Computer Bsian

Project Report

#4

Final Report

1. Project Summary:

This section will give a brief overview of the Positive Thought Card project.

1.1. Introduction:

- The Positive Thought Card mobile application is designed to enhance the well-being of VinUniversity students. The application is aimed at promoting positive thinking and mental health among VinUniversity by providing a platform for students to access daily positive quotes and engage in activities that promote well-being.

1.2. Features

- Daily positive quotes: The application sends daily positive quotes to students to start their day on a positive note.
- Calming music: The application includes a feature that allows students to listen to calming music to release stress while using the app.
- User-friendly interface: The interface of the application is intuitive and easy to use, making it accessible for students of all ages.
- Administration: The app owner can manipulate the card design and plan future updates through the administration feature.
- Personalization: For each card was drawn by user, it would later be used to create their own journey on the way of achieving positivity.
- Push notification: A daily reminder for user to use the app.

Up until now, the application has fulfilled most of the client's requirements, delivering features such as daily quotes, log-in/log-out function, sign-up, etc...., however, there are still some features such as admin page and user personalization that have not been delivered due to time constraints. Thus, the following sections will lead you through our journey creating the application, what is included in the handover package that will later be given to the client, as well as the user manual.

2. Project Development:

2.1. Overall:

In this project, we build a cross-platform native mobile application according to our clients' needs. With the main programing language Javascript and React Native framework, we can build an app that can run on both iOS and Android devices.

2.2. Frontend:

2.2.1. Frontend Architect:

- In this project, we apply component-based architecture, which means that the app is built as a collection of individuals, reusable components that can be combined to form the complete application, where each UI components will be applied into different aspect of the app's functionality such as changing user profile picture, or card drawing.
- With React Native framework, we also use Expo in our project. Expo is a platform that provides tools and services for building mobile application that simplify the development process with powerful CLI that help us build and run our app locally, support fast refreshing and inspect dependencies between many Javascripts package.
- We also use the Galio Framework, which is a UI framework built on top of React Native, that provides a set of UI components, such as buttons, text fields, and navigation bars, that can be used to quickly build the user interface of the app.
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2.2.2. Code Structure:

- App.js: The root component of the app, where you define the navigation structure and the top-level UI components.
- components/: A directory that contains Button UI components that are used for Account Screen.
- screens/: A directory that contains all the screen components, which represent the different pages of the app.
- constants/: A directory that contains values that do not change in the app, which are:
    - Images: contains variables that link to photos in assets folder.
    - Theme: contains color variables for difference usages.
    - Utils: use to change the scale of the screen to fit different devices.
- assets/: A directory that contains any static assets used in the app, which are background images, card images.

2.3. Backend:

In this project, our backend tasks are mainly centered on creating a database to store users' account information. Specifically, our application use Firebase to save user login/signup data via email and password. Here is the step-by-step implementation:

1. Set up a Firebase project: We go to the Firebase console and create a new project. Then, we follow the setup instructions to add Firebase to our app.
2. Install the Firebase library: Next, we install the Firebase library in our React Native project.
3. Initialize Firebase: Next, we initialize Firebase with our project's credentials and API key.
4. Create a Firebase Authentication method: In the Firebase console, we go to the Authentication section, then to the Sign-in method tab and enable the email/password sign-in method.
5. Implement email/password sign-up: In your React Native code, create a sign-up and log-in function that creates a new user in Firebase with the provided email and password and signs in an existing user with the provided email and password, respectively.
6. Store user data: After successful sign-up or sign-in, we store the user data in Firebase using the Firebase Realtime Database and Firestore for storing username, email and password.

For push notification, we use Expo tools to create a notification in the development environment. In this project, we are required to have notification appeared when the app is not running, the app is running on the background and foreground. By using Expo tool, the process of developing an service for pushing notification is faster with the following procedure:

1. First, create a function that takes Expo push token as input and uses it to send a push notification using the "fetch" API.
2. Next, we create a function named "registerForPushNotificationAsync", which is an asynchronous function defined in the React Native app code that uses the expo-notifications library to register the device for push notifications and get the Expo push token.
3. After we have the push token (format" ExponentPushToken[xxxxxxxxxxxxxx]"), we then use it on the https://expo.dev/notifications in order to send notification to user through Expo server.

