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AWAKEN THE BODHI MIND: A MEDITATION GUIDE AND CHANTING TRACKER MOBILE APPLICATION

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This Special Project titled

Awaken the Bodhi Mind: A Meditation Guide and Chanting Tracker Mobile Application

is hereby accepted by the Faculty of Information and Communication Studies in partial fulfillment of the requirements for the Master of Information Systems.

Ria Mae H. Borromeo
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ABSTRACT

The global pandemic has impacted our lives in ways unimaginable. It changes the way we interact with each other and how we live. Alcohol, mask, and face shield for some have been part of our daily necessities and routine. A number of companies switched to teleworking to avoid contact and to maintain business as usual. Schools implemented modular learning, online classes, and blended learning. Traveling was also one of the hardest parts of the pandemic as most of the borders were closed. Face-to-face meetings and religious gatherings were also stopped but were allowed eventually as long as attendees are limited and the venue is not in full capacity. In spite of that, we learn to adapt and leverage the resources that we have to be able to adjust to the new normal. Due to the global crisis, meditation classes and ceremonies have been canceled however, the community still continues to meditate and chant Sutras as part of their practice. The free classes allow the students to practice meditation and learn Buddhist principles. Sutra chanting is part of the Buddhist liturgy where one's karma is purified and a way to dedicate our merits to all sentient beings. The practitioners are using a manual card and prayer beads to keep track of their total chants. These total counts per person are consolidated by the organization as they have a certain goal to achieve. By chanting, we dedicate the merits to world peace and wish for everyone to be free from suffering. This project aims to focus on the individual users to help them track their chant counts and meditation minutes. A collection of Sutras and Gathas for readings that are portable is also beneficial. For better quality results and fast development, Agile methodology was used. Since it is an iterative and incremental development approach, it reduces the risk for possible issues and at the end of each sprint, there is an application ready to be tested and presented. As a result, the mobile application was well designed and coded and has undergone several quality assurance tests to assure the excellence of the application. Overall, the meditation guide and chanting tracker mobile application has solved the issue of the manual approach and encourages the practitioner even more to practice mindfulness through chanting and meditation. A recommended additional feature to the application would be a function to be able to download a backup of the user data so that it can be restored if the app has been reinstalled.

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Throughout the conceptualization and implementation of this information system project, I have received a great deal of support and encouragement.

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To my OSCM family, you are my inspiration to this project. This is my way of giving back and serving to the Buddhist community.

I am also grateful to my friends for the motivation, laughs and support. Special mention to Geran who introduced me to Flutter development. Your thoughts helped me decide and conceptualized the direction of what I wanted to develop.

TABLE OF CONTENTS

Abstract 5
Acknowledgments 6
Table of Contents 7
Chapter I 1
INTRODUCTION 1
Chapter II 2
Review of Existing Alternatives 2
Chapter III 4
PROJECT DETAILS 4
A. Overview 4
B. Theoretical Framework 6
C. Technologies Used 8
D. System Design 9
a. System Features 10
b. Database Design 10
E. Implementation 11
a. Mobile Application Screenshots 12
Chapter IV 22
PROJECT ASSESSMENT 22
A. User Testing 22
B. Testing Results 24
Chapter V 25
Discussions 25
Maintenance Plan 26
Chapter VI 27
Conclusion 27
Chapter VII 28
FUTURE WORK 28
References 29
Appendices 30

Dedicated to:
Tony

Chapter I

INTRODUCTION

As the face-to-face meetings and religious gatherings are restricted due to the global pandemic, the organization needs to adapt and leverage the technology to improve the efficiency of certain organizational activities. The mobile application will serve as an extension of the organization in reaching out to beginners and practitioners in understanding Zen Buddhism and to cultivate mindfulness through meditation and chanting. The main objective of the development of this application is to address the information system problem which refers to the manual record keeping of chant counts. This will also provide a single data source in accessing the PDF readings and to support the organization as part of the dedication to the community. The beneficiary of this application is a non-profit organization that has a goal to give locals an auspicious opportunity to study Zen Buddhism and meditation which is the essence of Buddha's teachings. They are also offering free weekly meditation classes conducted in both English and Chinese, chanting classes, Mandarin classes, Bodhi star classes for kids and also children's meditation camps during summer vacation.

"Chanting scriptures and prayers to buddhas and bodhisattvas is a central practice in all streams of Buddhism, intended both to reflect upon content and to focus the mind [1]." The practitioners in the organization are using prayer beads while reciting and a piece of card to manually record the total chants they have completed. The main goal of this project is to streamline the manual process of keeping track of the total number of chants and to guide beginners and practitioners to meditation.

Chapter II

REVIEW OF EXISTING ALTERNATIVES

The practitioners are using prayer beads that act as a counter then they will record the number of chants by manually writing it on a piece of paper or card. The main reason why chants are recorded are for consolidation purposes. The organization may aim to reach 50,000 to 100,000 total chants to a specific sutra. To be able to achieve this, practitioners will recite as many as they can and manually write it on a paper. Upon further research to the Android marketplace, I have identified several existing applications containing a similar approach.

Chants Counter is an android application that is straightforward and functional app to count chants. It can configure mantras and be able to add and set numbers to chant. The user can also save chant records to a file. Mantra text font size and orientation are configurable. On the other hand, my app is fully customized to the need of the organization and this is just one of the features of the mobile application.

Chanting Monitor – Mantra Meditation, Japa Counter is a simple virtual chanting assistant to monitor chants and sleep alerts. This app contains sleep monitoring and wake up alerts, a timer, beads and auto Japa counter to record the number of chants and a notification to play/pause current chanting/monitoring item. This is just one of the core functionalities of my application and other features listed are irrelevant to the requirement of the organization.

Calm – Meditate, Sleep and Relax is a leading app for meditation and sleep. It is also a perfect mindfulness app for beginners. It contains stories, breathing program, masterclasses, relaxing music, guided meditation with different durations to choose from. As this app features a lot of functionality, in-app purchase is included which is not a feature in my app and this focuses purely on meditation and sleep.

Basic Buddhism is an app made for beginners and provides all the basic information of Buddhism. It includes readings on introduction to Buddhism, teachings and practice, the eightfold path, Buddhist ethics, reincarnation and law of Karma. As this app is filled with relevant information related to my application, this solely focus on readings and concepts which is just a part of the main feature of my app.

The above-mentioned apps only contain one specific core functionality of the project which can either be a chanting counter or a meditation focused app. Some of it requires in-app purchase to fully experience the whole features. Also, there irrelevant features that is not essential to the organizational requirements. What makes this project stand out is its uniqueness. It is specifically customized and design to the needs of the organization. Moreover, it is free, user friendly and lightweight in terms of its user design and structure

Chapter III

PROJECT DETAILS

A. Overview

This meditation and chanting tracker mobile application will allow practitioners and interested individuals to learn Buddhism, practice mindfulness through meditation and cultivate concentration and eliminate delusions through chanting. For this implementation, it will only be available on Android for now.

