

Architecture models: Talk Time Application

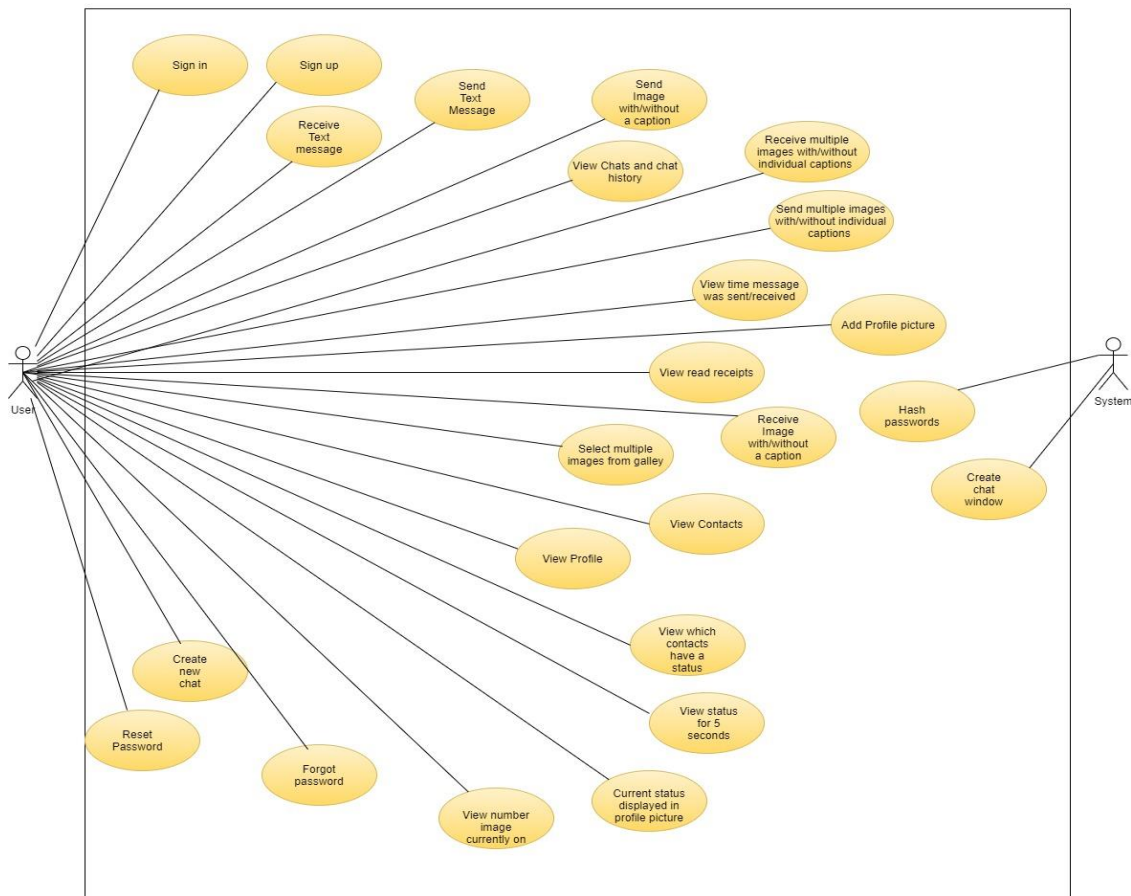


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1. Use Case Diagram

Talk Time
Use Case Diagram

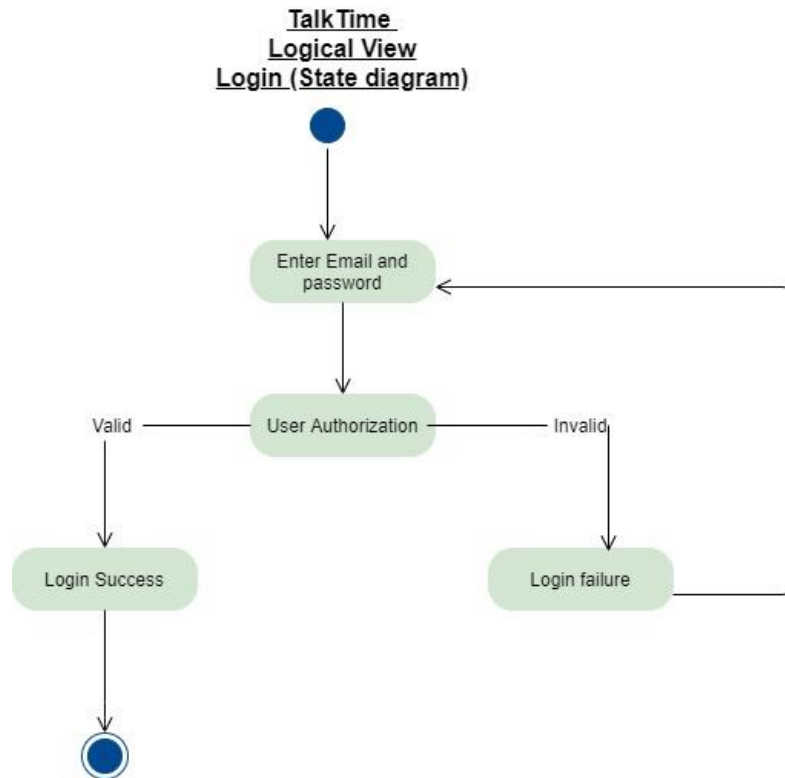


Description:

A user of the Talk Time Application will be able to **Sign in**, **Sign up** and **Register**. Should the user forget their password they will be able to reset their password via an email that will be sent to that users account. Further, once they enter our application, they will be able to **view the contacts** (Everyone who has registered for our app) and then they will be able to begin chatting by **creating a new chat** with a user. They can **Send a text message**, **receive a text message**, **send an image with or without a caption** as well as **receive an image with or without a caption**. They will be able to **view their chat history** of messages as well as they can see the **timestamp of each message sent and received**. They can also see if their message has been “Delivered” or “Seen” via the **read receipts** on the messages. Further, should the user wish to **send multiple images** from the gallery they will be able to select multiple images and send those with or without a caption. They can scroll through the selected images and **view which image they are currently on**. They can also **receive multiple images with or without a caption**. They can **add a profile picture** and **view the profile picture** afterwards. They can **create a status** and **view other people's statuses**. They can **view another person's status for 5 seconds** each time over a 24-hour period. Lastly, they can also **reset their password** should they wish.

On the other side, our system will hash the passwords and create new chat windows for each chat.

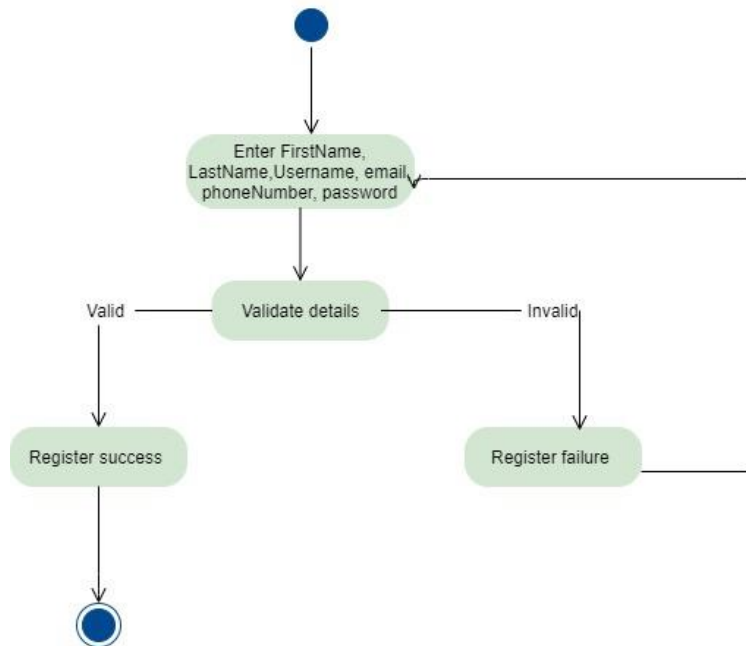
1. Logical View)
 - a. State Diagram



Description:

The client will open the application, they will then be prompted to enter their email and password. If the username and password is correct, they will be logged in, then they will be able to view their unique chat list. If the username and password is invalid, they will be prompted to reenter their email and password.

