**Product Design**

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| ***Revision Number*** | ***Revision Date*** | | ***Summary of Changes*** | | ***Author(s)*** |
| *Initial* | *09/25/2023* | | *Initial Creation* | | Austin,  Akash,  Hadia,  Shawana, Timmy |

# Class Diagram(s)

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# ER Diagram(s)

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# User Interface Wireframe(s)/Screenshot(s)

# \*Wireframe in Sprint 1

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| **A screenshot of a login screen  Description automatically generated** | **A screenshot of a login screen  Description automatically generated** | **A screenshot of a computer  Description automatically generated** |
| **1: Login Screen**  Purpose:  - User can login in the app by putting in information like email and password.  - New user can click on Signup to go to sign up for the app. | **2: Signup Screen**  Purpose:  - User can sign up for the app by creating a unique username, putting in a valid email and creating a password. | **3: Home Screen**  Purpose:  - User will land to home screen after logging in. They can access mood tracking, regular check-ins, and goals. |

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| **4: Menu**  - Helps access most of the screens in the app. | **5: Chat Screen**  - User can chat with the bot on chat screen. | **6: Goals Screen**  - User can write down goals for the future and access previously created goals. |

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| **7: Profile Screen**  Purpose:  - User can customize their profile by adding a photo, name, email and phone number. | **8: Conversation History Screen**  Purpose:  - User can access previous conversations based on the date of the conversation. | **9: Emotion History Screen**  Purpose:  - User can see their emotion history throughout the month.  - User can also see how they felt on a certain day based represented through emojis. |

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| **10: Password Reset Screen**  Purpose:  - User can reset their password. | **11: Settings Screen**  Purpose:  - User can select a language, adjust text size and choose theme (dark or light) based on their preferences. | **12: Check-in Screen**  Purpose:  - User can write down the emotion they are feeling (happy, sad, angry, etc.) and write down any notes to self. |

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| **A screenshot of a computer  Description automatically generated** |
| **13: Conversation History Screen**  Purpose:  - Once the user puts in information about their mood/emotion, the confirmation pop up appears to confirm mood check in. |

**Link Analysis:**

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**Link Analysis Description:**

* Login Screen (1):
  + Login button 🡪 home screen (3)
  + Signup link text 🡪 Signup screen (2)
* Signup Screen (2):
  + Sign in link text 🡪 login screen (1)
* Home Screen (3):
  + Check in option takes to the Check in Screen (12)
  + Check in submit button takes to the Check in Confirmation popup Screen (13)
  + Lines on the top right corner of the Home Screen (3) takes to the Menu Screen (4)
* Menu Screen (4):
  + Login 🡪 Login Screen (1)
  + Chat 🡪 Chat Screen (5)
  + My Goals 🡪 Goals Screen (6)
  + My Profile 🡪 Profile Screen (7)
  + Conversation History 🡪 Conversation Screen (8)
  + Emotion History 🡪 Emotion History Screen (9)
  + Password Reset 🡪 Password Reset Screen (10)
  + Settings 🡪 Settings Screen (11)

Note: ‘🡪’ means ‘takes you to’ in this context. For example, ‘login button 🡪 Login Screen’ means ‘login button takes you to login screen’.

# Design Summary

Our class diagram simple outline: (You can possibly use this when making the class diagram, it’s a simple idea overview)

Class Diagram:

For the class diagram, there are more things added to the diagram. The first thing is the Operating system which must be valid before the app can run. Then there is the account which has the sign-in/register and the quick login section, selecting sign-in leads to the sign-in page making use of a username and password, and register prompts one to create an account. The quick login utilizes established social media accounts to enable fast login.

The homepage contains the performance, AI chatbot, Profile, emergency contact, and settings page all of which can easily be edited as one pleases  
We will need to think of more methods and variables and expand this throughout project development.

ER Diagram:

User:

Attributes: userID, username, age, Gender, education, Location, purpose, physical health, Anonymity

Methods: login(), logout(), logFeeling(), viewHistory()

Message:

Attribute: messageID, conversationID, Timestamp.

Profile:

Attribute: ProfileID, UserID, depressionHistory.

Pattern:

Attributes: patternID, patternName:

Conversation:

Attributes: conversationID, userID, Timestamp.

Methods: initiateChat(), analyzeResponse(), correlateEvents()

Emotion:

Attributes: EmotionID, UserID, EmotionType, Timestamp.

Method: getEmotion(), SetEmotion().

FeelingsLog:

Attributes: logID, UserID Emotion type, Timestamp.

Methods: addLog(), viewLogs()

UserPattern:

Attributes: UserPatternID, UserID, PatternID.

Methods: getUserPattern(), associateUserPattern()

EmergencyContact:

Attributes: ContactID, UserID, ContactName, ContactPhone.

Methods: addContact(), UpdateContact(), removeContact().

Relationships:

User and ChatHistory: One to Many (One user can have many chat histories)

User and FeelingsLog: One to Many (One user can have many logs)  
User and Profile: One to One (User has only one profile)  
User and Emergency contact: One to many(one user can have multiple emergency contacts)

# Design Rationale

**Considered Designs:**

**Cloud-based AI**: We initially considered leveraging cloud-based AI systems for the chatbot feature. However, this was ruled out in favor of local AI execution, emphasizing user privacy and data security.

**Application Development Environments**: We briefly considered using Unity or Xamarin Forms to create the application because of some of the features each tool possessed. We disregarded these different tools though because there exist better and more focused tools for our use case.

**Selected Design and Rationale:**

**Flutter Mobile Application:** Flutter was chosen for its cross-platform capabilities, allowing a single codebase to cater to both iOS and Android users. This optimizes development resources and ensures consistent user experience across devices. Flutter also runs on Dart, which is a language like C#, which simplifies a lot of the tediousness of working with C, a language all members of the team are familiar with.

Our decision to use flutter was also in part to Flutters ability to simplify UI creation. With Flutter, making intuitive and easy to use UI is much easier.

**Local AI execution:** Keeping the AI operations local ensures data privacy. Users will be more inclined to be honest and open if they know their sensitive data isn't leaving their device. Keeping the AI local also makes it so that our application does not rely on external servers, so the project will continue to work even without future lack of support.

**User Log Feature:** Allows users to actively record their feelings, fostering a sense of engagement and responsibility towards their mental health journey. We decided on this because it further encourages the use and appreciation of the apps correlation abilities. Beyond being able to just converse with the AI, you can also use the app to directly store your emotions. Using this feature in tandem with chatting with the AI, allows the user to see possible correlations between events from their day and how they are feeling.

**Simple AI Chatbot Design:** Instead of a complex, multifunctional chatbot, we opted for simplicity to ensure it's approachable, friendly, and doesn't overwhelm the user. Its primary function is listening and drawing insights, in line with our objective to provide users a virtual companion. This design choice decreases the broadness of the AI’s knowledge, but allows the AI to run on simpler devices, and to keep its responsibilities strict so it performs as best it can with its resources.

**Trade-offs and Considerations:**

Local AI execution might limit the computational capabilities compared to cloud-based solutions. However, we believe the privacy advantage far outweighs the potential drawbacks. Users will be sharing sensitive information, and we want to make sure they are absolutely assured their secrets are secret.

Simplicity of the AI may sometimes not capture all complexities of a conversation. We accepted this trade-off for the sake of user-friendliness, preventing misinterpretations that can arise from information hallucinations, and resource usage. By creating a simpler, more focused AI, older devices may be able to run the application because of the lowered device resource requirements. Making our AI model simpler also allows us to personally curate training data due to the smaller dataset needed for training, which will keep responses more helpful and reduce the chance of harmful responses.