Figure 1. Use Case Model

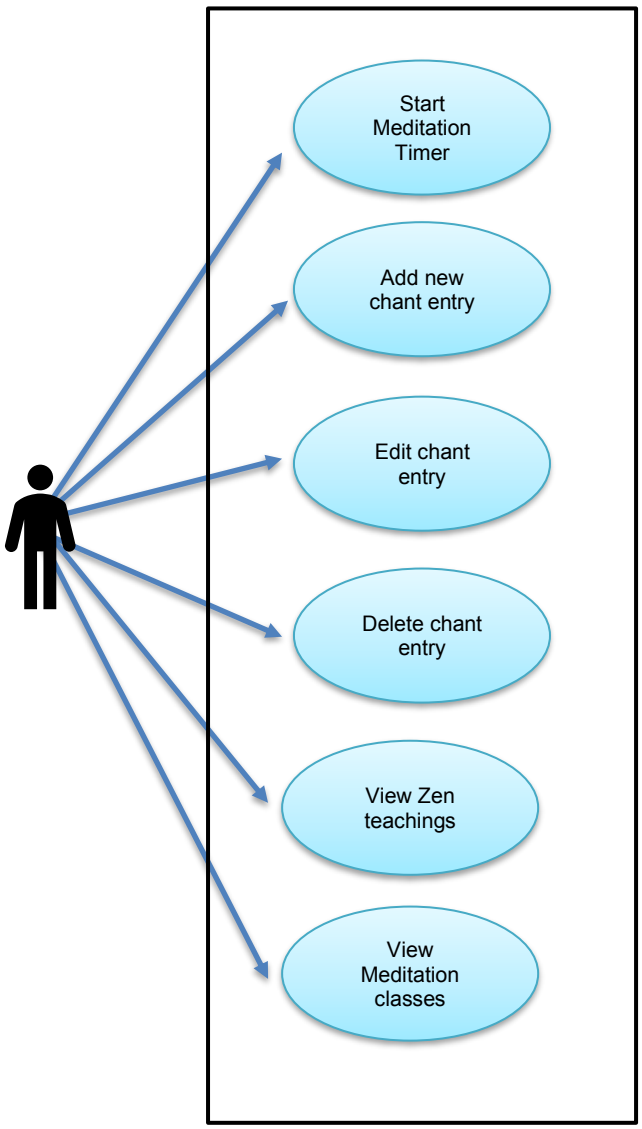


Figure 1 shows the actor and how it will interact with the application. To clearly define these technical specifications, below are the functional requirements of the mobile application:

1. User shall be able to set a timer for the duration of the meditation

   The desired time can be set and adjusted
2. User can cancel, pause, resume and save the timer at any given point
3. A graph shall show the total minutes completed per day
4. The application shall automatically save the chanting counter.
5. The count record for the day will be displayed and will reset after midnight
6. Overall total record will be displayed
7. User shall be able to add new chant reference text

   One attribute of the chanting record is the chant text source. It can also serve as a regular note pad where users can enter any details that they wish to type.
8. User shall be able to edit or update saved chant text

   One of the key functions is for the users to be able to edit the saved text.
9. User shall be able to save any new record and changes

   One of the key functions is for the users to be able to save new data text.
10. User shall be able to delete recorded chant text

    One of the key functions is for the users to be able to delete any existing data on the chant record.
11. User shall be able to view Zen teachings menu

    The application should be able to display the different topics under Zen teachings which includes Sutras and Gathas, Buddhist stories etc. in PDF form.

12. User shall be able to view Ceremonies information

    The application should be able to display all the list of Buddhist ceremonies celebrated by the organization.

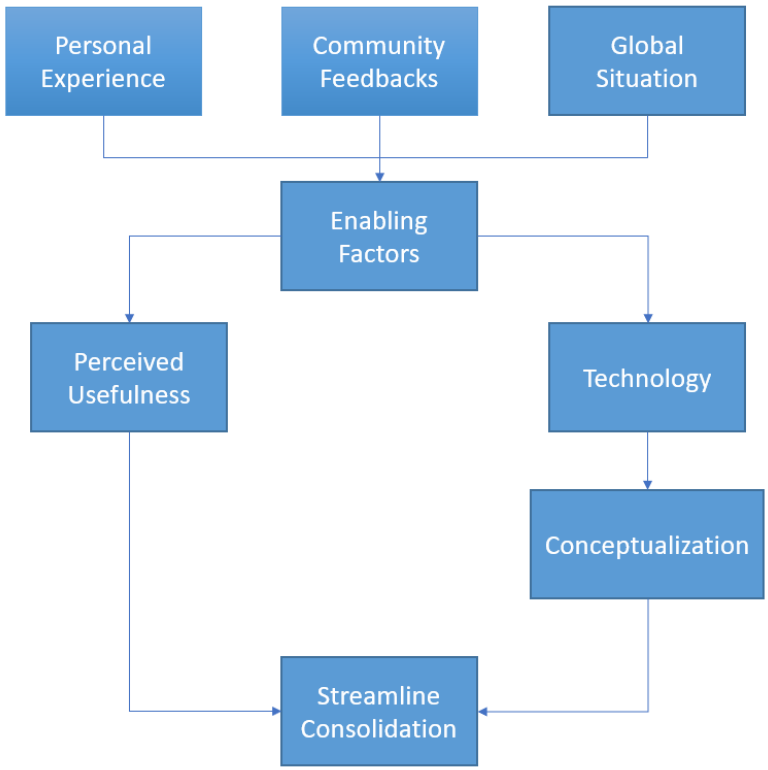
13. User shall be able to view Zen meditation classes information

    The application should be able to display the available class listings and expectations for each class.

B. Theoretical Framework

The framework below on Figure 2 demonstrates how each of the concepts are associated with each other and how certain factors are related to the formulation of the desired outcome.

Figure 2. Theoretical Framework



According to the latest statistics by Turner, “currently we have a total of 3.8 billion smartphone users around the world [2].” Now, the main challenge here is how to effectively design an application and how to improve the user experience. Since the project is a mobile application implementation, the following are the UX design principles that I followed to make the app engaging and pleasing.

1. Keeping it simple
    - The simple the interface, the better. I placed the focus on the important menus with a minimalistic approach on the design so as to avoid distraction and functions can be easily found.
2. Make navigation intuitive [3]
    - Users should be able to use the application with ease and without the need to explain the navigation procedure. It should take less time and effort to learn to use the app or else this will cause low retention rate of users.
3. Legible text content and visible interface elements [4]
    - I specifically consider the user of the application since most of the practitioners are on their 40s to 60s. Having a readable content and clear icons will help guide them in the navigation of the application.
4. Understand hand position controls [5]
    - Since majority of the people rely on their thumb to interact with mobile phones, placing the essential menus that is reachable by thumb is an effective way to design the navigation.

C. Technologies Used

Flutter is used in the development of the project. It is a tool that allows you to build native cross-platform app with one programming language and codebase. “It is fast as the hot reload helps you build UIs and add features quickly. It also has expressive and flexible UIs through its built-in widgets [6].” Flutter uses a programming language called Dart which is focused on frontend user interface development.