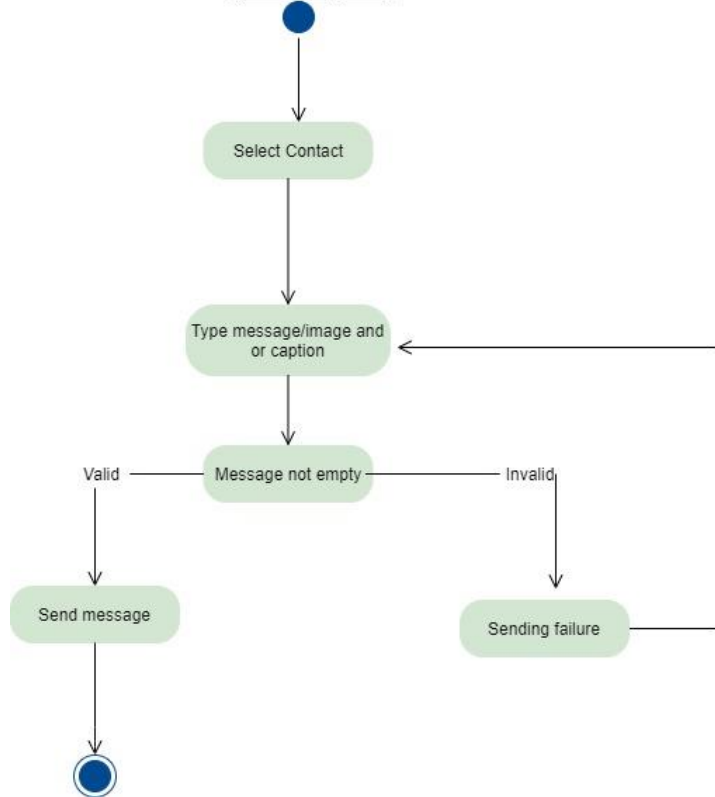
TalkTime
Logical View
Register (State diagram)



Description:

The client will open the application, they will then be prompted to enter their first name, last name, username, email, phone number and password. If the details are correct, they will be registered else they will be redirected to re-enter their details.

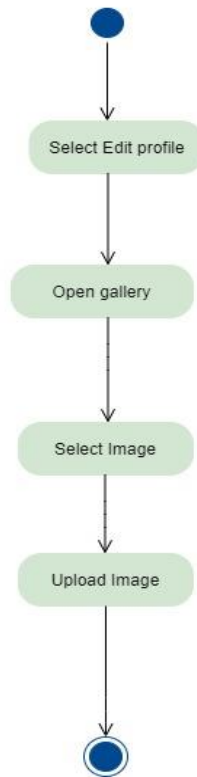
TalkTime
Logical View
Compose new message
(State diagram)



Description:

The client will open the application, they will then select a contact they want to chat with. They will then be able to type a message and add an image with or without a caption. If the message is not empty they will be able to send a message otherwise an error will be displayed and a new message will be able to be entered.

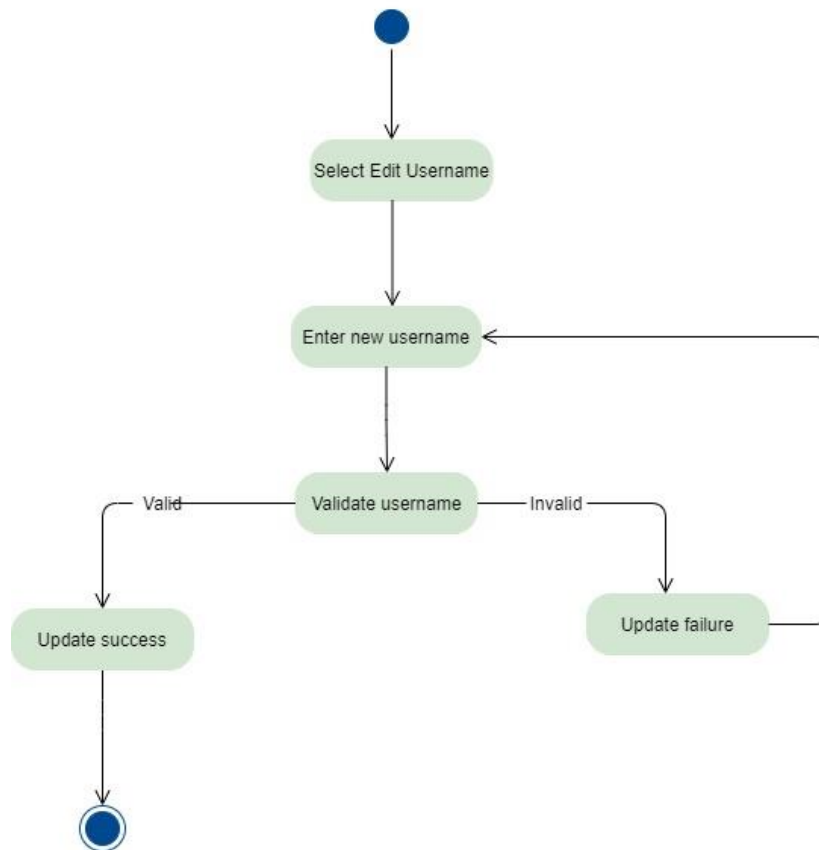
TalkTime
Logical View
Upload profile picture
(State diagram)



Description:

The client will open the application, they will then select edit profile. They will have to grant access to their gallery. They will then select an image and upload the image to their profile.

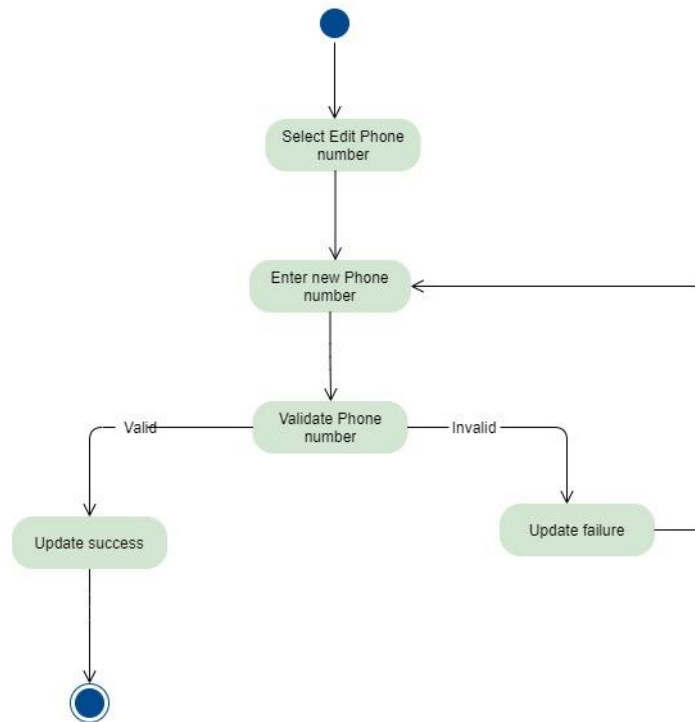
Talk Time
Logical View
Update username(State
diagram)



Description:

The client will open the application, they will then select edit username and they then can enter a new username. The username will then be validated and if the details are correct it will say details updated correctly and if not, they would have to reenter the new username and try again.

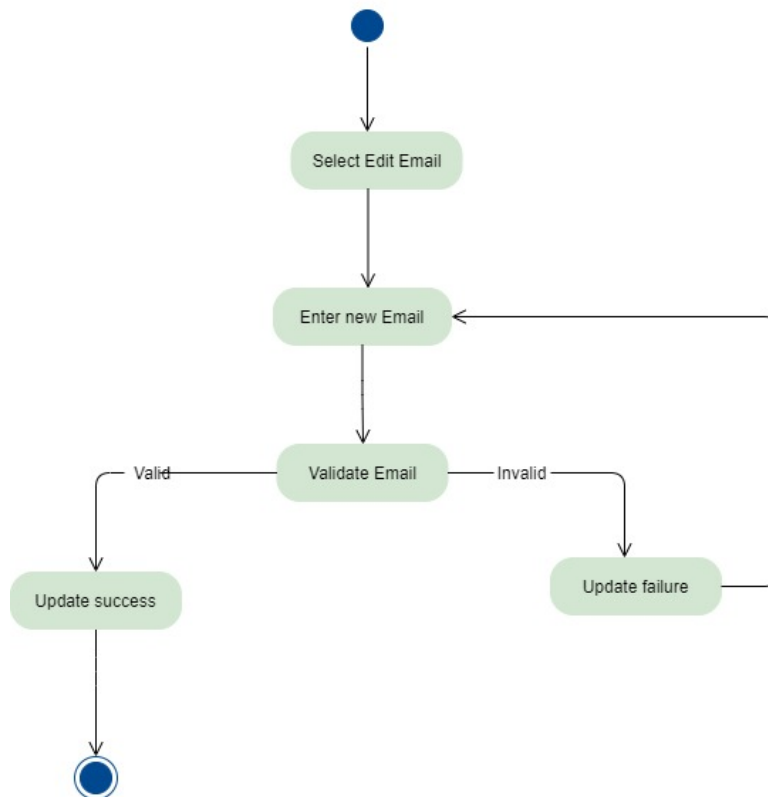
Talk Time
Logical View
Update Contact number(State
diagram)



Description:

The client will open the application, they will then select edit phone number and they then can enter a new phone number. The phone number will then be validated and if the details are correct, it will say details updated correctly and if not, they would have to reenter the new phone number and try again.

