rd Feb	1																			
1.7.	Research an android application development course	27th Jan	3rd Feb	1																			
2	Introduction and Background Research	3rd Feb	24th Feb	4																			
2.1.	Complete Android development course	3rd Feb	24th Feb	4																			
2.2.	Research existing solutions and related work	3rd Feb	10th Feb	1																			
2.3.	Research set of tools to be used to solve the problem	3rd Feb	10th Feb	1																			
2.4.	Write up Project Introduction & Background	3rd Feb	10th Feb	1																			
2.5.	Write up Scope of Project	3rd Feb	10th Feb	1																			
2.6.	Write up Existing Solutions	3rd Feb	10th Feb	1																			
2.7.	Write up Project Justification	3rd Feb	10th Feb	1																			
2.8.	Research common users of proposed application	10th Feb	16th Feb	1																			
2.9.	Carry out user based research to discover requirements	10th Feb	16th Feb	1																			
2.10.	Research objectives/needs for the proposed application from common users	10th Feb	16th Feb	1																			
2.11.	Research common users of proposed application	10th Feb	16th Feb	1																			
3	Design	10th Feb	9th Mar	4																			
3.1.	Research Functional and non-functional requirements for the system	10th Feb	17th Feb	1																			
3.2.	Write up Personas of the system	10th Feb	17th Feb	1																			
3.3.	Write up Functional and Non Functional Requirements	10th Feb	17th Feb	1																			
3.4.	Write up Use Cases	10th Feb	17th Feb	1																			
3.5.	Write up Approach to solve the problem	10th Feb	24th Feb	2																			
3.6.	Create user interface design for the system	17th Feb	2nd Mar	2																			
3.7.	Write up User Interface Design	24th Feb	2nd Mar	1																			
3.8.	Write up UML Class Diagram	24th Feb	2nd Mar	1																			
3.9.	Write up Test Cases	2nd Mar	9th Mar	1																			
3.10.	Write up Tests of Use Cases	2nd Mar	9th Mar	1																			

Personal Diary App: Emphasis on Dog Walking Gantt Chart																			
Task ID	Task	Start Date	End Date	Duration (weeks)	1	2	3	4	5	6	7	8	9	10	11	12 (Easter)	13 (Easter)	14 (Easter)	15
					27th Jan	3rd Feb	10th Feb	17th Feb	24th Feb	2nd Mar	9th Mar	16th Mar	23rd Mar	30th Mar	6th Apr	13th Apr	20th Apr	27th Apr	4th May
4	Implementation	17th Feb	12th Apr	8															
4.1.	Create data storage method and ensure connection	17th Feb	24th Feb	1															
4.2.	Create implementation plan	17th Feb	24th Feb	1															
4.3.	Primary function implementation	17th Feb	23rd Mar	6															
4.4.	Secondary function research	16th Mar	23rd Mar	1															
4.5.	Secondary function implementation	22nd Mar	13th Apr	3															
5	Testing	6th Apr	27th Apr	3															
5.1.	Test system against test cases	6th Apr	27th Apr	3															
5.2.	User testing	6th Apr	27th Apr	3															
6	Results, Evaluation and Conclusion	30th Mar	7th May	6															
6.1.	Write up Implementation of the system	30th Mar	20th Apr	3															
6.2.	Write up findings from testing	20th Apr	4th May	2															
6.3.	Write up System evaluation	20th Apr	4th May	2															
6.4.	Write up conclusions	20th Apr	4th May	2															
6.5.	Write up references	4th May	7th May	1															
	Supervisor Meeting																		

6. Knowledge Map.

Below is a knowledge map of the intended application and its features.



7. References.

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