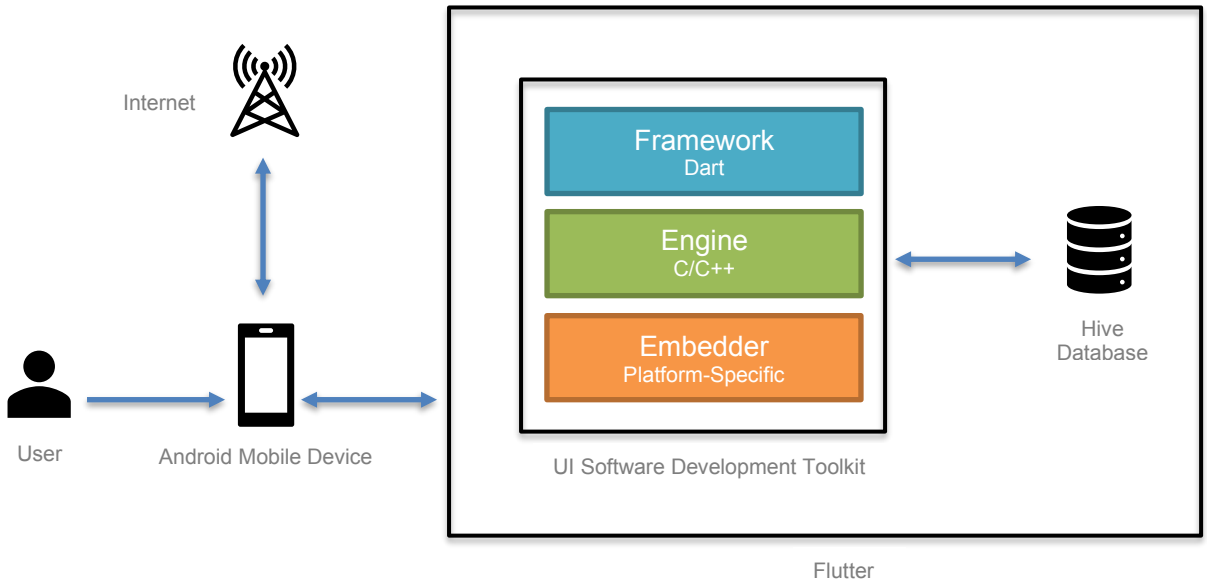
Android Studio is an integrated development environment tool used for building apps with an intelligent code editor, flexible build system and real-time profilers and emulators.

Hive was the preferred database for this project as it is lightweight and secure with no native dependencies.

For the experience design, Adobe XD is used. It is an excellent app that lets you create mockups on different screen sizes and to engage more on the user navigation flow, animation on artboards can be added to mimic the expected user journey. It also has an integration to Flutter which made it easier to incorporate the design and the code together.

D. System Design

Figure 3. System Architecture



The user should have a mobile device with an Android operating system. The device requires connectivity to the internet during the application download via Google Play Store. Flutter is the software development kit that will be used in this project. Figure 3 shows its architectural layers. “The Flutter framework provides a modern, reactive framework written in Dart language [7].” “At the core of Flutter is the Flutter engine, which is mostly in C++ and supports the primitives necessary to support all Flutter applications [8].” “To the underlying operation system, Flutter applications are packaged in the same way as any other native applications. A platform-specific embedder provides an entrypoint; coordinates with the underlying operating system for access to services and manages event loop [9].” Hive is a fast and lightweight dart package used in Flutter applications to store and manipulate data locally. It is easy to integrate because Hive was developed using pure DART language and can just be added as a dependency on your project file.

a. System Features

The key features of the application are the following:

- Assist beginners and practitioners in meditation through the timer feature
- A graph shows the total minutes completed per day
- In the chanting tracker feature, user will be able to add, edit, delete and save chant reference text.
- The chant counter automatically saves the record
- Zen teachings include reading materials in PDF form
- The menu for Ceremonies explains the purpose of each and when it is celebrated
- The meditation classes being offered are listed, describing the expectations and what the classes are all about

b. Database Design

Figure 4. Hive key-value pair

key	value
idNumber	2022-10516
lastName	Dela Cruz
firstName	Juan

Hive was the preferred database on this project. It is a light, key-value database for Flutter that can be used to store data locally. As shown in Figure 4, the data is organized in a box and since this is a NoSQL model, it does not have a schema or structure.

E. Implementation

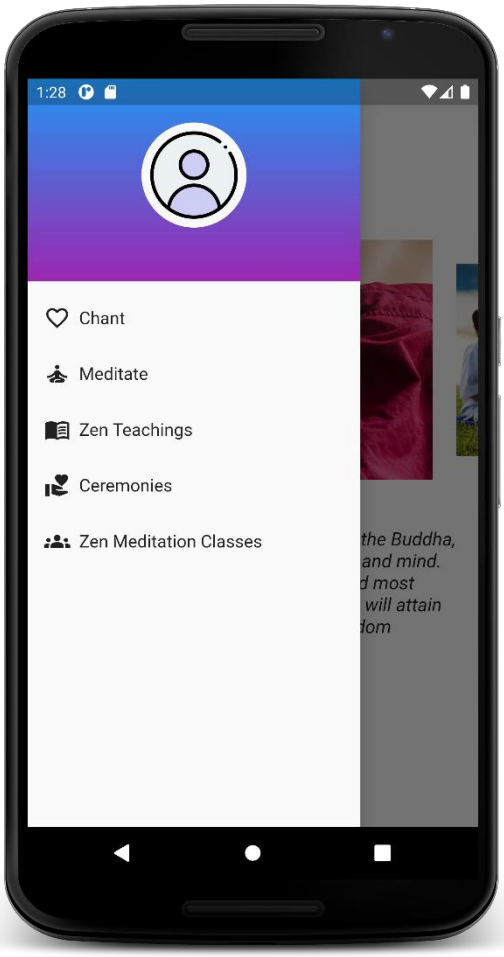
The development was implemented using Agile methodology. Since it is an iterative and incremental development approach, it reduces the risk for possible issues and at the end of each sprint, there is an application ready to be tested and presented. This project was consisted of 4 sprints that lasts 30 days each. I decided to divide the mobile app feature per sprint depending on its complexity. Sprint 1 focuses on setting up the wireframes, splash page and navigation. Sprint 2 involves database integration and the chanting tracker feature. This one solely consumed the entire sprint as I considered this a bit challenging and complex since it includes CRUD operations. On Sprint 3, the main objective is to be able to deliver the timer feature and class menu. The timer also involves database integration and the logic for the countdown function. The class menu are card images that redirects the user to a new page. Lastly for Sprint 4, most of the polishings are done here. The Zen teachings and Ceremonies menu are developed on this phase. I implemented a cached PDF viewer for the Zen teachings feature and an expandable card widget for the Ceremonies feature.

There are a few changes and blockers that happened along the way. These impediments are the issues and bugs that were encountered during the testing which hinders me to develop and test further. External factors such as work schedule and personal commitments also affected the sprints.