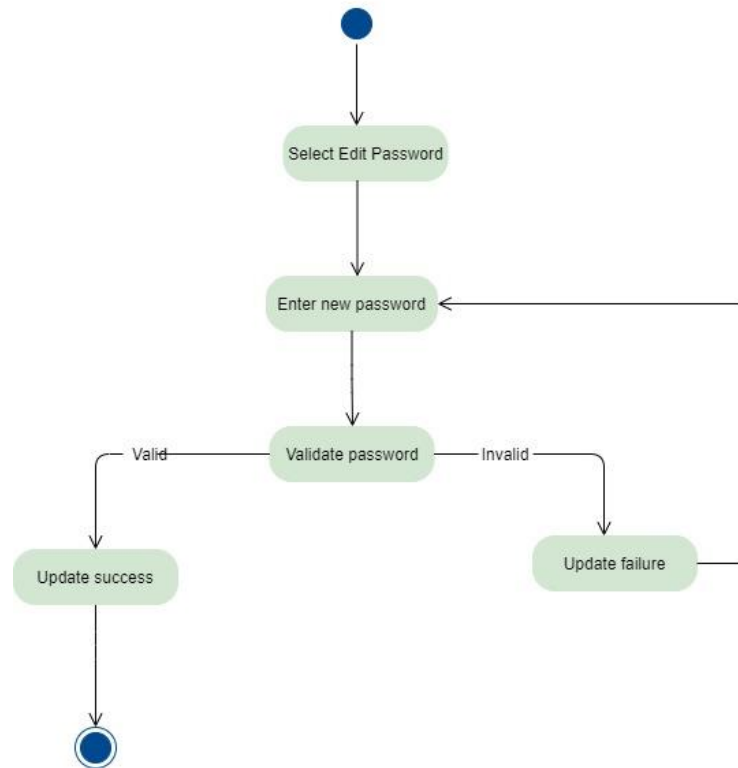
Talk Time
Logical View
Update Email(State diagram)



Description:

The client will open the application, they will then select edit email and they then can enter a new email. The email will then be validated and if the details are correct it will say details updated correctly and if not they would have to reenter the new email and try again.

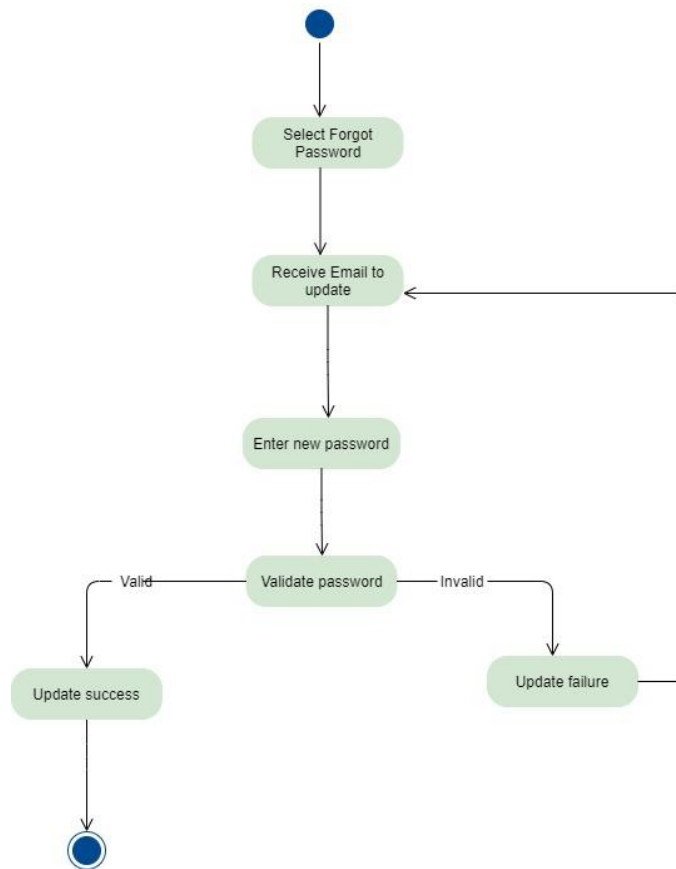
TalkTime
Logical View
Change password(State
diagram)



Description:

The client will open the application, they will then select change password and they then can enter a new password. The password will then be validated and if the details are correct, it will say details updated correctly and if not, they would have to reenter the new password and try again.

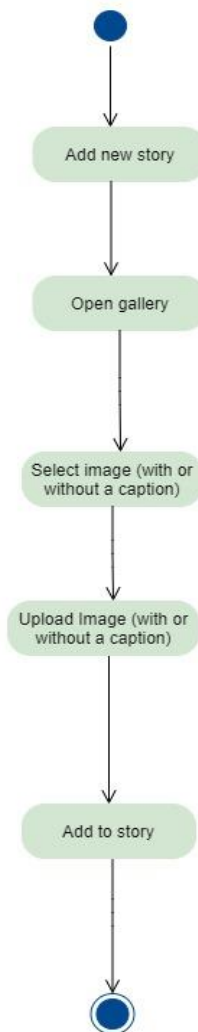
TalkTime
Logical View
Forgot password(State
diagram)



Description:

The client will open the application, they will then select forgot password and they then will receive an email and then they can enter a new password. The password will then be validated and if the details are correct, it will say details updated correctly and if not, they would have to reenter the new password and try again.

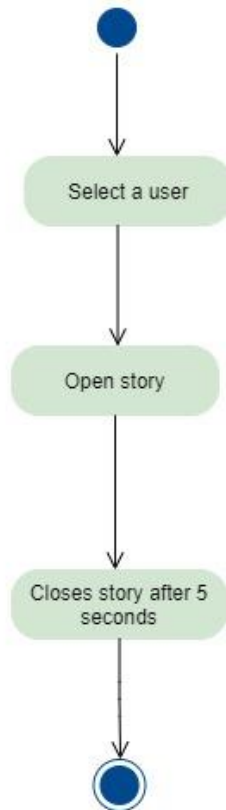
TalkTime
Logical View
Upload story(State diagram)



Description:

The client will open the application, they will be able to add new story. They will have to grant access to the gallery, and they then can select an image and have the option of adding a caption or not. They then can upload the image to their status for other users to view.

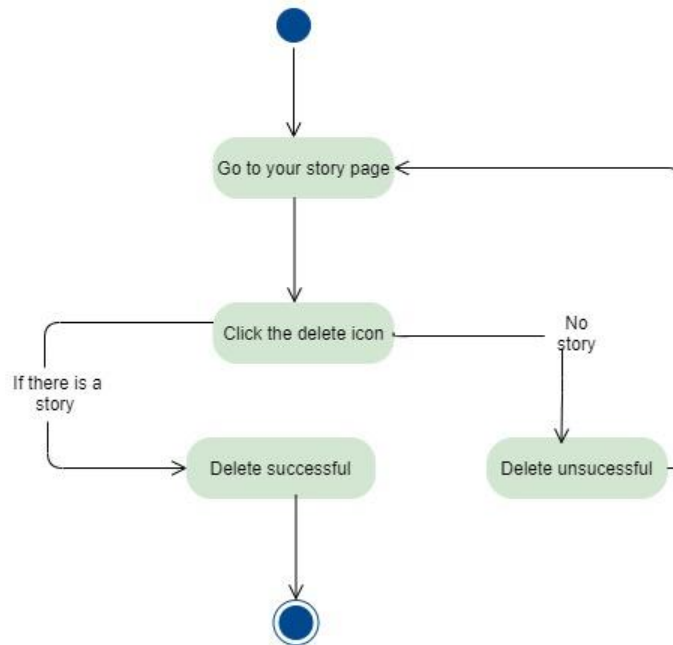
Talk Time
Logical View
View story(State diagram)



Description:

The client will open the application, they will be able to select a user. They will then have the option to select a user who has a story and then open the story. The story will display for 5 seconds and then it will close on their own. You then can view another person's status as well.

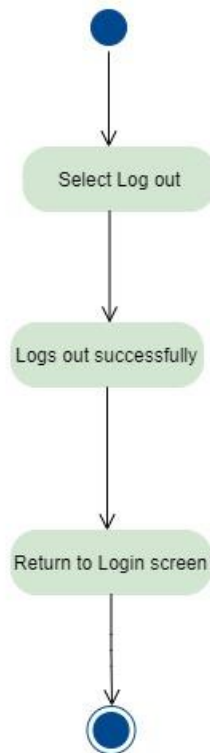
Talk Time
Logical View
Delete story(State diagram)



Description:

The client will be able to delete a story by going to his/her own story page, clicking the delete icon and if there is a story uploaded it will be deleted else you will just be returned to the story page.