To create a database for displaying the cards, we simply store the content of the cards in an array, and using random function to allow users to draw a card randomly with a random content randomly selected from the array.

2.4. Testing:

We conducted a user testing on VinUniversity students on the Wellness Day, with the first product was a website-based application as our MVP. Here, we let the user test every possible action that one can make while using the app and then get their feedback through Google form for later processed. As a consequence, the testing session on Wellness Day was one of the main reasons for us to migrate the application to mobile based instead of web based.

When we were done with our first version of the mobile application, we also ran a test session for our colleagues to try out the app and did a similar method as before to find bugs if it existed.

3. Handover Package:

3.1 Code repository:

https://github.com/Lammartial/Positive-Thought-Card_ComputerBsian_Mobile-App (github.com)

https://github.com/Lammartial/Positive-Thought-Card_ComputerBsian_WebApp (The older version as we migrated from web-based to mobile-based)

3.2 Team workspace

Team Computer Bsian uses a combination of Microsoft Teams, Slack, and Github as their team workspace to facilitate collaboration, communication, and project management. Microsoft Teams provides virtual meetings and file sharing, Slack offers real-time communication and integration, and Github is used for version control and software development collaboration. The use of these tools has improved team efficiency and workflow.

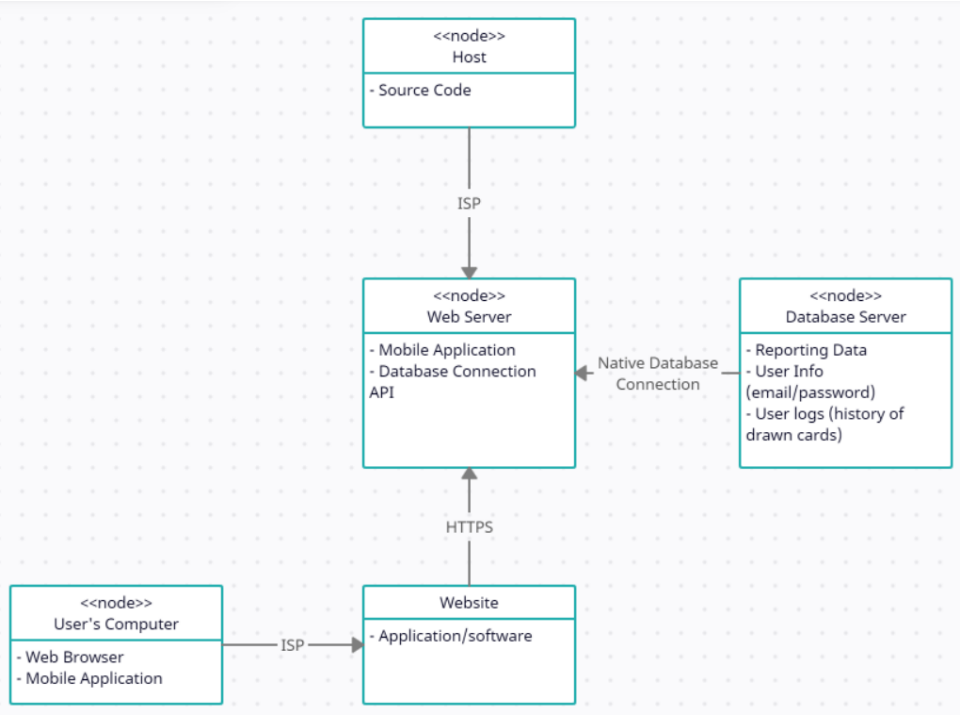
3.3 Documentation

3.3.1 Requirement analysis and specification

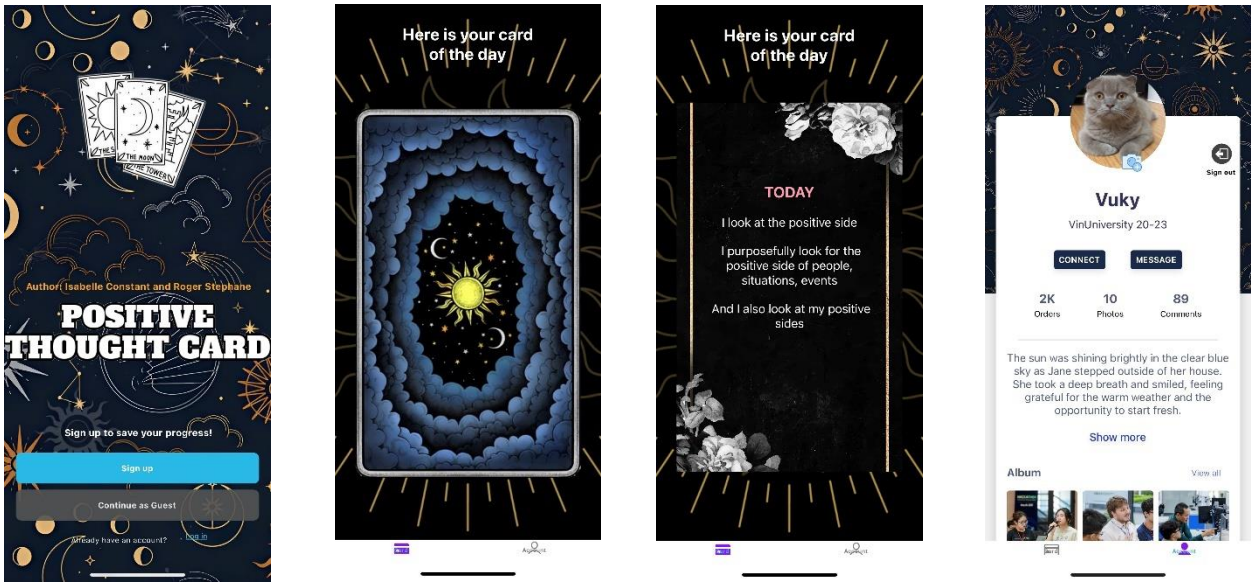
The goal of the project is to create a mobile application aimed at promoting mental wellness among students. The app features a collection of "cards" from which a random card is displayed each day,

providing a positive thought or message for the user to reflect on. These cards serve as "food for thought" and encourage users to focus on their mental wellbeing.

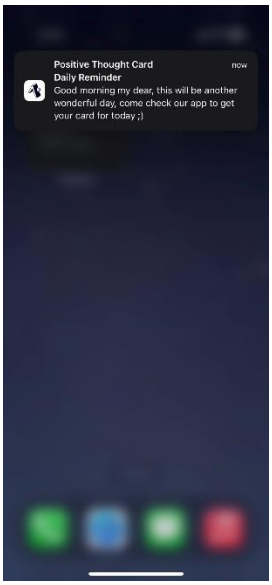
3.3.2 Architecture diagram

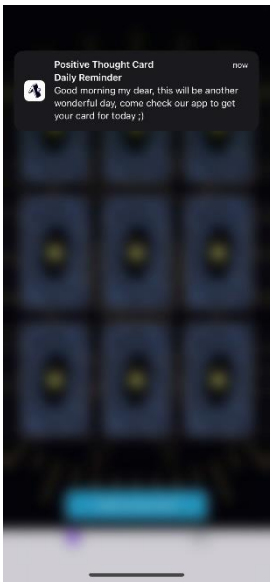


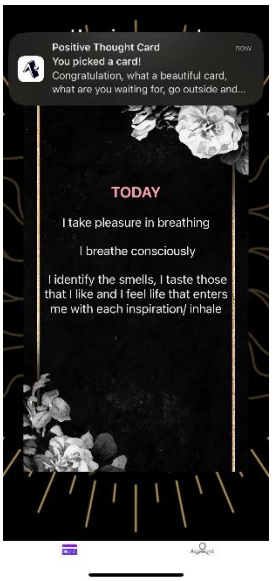
3.3.3 Final UI

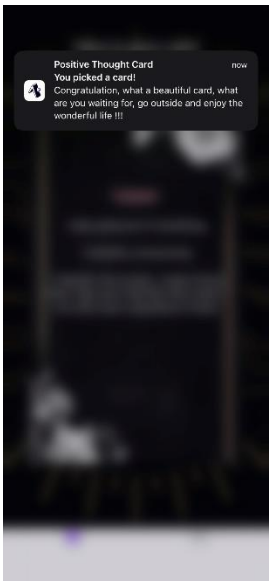


When having push notification:









3.3.4 Development workflow

Sprint 1:

- Migration from web to mobile

- Log-in, log-out, sign-up, log-in as guest function and page

- Card set selection page

- Card view page

- Set up database

Sprint 2: - Notifications

- Favorite Card + Save/Share Card

- Filter function

- User settings (Simple personalization: Display Name, Profile Pic + Settings)

Sprint 3:

- Monthly Recap function

- Brief instruction on user's first log in

- User History – Notifications

3.3.6 Introduction video

https://drive.google.com/drive/folders/1-Q0t3nXzBTM95IsD3vJjePE_VNJ4Bx5R

3.3.7 User manual

https://vinuni-edu.gitbook.io/positive-thoughts-card-user-manual/

3.3.8 Maintainer's manual (included in the handover package)

4. Teamwork:

In this project, our team has seven people:

- Nguyen Trong Nhan: Project Manager
- Nguyen Tran Chung Vu: Frontend Leader
- Vo Khoi Thanh Lam: Backend Leader
- Ngo Hoang Dung: Frontend Developer
- Vu Ky: Frontend Developer
- Le Nguyen Nhat Minh: Frontend Developer
- Tong Duy Hai: Backend Developer

For communication, we set up a group in Jira to manage our sprint and using Slack as a main communication channel between members. For version control, we using Git and GitHub for collaborative work.

5. Discussion:

The Positive Thought Cards app is a smartphone application that uses daily positive affirmations and peaceful music to assist users to enhance their mental health and well-being, specifically targeting the VinUniversity community. This app has the ability to improve the lives of students looking for an effective and accessible answer to their mental health. The app, like any other technology, has advantages and disadvantages.

One of the most significant benefits of the Positive Thought Cards app is its portability. Because the software is conveniently available through mobile devices, users can obtain positive affirmations and

calming music at any time and from any location. This is especially useful for students who are constantly on the go and may not have the time or resources to seek out mental health care elsewhere. Another feature of the app is its low cost. The app is available for free or at an exceptionally low cost (if a beta version is created), making it a cost-effective alternative for anyone looking to enhance their mental health. This is especially significant for students on a limited budget who cannot afford more expensive alternatives. The software is also configurable, allowing users to select from a wide range of affirmations and music. Users can adjust the app to their unique requirements and tastes, making the experience more personalized and effective. The Positive Thought Cards app fosters user participation by offering daily affirmations and tracking their progress. This encourages users to actively participate in their own mental health, making the experience more meaningful and successful. Finally, the software protects the privacy of users' mental health information by not collecting or keeping any personal information. This is crucial for people who are concerned about the privacy of their mental health information and want to ensure that it is secured.

However, the Positive Thought Cards app has several restrictions. One limitation is the lack of features. The software only offers basic functions like daily affirmations and soothing music, leaving potential for advancement in terms of additional features that encourage mental wellness. The software, for example, could benefit from the addition of interactive activities or gamification components that would make the user experience more engaging. Another disadvantage is the app's lack of interactivity. The software largely relies on users reading affirmations, which may be tedious for some. Including interactive activities or gamification features could improve and enhance the user experience. The software does not offer any professional assistance or resources to users who may be experiencing mental health difficulties. This may not be appropriate for people who want expert assistance and may need to explore alternative alternatives. Another constraint is the reliance on technology. Users who may not have access to a mobile device or prefer alternate methods of promoting their mental health may find the program unsuitable. This may limit the app's reach and prevent it from reaching individuals in greatest need of mental health care. Finally, the app's restricted reach may be a source of concern. The app may not reach those who need mental health support the most, such as those who are isolated or have restricted access to technology. This may limit the app's influence and prevent it from reaching its full potential.

To conclude, the Positive Thought Cards app is an excellent resource for VinUniversity faculties and students seeking to improve their mental health and well-being. Positive affirmations and soothing music on a daily basis have the potential to encourage positive thinking and reduce stress. The Positive Thought

Cards app has the potential to become an even more powerful tool for encouraging positive thinking and mental health with future updates and upgrades. App developers must evaluate user feedback and provide updates and adjustments to improve the user experience and fix any constraints. As a result, the Beneficial Thought Card app can continue to have a positive impact on students' well-being and help them live happier and healthier lives.