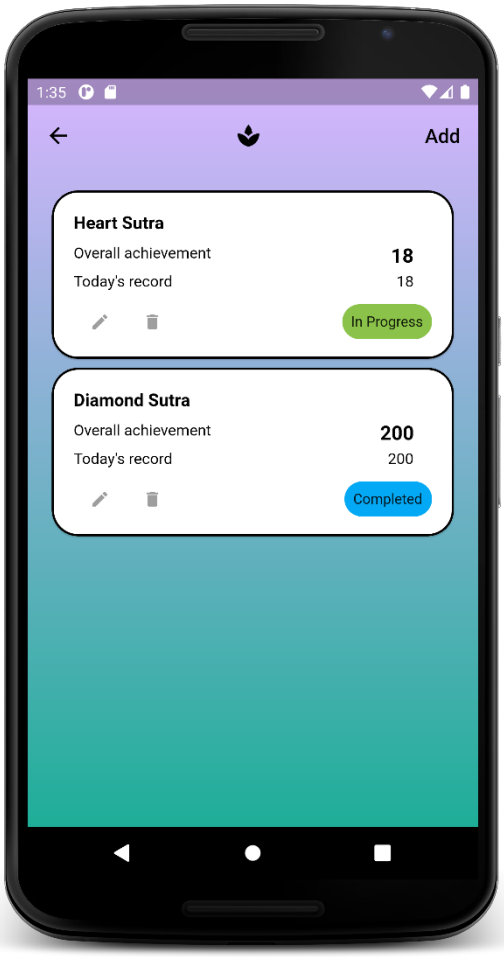
a. Mobile Application Screenshots

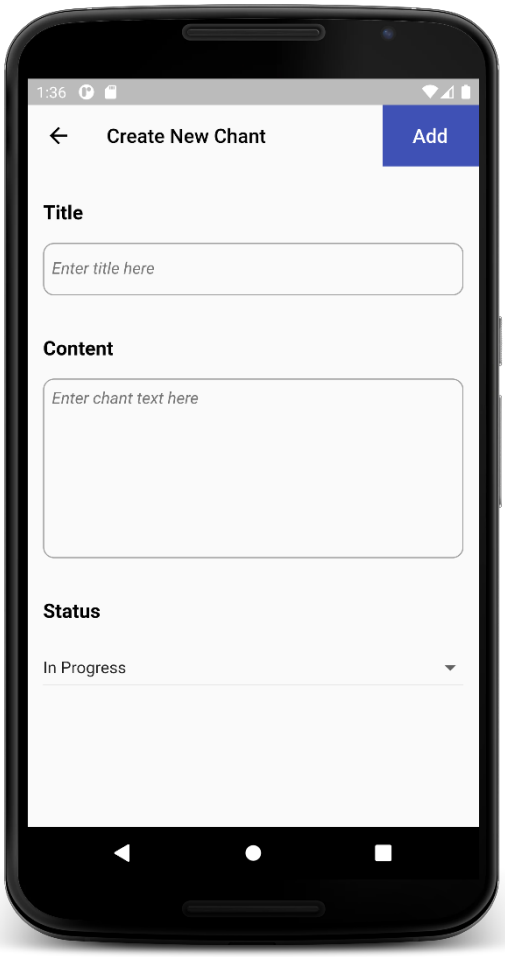
Splash Page and Home Page

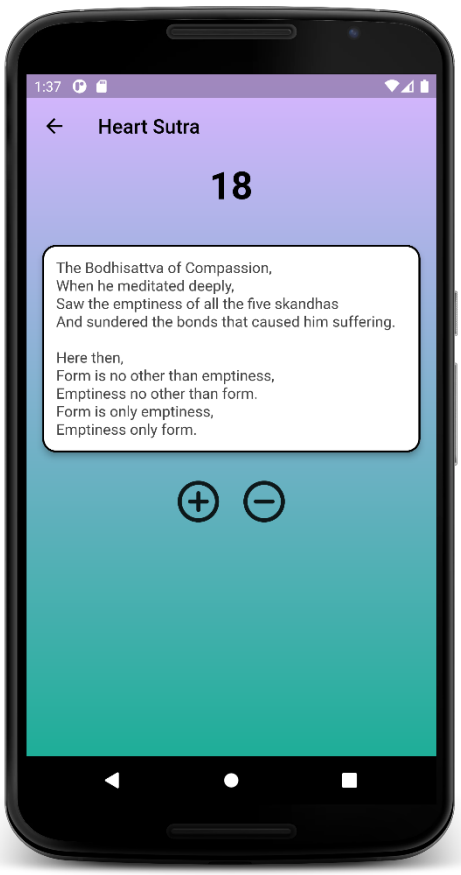
Navigation Drawer



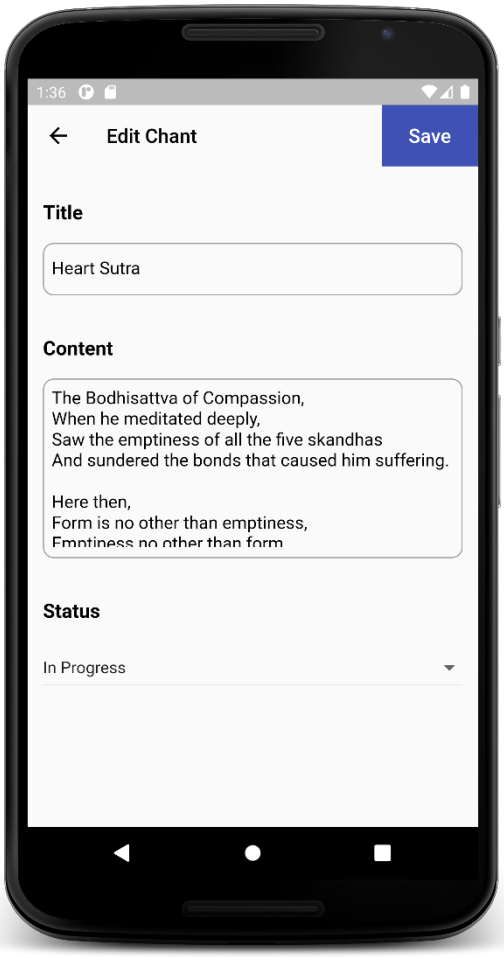
Chant Home Screen and Create Chant Page

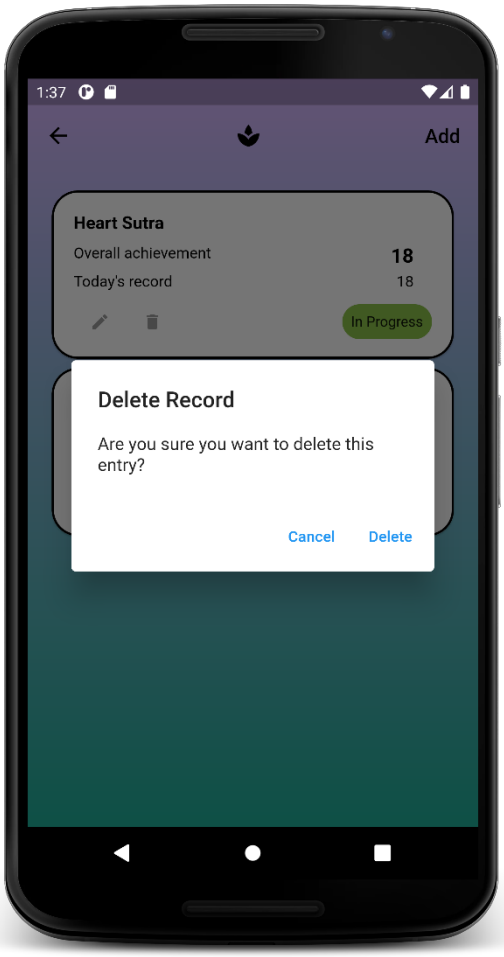

1:35
Add
Heart Sutra
Overall achievement
18
Today's record
18
In Progress
Diamond Sutra
Overall achievement
200
Today's record
200
Completed


1:36
Create New Chant
Add
Title
Enter title here
Content
Enter chant text here
Status
In Progress

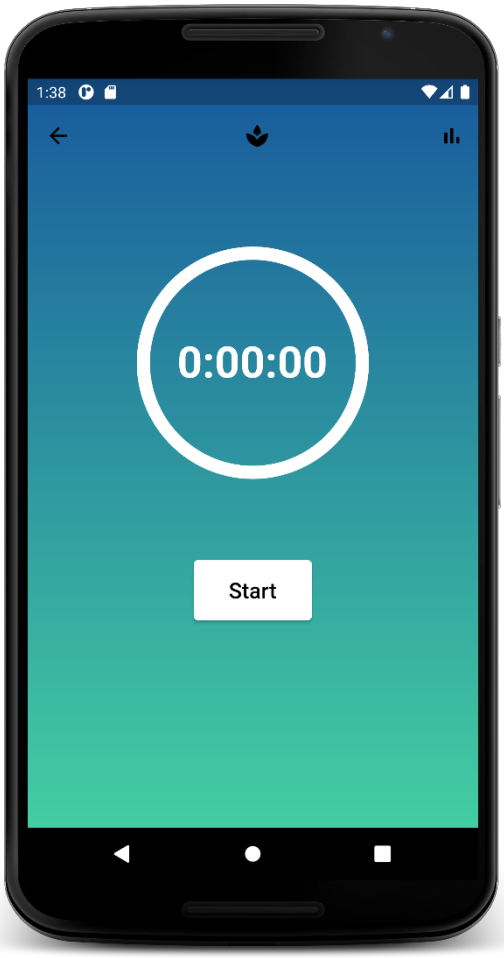

1:37
Heart Sutra
18
The Bodhisattva of Compassion,
When he meditated deeply,
Saw the emptiness of all the five skandhas
And sundered the bonds that caused him suffering.
Here then,
Form is no other than emptiness,
Emptiness no other than form.
Form is only emptiness,
Emptiness only form.