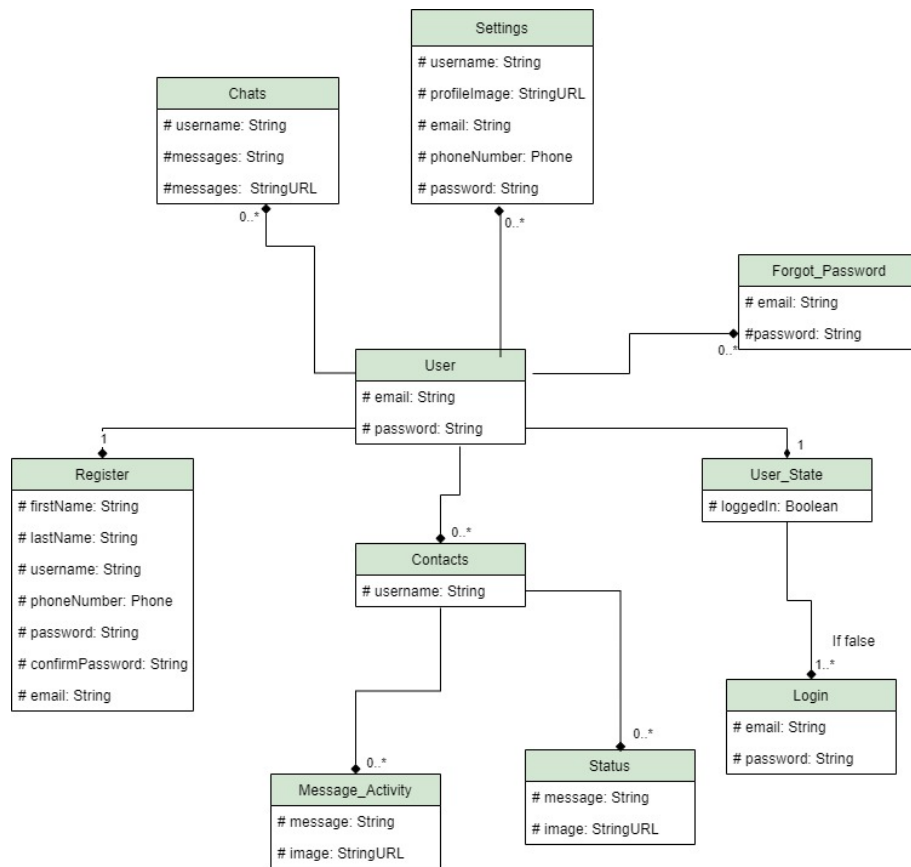
Talk Time
Logical View
Logout (State diagram)



Description:

The client will be able to exit the application, they will be able to logout when they wish to, they will select logout and be returned to the home screen.

b. Class Diagram



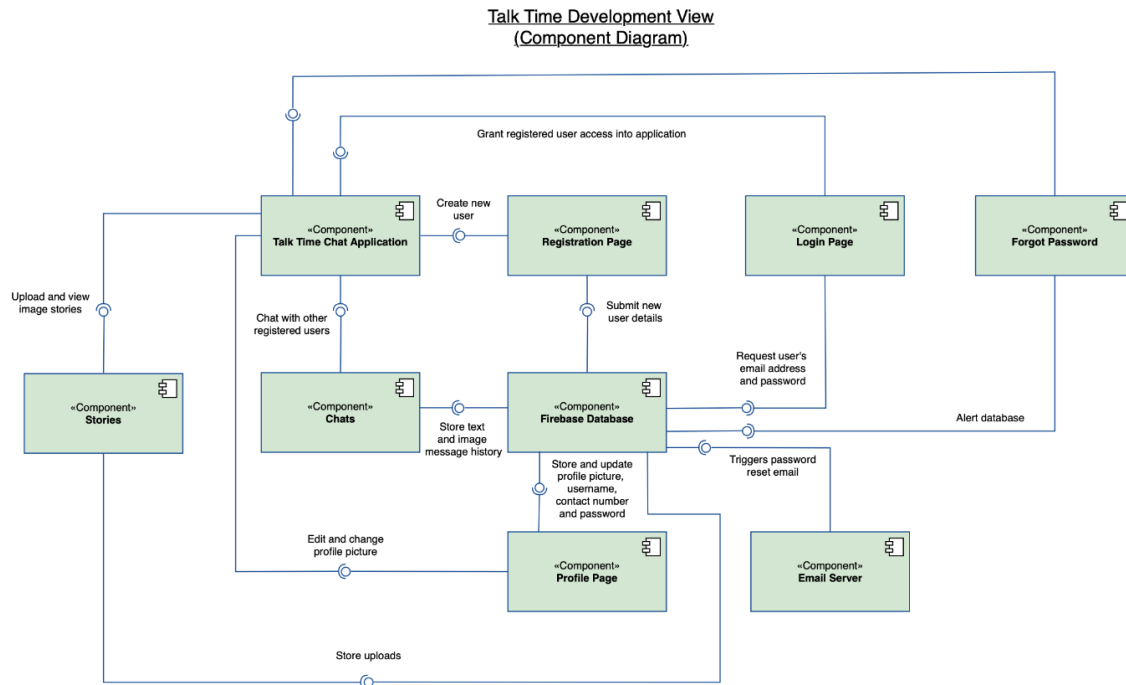
Description:

The above diagram is a class diagram for the talk-time application. It consists of 10 entities. Below we will go through each of them as well as their relationships:

- **Settings** – A user can change his/her settings 0 or many times and the settings can only be changed by that user.
- **Forgot_Password** – A user can reset his/her password 0 or many times and the password can only be changed by that user.
- **Chats** - A user can have 0 or many chats and each chat belong to only to that user.
- **Register** - A user can register only once, and the account only belongs to that user.
- **Contacts** - A user can have 0 or many contacts and each contact belong to every user.
- **Message_Activity** - A user can send 0 or many messages to his/her contacts and each message can only be seen by those 2 users (sender and receiver)
- **Status** - A user can upload 0 or many statuses to his/her stories and each story can be seen by all the contacts.
- **User_State** - A user may not be logged if they not they will be able to login.
- **Login** - A user can Login 1 or many times (i.e., they can logout) and each user can only login into one account

3. Development View

a. Component Diagram



Description:

The Talk Time Chat Application Component Receives data and methods from the following components:

- [Registration Page](#) Component
- [Login Page](#) Component
- [Forgot Password](#) Component
- [Chats](#) Component
- [Stories](#) Component
- [Profile Page](#) Component

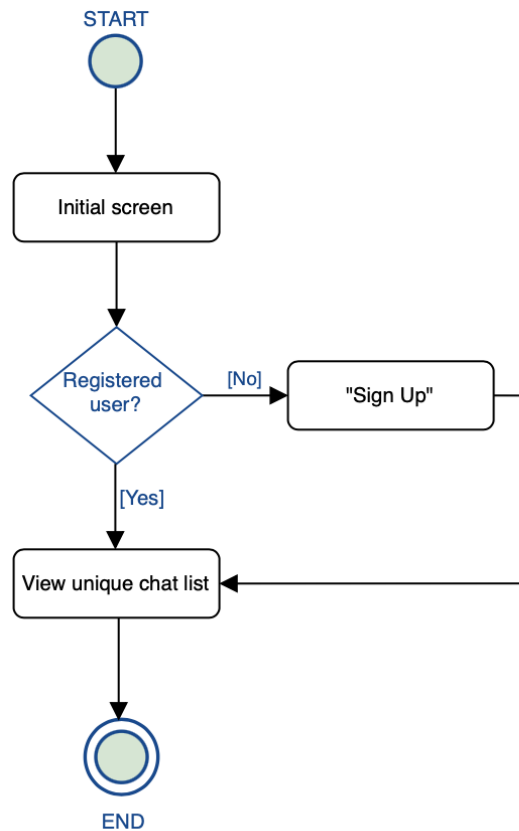
The Firebase Database Component provides data and methods to the components mentioned above.

As soon as the Forgot Password Component alerts the Firebase Database Component that a user has forgotten their password, the Firebase Database Component will trigger the Email Server Component to send an email to the email address provided so that the user can reset their password.

4. Process View

a. Activity Diagram

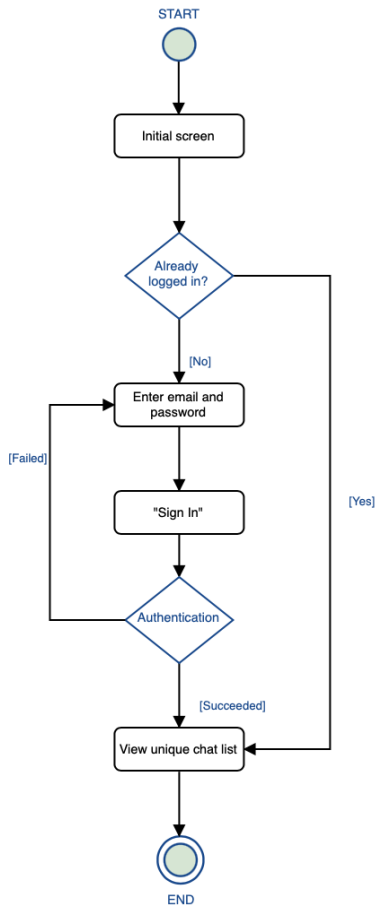
Talk Time Process View (Activity Diagram) Registration Page



Description:

The client will open the application, which will initiate the welcome screen. If the client is using the application for the first time and has not registered yet, then they can do so by signing up. Once signed up, the client will be allowed into the app and can view their unique chat list. If the client is already a registered user, they will be permitted to view their unique chat list without having to fill out any registration details.

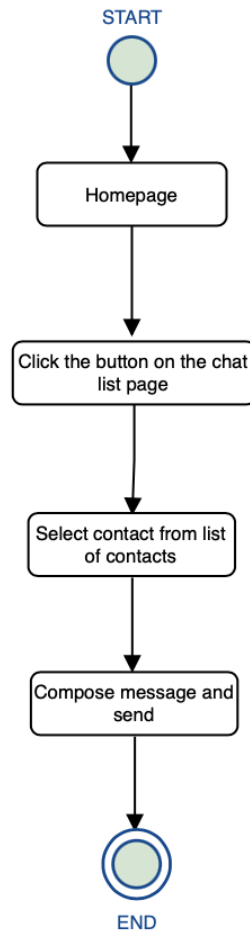
Talk Time Process View
(Activity Diagram)
Login Page



Description:

The client will open the application, which will initiate the welcome screen. If the client is already logged in, they will be able to view their unique chat list. If the client is not logged in, they will be required to first enter their email address and password and then click the 'sign in' button. If the authentication fails, the client will be required to enter their email address and password again. If the authentication is successful, then the client will be granted access into the application, and they will be able to view their unique chat list.

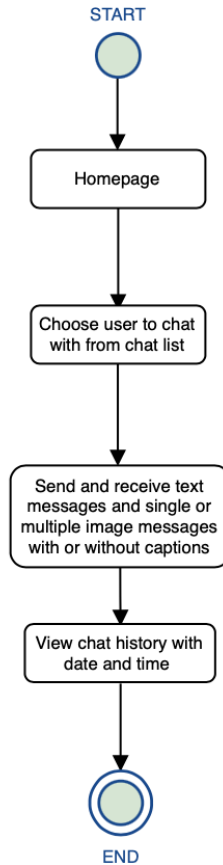
Talk Time Process View
(Activity Diagram)
Compose New Message



Description:

The client will be on the homepage once logged in. They will be able to navigate to their unique chat list page and click the relevant button to start a new chat. Upon this action, a list of contacts will be displayed and the client will be able to select any user from the list. The client can then compose the message and send it to the relevant user.

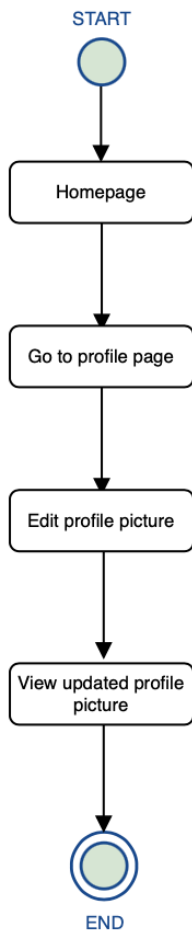
Talk Time Process View
(Activity Diagram)
Chat With Other Users



Description:

The client will be on the homepage once logged in. They will be able to select any user from their unique chat list and can choose to send a text message, a single image message with or without a caption and/or multiple images with or without messages. They can also receive these types of messages. The client as well as other users will be able to view a complete chat history with the correct date and time at which the message was exchanged.

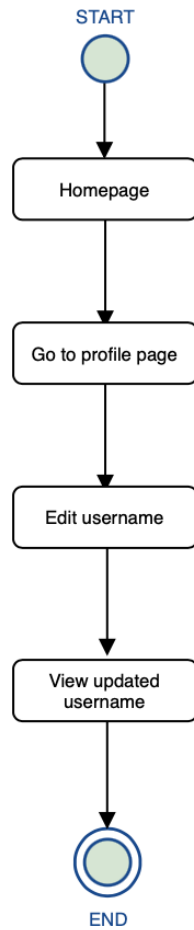
Talk Time Process View
(Activity Diagram)
Update Profile Picture



Description:

The client will be on the homepage once logged in. They will be able to navigate to their personal profile page where they will be able to edit their profile picture. They can select the new picture and will then be able to view the updated profile picture once it has been saved.

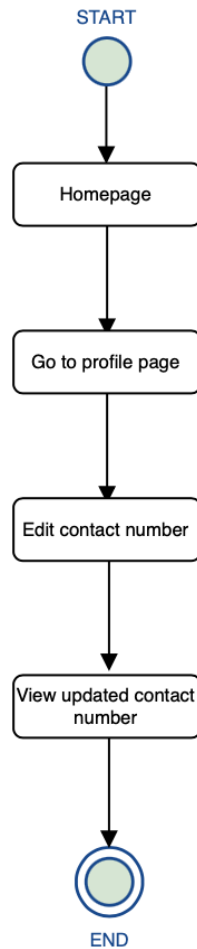
Talk Time Process View
(Activity Diagram)
Update Username



Description:

The client will be on the homepage once logged in. They will be able to navigate to their personal profile page where they will be able to edit their username. They can change their username and will then be able to view the updated username once it has been saved.

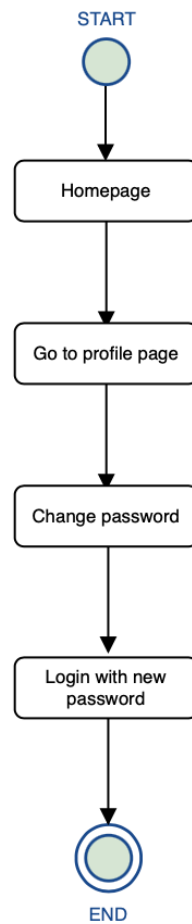
Talk Time Process View
(Activity Diagram)
Update Contact Number



Description:

The client will be on the homepage once logged in. They will be able to navigate to their personal profile page where they will be able to edit their contact number. They can change their contact number and will then be able to view the updated contact number once it has been saved.

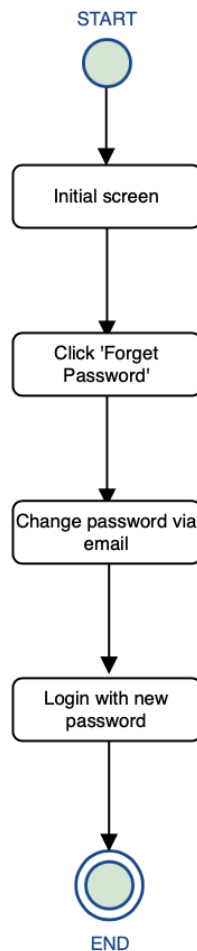
Talk Time Process View
(Activity Diagram)
Change Password



Description:

The client will be on the homepage once logged in. They will be able to navigate to their personal profile page where they will be able to change their current password. Once they click on the option to change their password, they will be navigated to a password reset screen where they can change their password. After the change has been made, they can login with their new password.

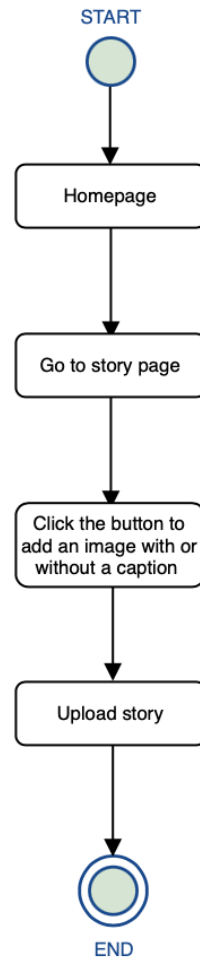
Talk Time Process View
(Activity Diagram)
Forgot Password



Description:

The client will open the application, which will initiate the welcome screen. If they cannot log in because they do not remember their password, they can click on the 'forgot password' option, which will send them an email. They will need to open this email and follow the instructions in order to successfully reset their password. Once this has been done, they can then log in to the application using their new password.

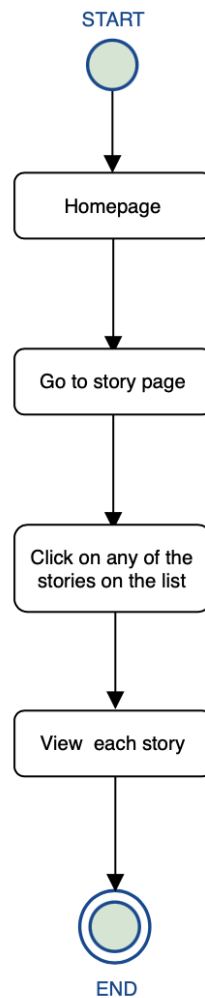
Talk Time Process View
(Activity Diagram)
Upload Story



Description:

The client will be on the homepage once logged in. The client can go to the story page and click the relevant button to add an image to their story. They will be taken to their gallery to select an image, which they can add a caption to. They can then upload this image to their story.