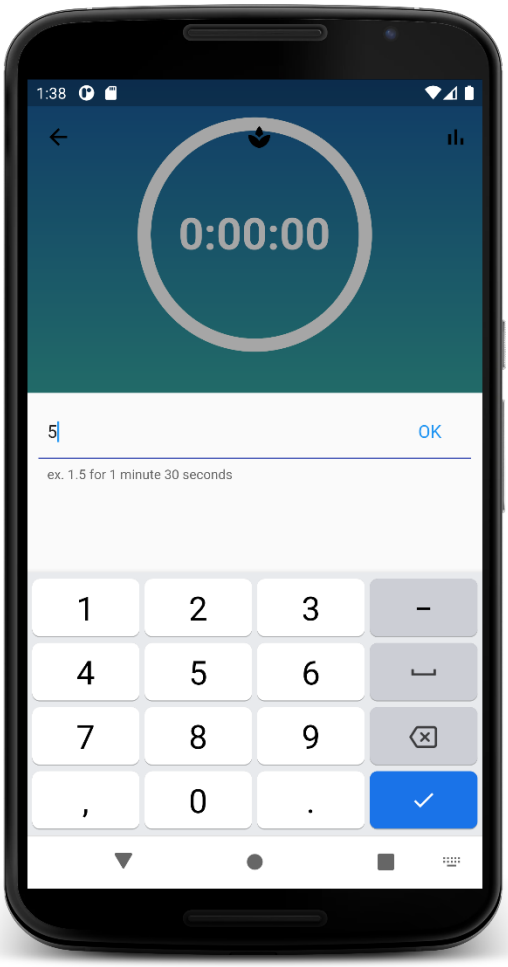
Edit Chant and Delete Chant



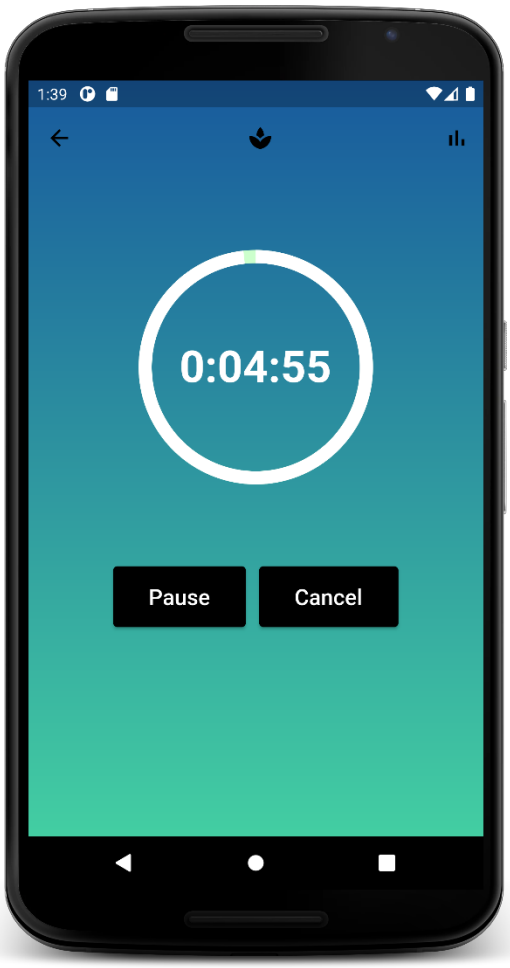


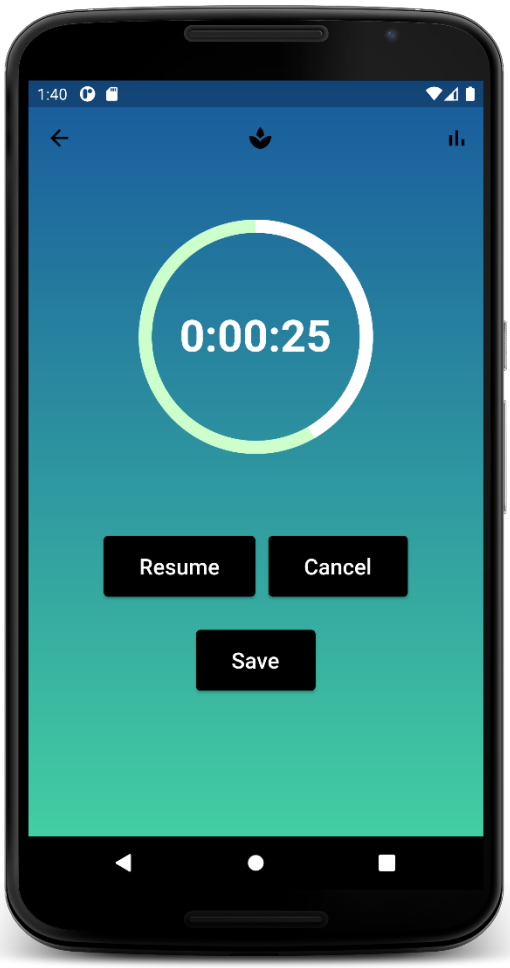
Meditation Timer and Input Screen



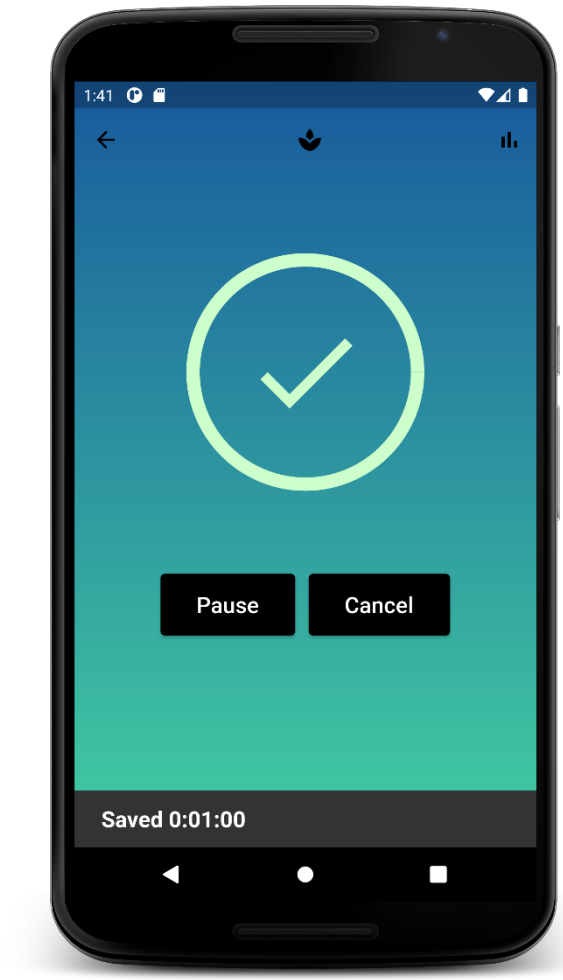