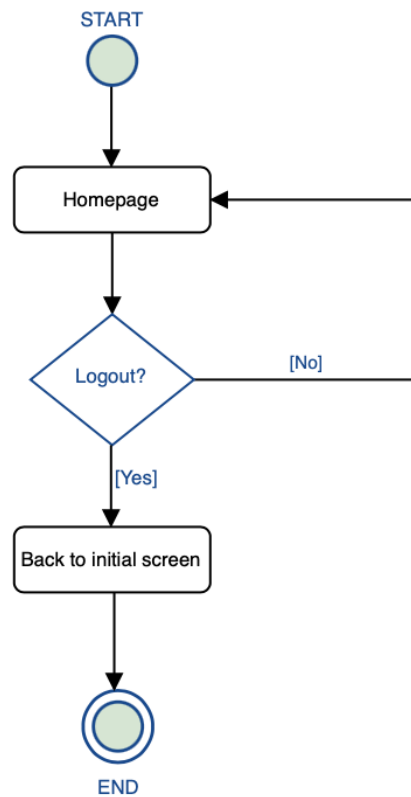
Talk Time Process View
(Activity Diagram)
View Stories



Description:

The client will be on the homepage once logged in. The client can go to the story page where they will be able to view a list of stories posted by different users. They can click on a certain story, which will allow them to view the image posted by a certain user.

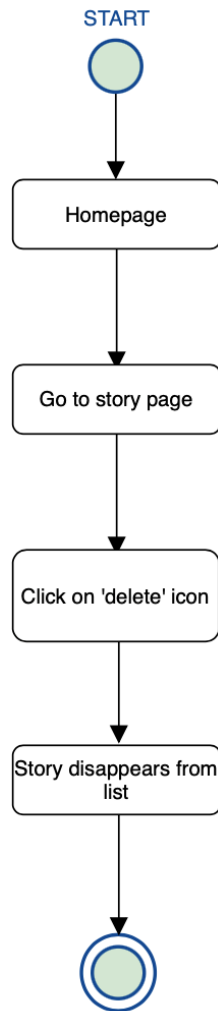
Talk Time Process View
(Activity Diagram)
Logout



Description:

The client will be on the homepage once logged in. Given that the client is still on the homepage, they can choose to logout, which will take them back to main page, which asks users to either sign in or register to continue using the application. If the client wishes to stay logged in, they will remain on the application homepage.

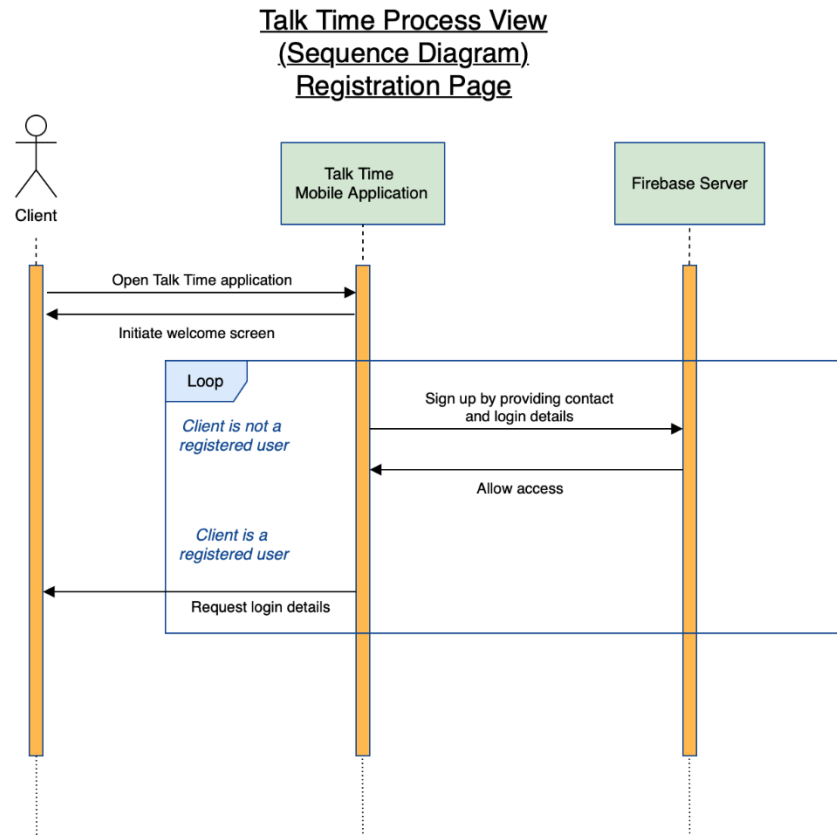
Talk Time Process View
(Activity Diagram)
Delete Story



Description:

The client will be on the homepage once logged in. The client can go to the story page and click the relevant button to delete their story. The story (or stories) will be deleted and immediately removed from the list.

b. Sequence Diagram

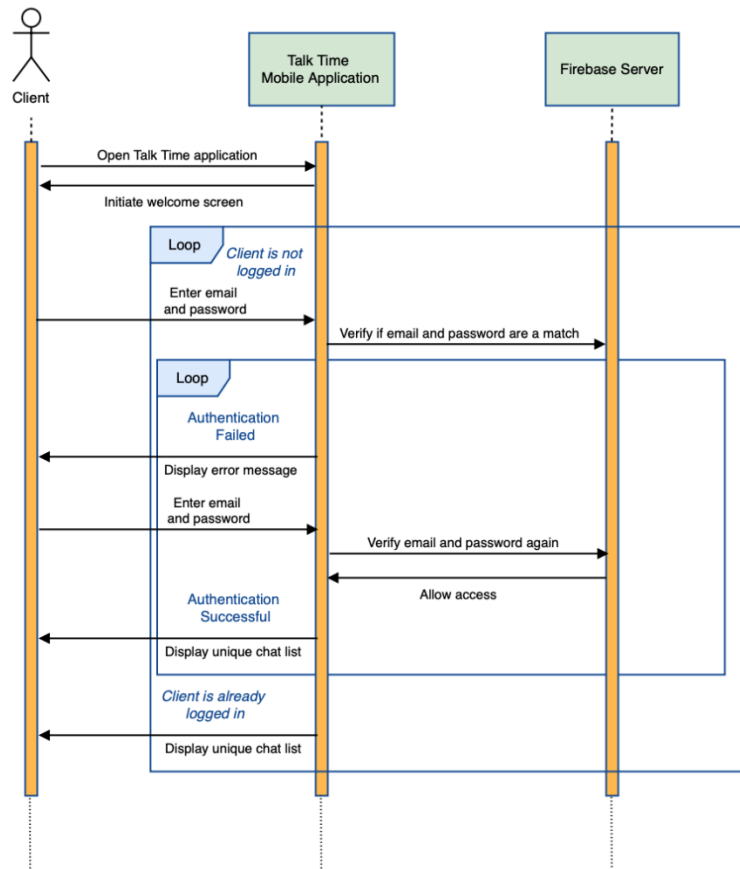


Description:

The client will open the application, which will initiate the welcome screen. If the client is using the application for the first time and has not registered yet, then they can do so by signing up. They will be asked to fill out details regarding their username, contact details and password. Once they are done filling out the registration page, the information will be stored on the Firebase Server. The client will then be granted access into the application.

If the client is already a registered user, they will be required to enter their email address and password on the login page, which, will grant them access into the application provided that the details are valid.