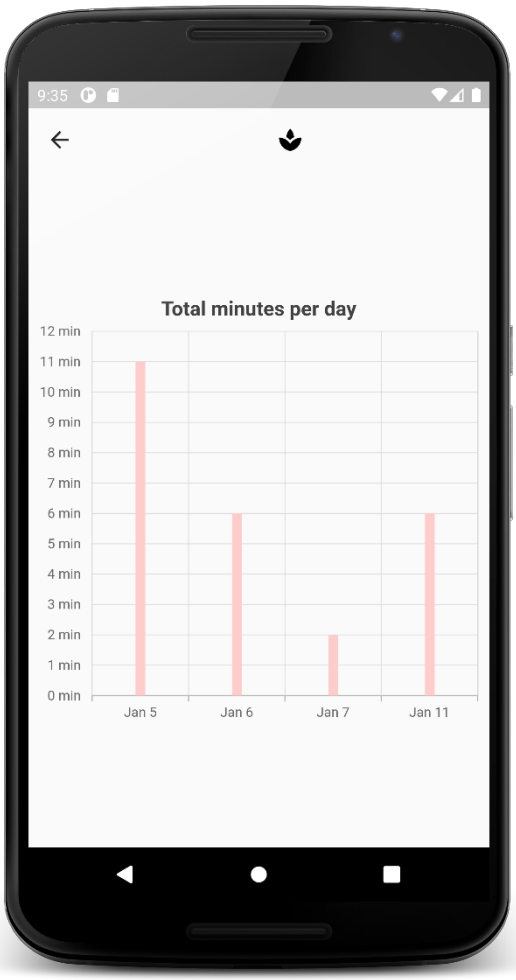
Timer Pause, Cancel, Resume, Save



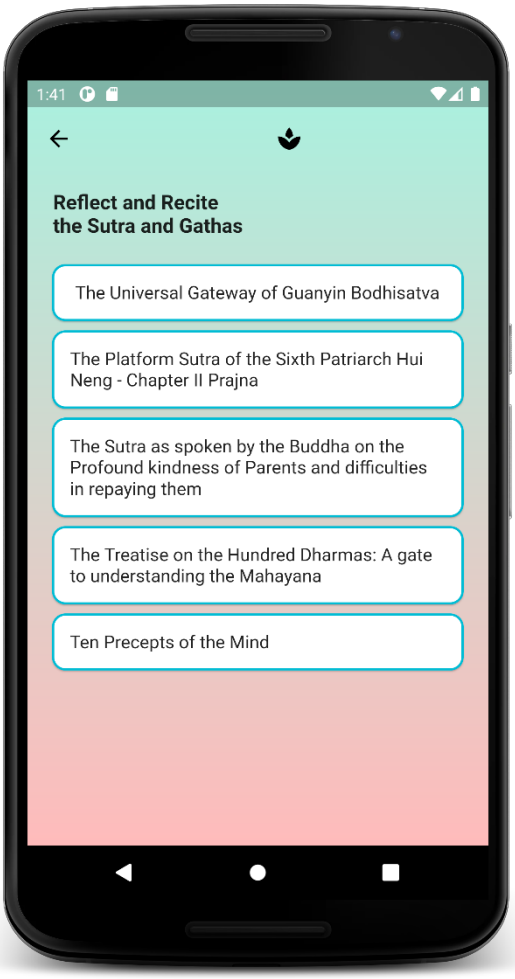


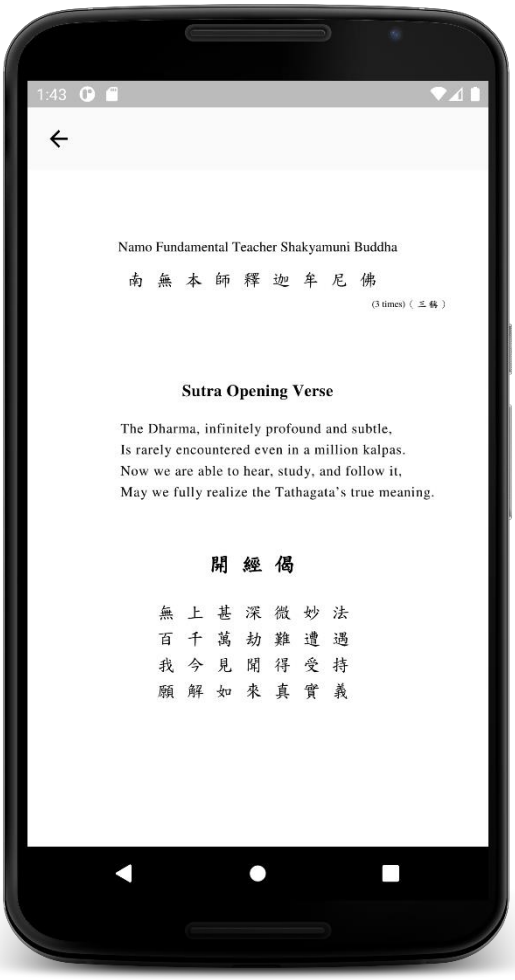
Saved Time and Total Minutes Graph



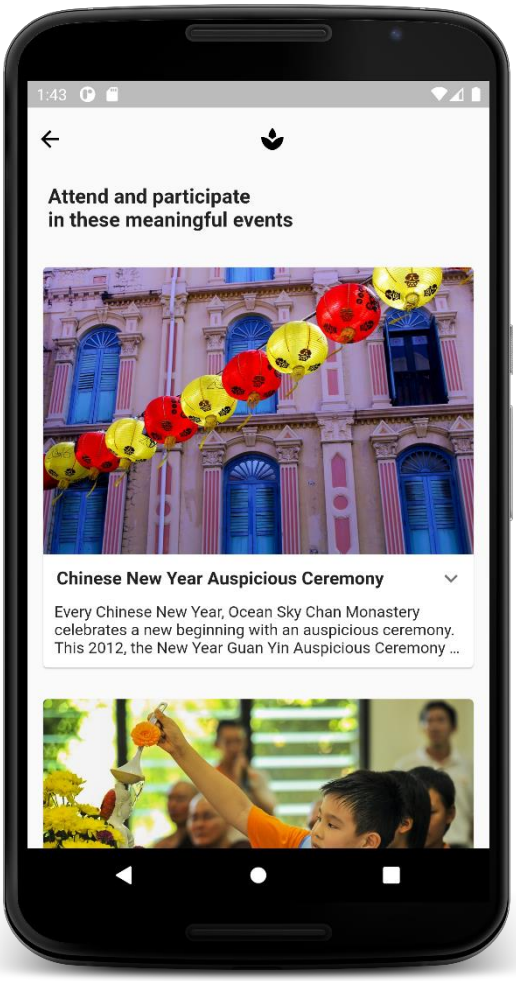