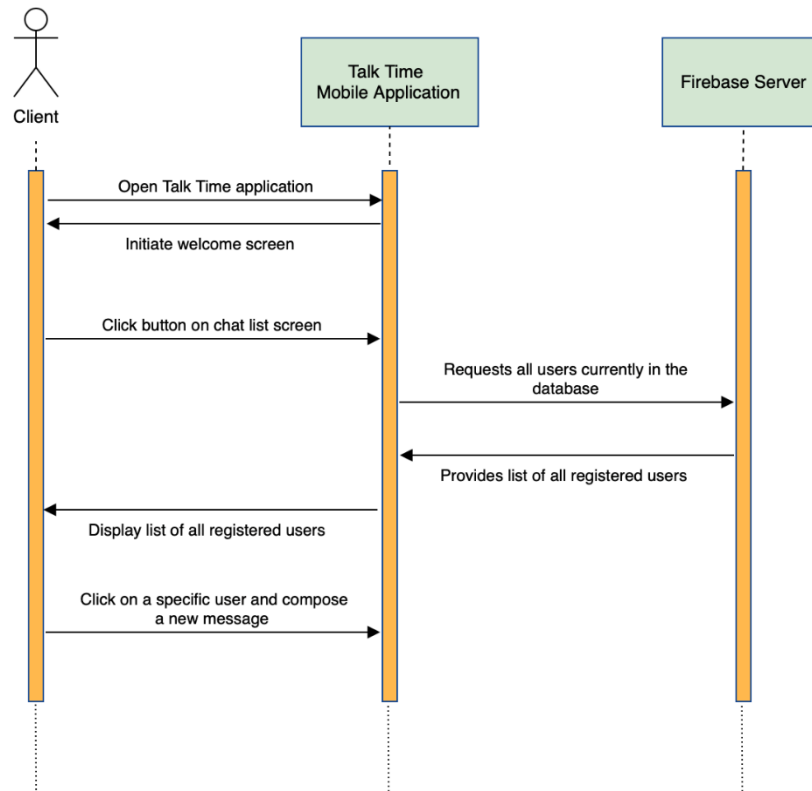
Talk Time Process View
(Sequence Diagram).
Login Page



Description:

The client will open the application, which will initiate the welcome screen. If the client is not already logged in to the application, then they will be required to enter their email address and password. These details will then be sent to the Firebase Server to be verified. If the authentication fails, the client will receive an error message and be required to re-enter his or her details. Once again, these details will then be sent to the Firebase Server to be verified. The server will then allow the client access if the details match those already in the database. If the authentication is successful, the user will be able to view their unique chat list. Conversely, if the user is already logged in, they will be able to view their unique chat list without having to enter any details.

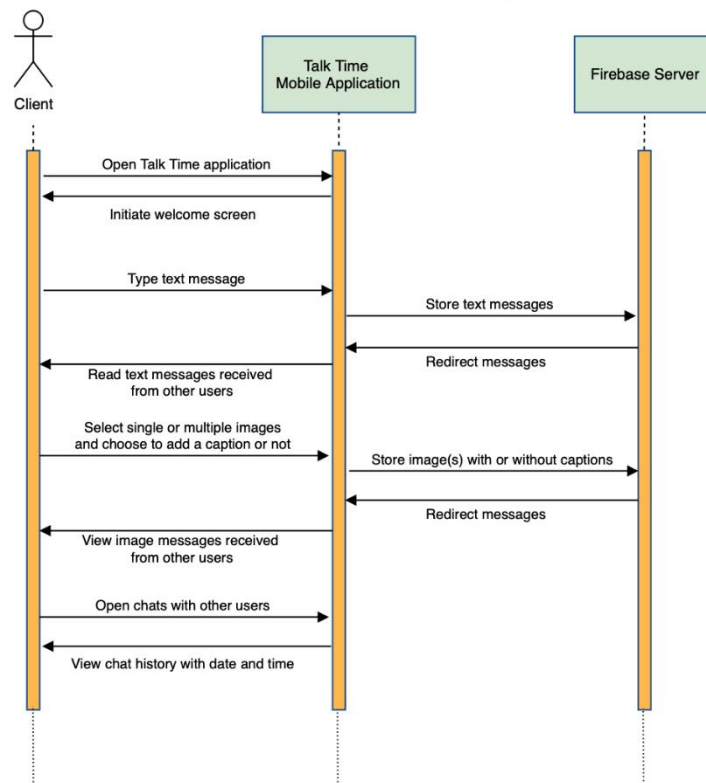
Talk Time Process View
(Sequence Diagram)
Compose New Message



Description:

The client will open the application, which will initiate the welcome screen. The client can then go to their unique chat list and click on the relevant button to compose a new message. This will then get an updated list from the Firebase Server and display all users currently registered on the server. The client can choose any user they would like to start a chat with and compose the new message. Once the message has been sent, both the client's and the respective user's unique chat list will be updated.

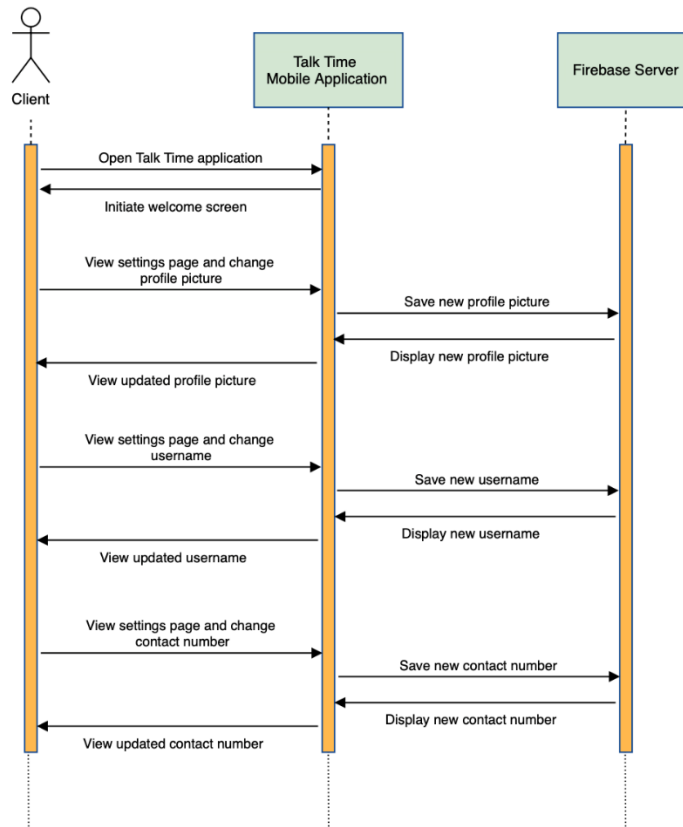
Talk Time Process View
(Sequence Diagram)
Chat With Other Users



Description:

The client will open the application, which will initiate the welcome screen. The client will select a registered user to chat with. They will be able to type a message, which will be sent and stored as a text message on the Firebase Server, or they can select single or multiple images to send with or without captions. Both the image(s) and caption will also be sent and stored on the Firebase Server. Both these text and image messages will then be redirected from the server to the application for the relevant user to view. The client is also able to open chats that they have with other user and can easily view the chat history along with the date and time at which the message was exchanged.

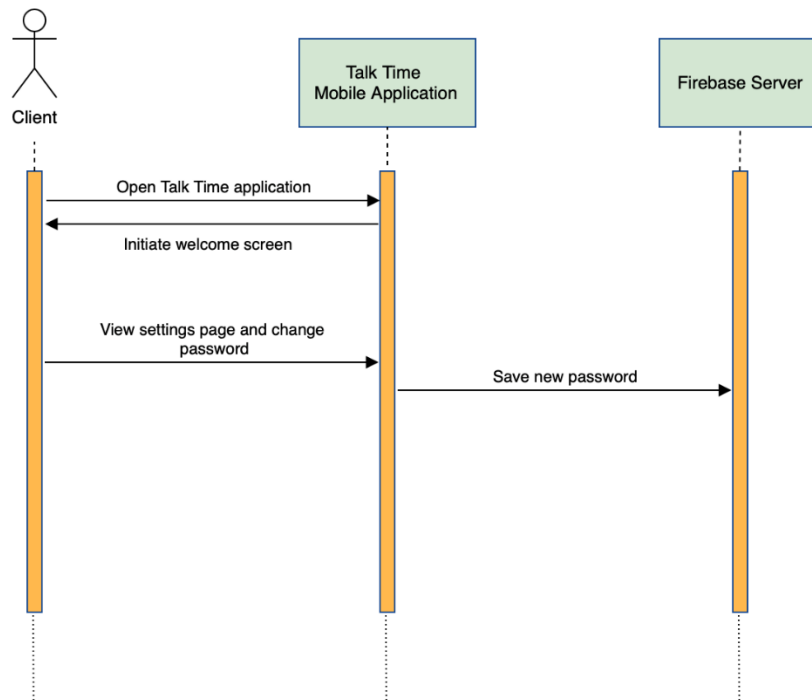
Talk Time Process View
(Sequence Diagram)
Profile Page



Description:

The client will open the application, which will initiate the welcome screen. The client can then go to their personal profile page under the settings tab and change certain information. They will be able to see their current profile picture and change it if they wish to. The new profile picture will be sent and stored on the Firebase Server. The server will then display the new profile picture to the application, which will allow the user to view the new an updated profile picture. The client will also be able to see their current username and change it if they wish to. The new username will be sent and stored on the Firebase Server. The server will then display the new username to the application, which will allow the user to view the new an updated username. Lastly, the client will also be able to see their current contact number and change it if they wish to. The new contact number will be sent and stored on the Firebase Server. The server will then display the new contact number to the application, which will allow the user to view the new an updated contact number.