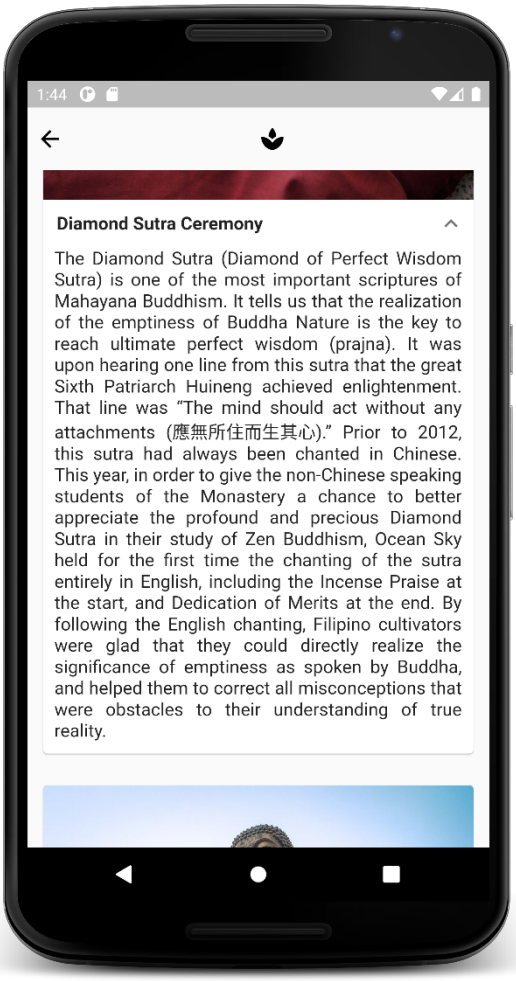
Zen Teachings Home Screen and PDF Viewer



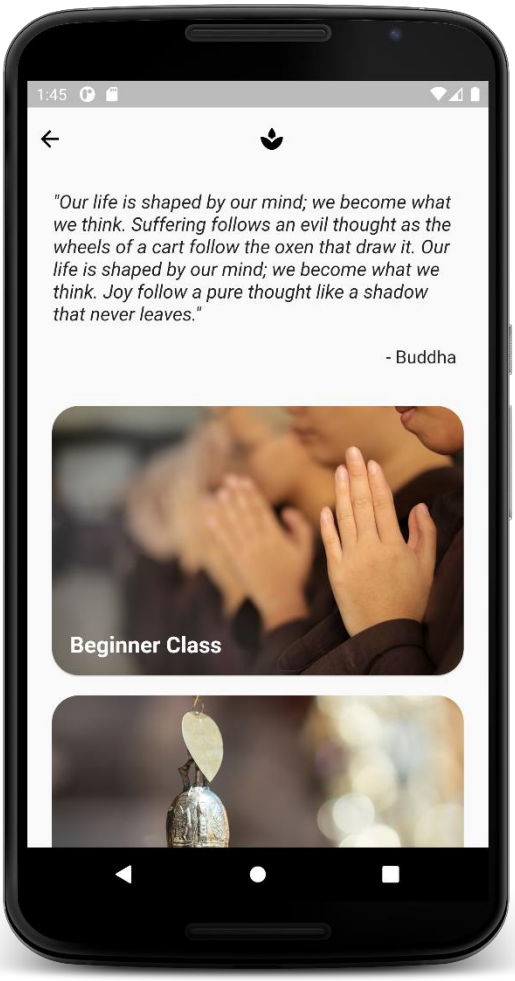


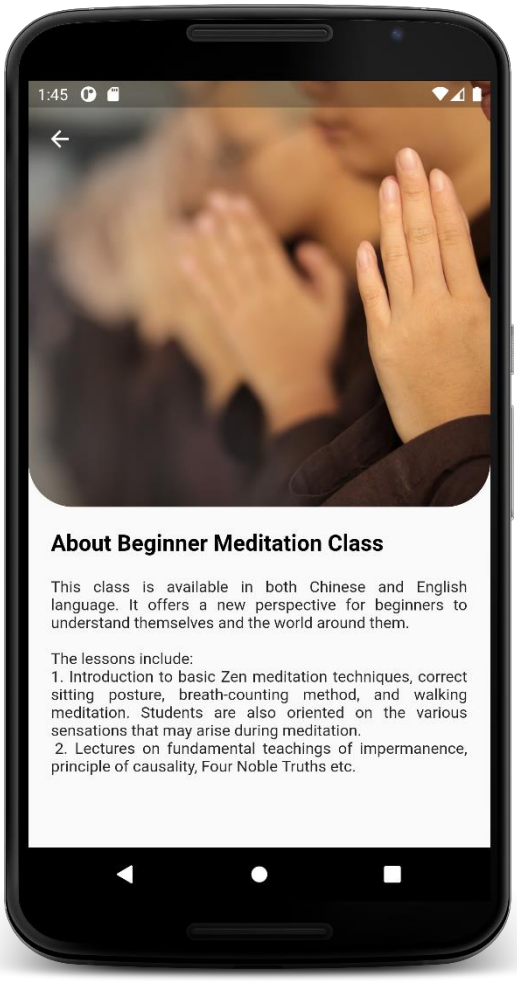
Ceremonies Home Screen and Expanded Card





Zen Meditation Classes Screens





Chapter IV

PROJECT ASSESSMENT

A. User Testing

Testing procedures

1. Build the APK
2. Share to the testers the latest APK release
3. Provide the test scenarios and app functionalities
4. One on one discussion of feedbacks

Since the mobile app was on the testing phase, the only way to access it is thru an APK. It is the android application package file format used by the Android operating system which can be distributed and installed in an Android device. Basically, this is the fully working output of the application that does not need to be installed via Play Store. Due to its pre-release state, I decided to have a very limited users to restrict the distribution of the APK to the general public. However, I make sure I cover relevant target audience to assess the effectivity and ease of use of the mobile app.

For every change made in the code, an APK needs to be generated. Testers need to install the latest APK and uninstall the old version to make sure that the expected output will be shown. All of the users who participated has prior experience on using any apps in the market. Test scenarios were given which includes the functionalities to be tested, the steps and expected output. The good thing about the limited participants is the opportunity to conduct one on one discussions on how the testing went. It was also a good avenue to directly explain to them some aspects of the app and the reason behind the implementation.

How the bugs are found

Most of the bugs were identified during the unit testing. I executed the same test scenarios that I provided to the test participants and made sure that everything was working as expected before I will build the latest APK. Surprisingly, no bugs were identified during the UAT. No issues as well in terms of the app performance and loading of image assets. The feedback was more on the design, user interface and future improvements.

Participant demographics

- Gender – both male and female participated
- Age – diverse brackets such as teenage, 30's, 40's and 60's
- Tech-savvy skill – covers different levels of internet and app knowledge

Test Specifications

No.	Functionality	Expectation	Result
TC-1	Chant Menu	User must be able to add a new chant entry	
TC-2		User must be able to add a title and note	
TC-3		Counter increment and decrement must be working	
TC-4		User must be able to update the note and delete	
TC-5		User must be able to see the overall total count	
TC-6		User must be able to see the total count for today	
TC-7		Today's counter should be reset each day	
TC-8		Progress status should be shown on each note	

TC-9	Meditate	User should be asked to input their desired duration time	
TC-10		User should be able to pause, resume and cancel the ongoing timer	
TC-11		Timer should be saved	
TC-12		A graph will show the total counts accumulated per day	
TC-13	Teachings	Each card should load a PDF content	
TC-14	Ceremonies	Image assets should be displayed on each card	
TC-15		Once the card is expanded, the fonts will increase and the entire content will be shown	
TC-16	Classes	Image assets should be loaded on all the cards	
TC-17		Once the card is clicked, the information text should be displayed	

B. Testing Results

Using the test specifications shared to the participants, all of the results yielded a successful outcome. The mobile app functionalities are working as expected. There were no issues reported in terms of app performance and loading time. Below are some of the comments received during the UAT:

"Reverse the color gradient of the chant home screen."

"After the timer is finished, should it display "Start again?""

"Color gradient and overall design looks nice."

"Create a profile page to make it more personal."

"The PDP viewer is a good feature."

Chapter V

Discussions

As I went along with this project, I am proud that I was able to learn mobile applications development in a short span of time. Internet is a really powerful tool to learn something new and a good medium in achieving your goals. It only proves that we can be productive even at times like this. Moreover, as we live in this new normal, there are several factors that hinder me from completing the project. The demand from work sometimes eats up most of my time and led to physical burnout and stress. Since the technology used as mentioned was new to me, I would usually get stuck to some modules. There are also certain aspects in the implementation that I underestimated that affect my development timeline. But in spite of these, I managed to overcome those challenges and made me even more disciplined and focused on my goal. I utilized the dev docs and forums to better understand the development toolkit, I would normally keep a diary of my achievements and set weekly goals that I need to do. I adjusted my daily routine when it comes to work so that I can be more efficient in completing certain tasks. The whole journey towards finishing this project not just fulfills my goal in completing the requirement to finally graduate but most importantly, it teaches me to trust and believe in myself more that I can finish this project despite the challenges I encountered and to change our mindset and attitude if you want to succeed in something. Resilience and dedication even in the most difficult times.

Maintenance Plan

The application will be maintained solely by the author. A version release will be conducted if and not limited to: bugs were found, additional content is requested, and a new feature is introduced

Chapter VI

CONCLUSION

This project aimed to develop a mobile application that will serve as a tool to continuously participate in the reciting of sutras to promote mindfulness, purify our minds, for protection and several other beneficial things. Now, I understand the complexity and amount of effort that a team or developer is providing to be able to create an app or even just an update on the code for any new required changes. Based on the UAT result and the feedback provided by the participants, it can be concluded that the application was able to provide to the users the satisfaction of an automated and offline resource in managing chanting records and learning more about Buddhist teachings in an organized and portable way. It also provides convenience to the users because records can now be stored systematically. Moreover, Flutter is a very good developer toolkit for anyone aspiring to become a mobile developer. My key takeaway during the implementation of this project is that if you are passionate about something, you will find a way to make it happen and it will enable you to be the best you can be.

Chapter VII

FUTURE WORK

This application has a lot of room for innovation and improvement. It is a good start to know more what new features or contents that can be added to make it more interesting and engaging to users. The changes can be discussed with the author depending on the outcome of the assessment.

High Priority Features:

- A way to download the user data for backup and be able to restore it after the app has been reinstalled.
- User profile creation to make it more personal
- Create a Settings page to manage data and other settings

Medium Priority Features:

- Replace drawer/hamburger menu with bottom navigation
- Re-design the wireframe and user interface

Low Priority Features:

- Add music and audio assets
- Daily motivational quotes refresh on homepage

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APPENDICES

“App” – application
Bodhi mind– our fundamental mind and nature
Bodhisattvas – are enlightened beings who have put off entering paradise in order to help others attain enlightenment
KPI – key performance indicator
Sutra – scriptures of Buddha’s teachings for guidance and proper understanding

User Guide to App Installation

1. Via APK, using the latest app version, install the APK on your Android device by tapping the icon.
2. Via Google Play Store, search the app and click Install.

***Please contact the author for a copy of the latest APK or to know the official app name*