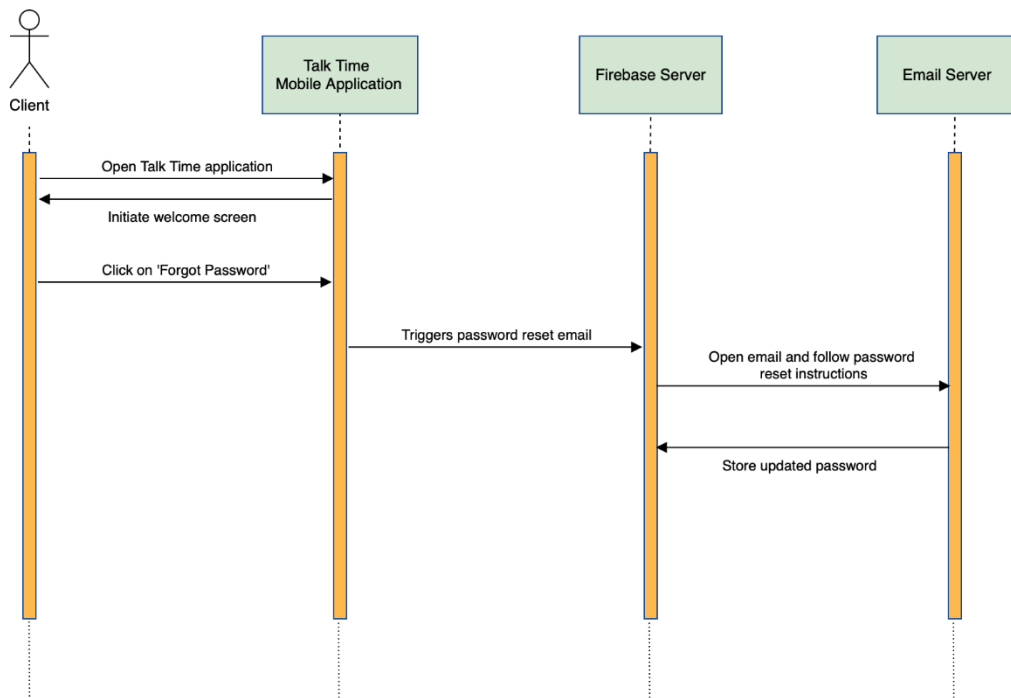
Talk Time Process View
(Sequence Diagram)
Change Password



Description:

The client will open the application, which will initiate the welcome screen. The client can then go to their personal profile page under the settings tab and will be able to change their current password. Once they enter their new password, the updated password will be sent, stored and saved on the Firebase Server. The client will then be able to login with their new password.

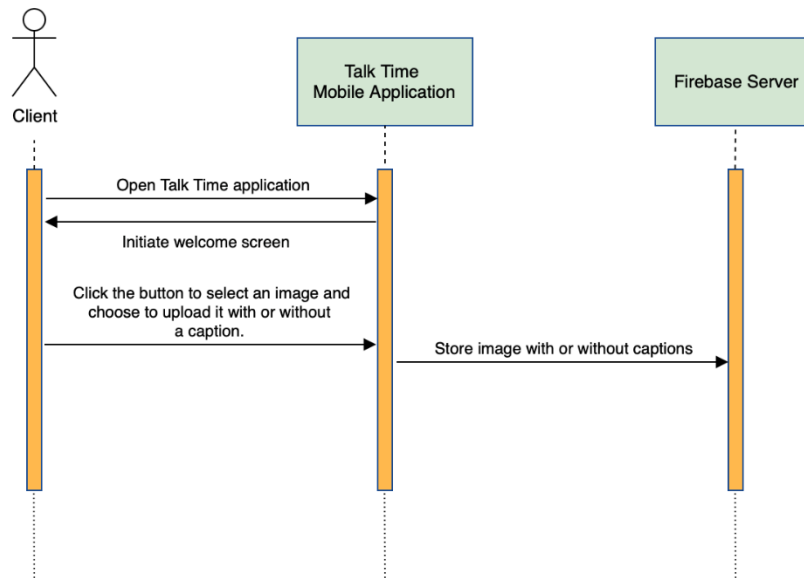
Talk Time Process View
(Sequence Diagram)
Forgot Password



Description:

The client will open the application, which will initiate the welcome screen. Should they forget their password, they can click on the 'Forgot Password' link. This will take the client to a new page where they will be required to enter their email address. After an email address has been entered, the Firebase Server will send an email to the address entered. The client can then access the email and follow the password reset instructions. The new password will be sent and stored on the Firebase Server, allowing the client to login with their new and updated password.

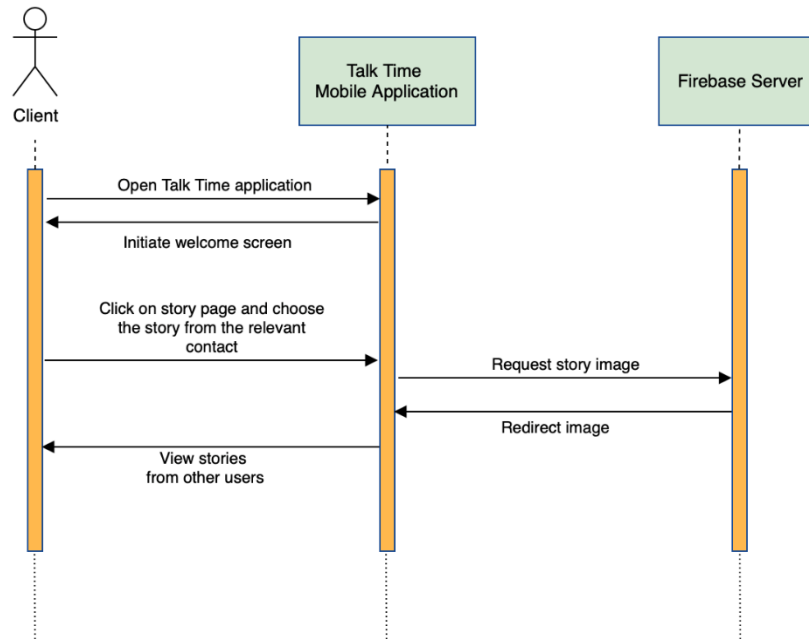
Talk Time Process View
(Sequence Diagram)
Upload Story



Description:

The client will open the application, which will initiate the welcome screen. The client can go to the story page and click the relevant button to add an image to their story. They will be taken to their gallery to select an image, which they can add a caption to. The image will then be stored on the Firebase server with or without the caption.

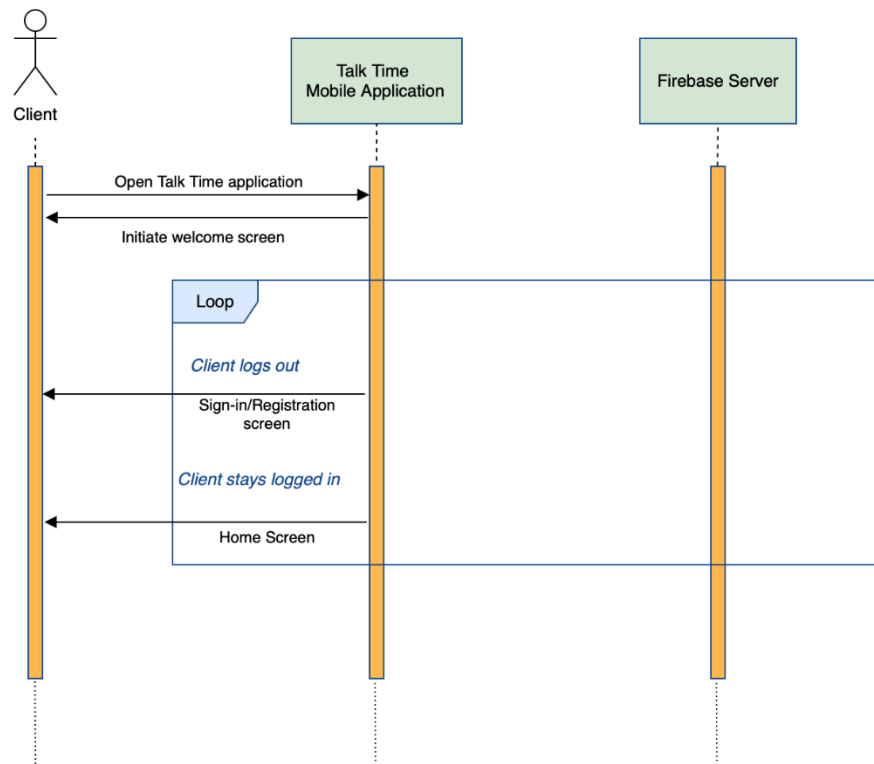
Talk Time Process View
(Sequence Diagram)
View Stories



Description:

The client will open the application, which will initiate the welcome screen. The client can go to the story page where they will be able to view a list of stories posted by different users. They can click on a certain story, which will send a request to the Firebase Server. The server will then redirect the image, allowing the client to view the image posted by a certain user.

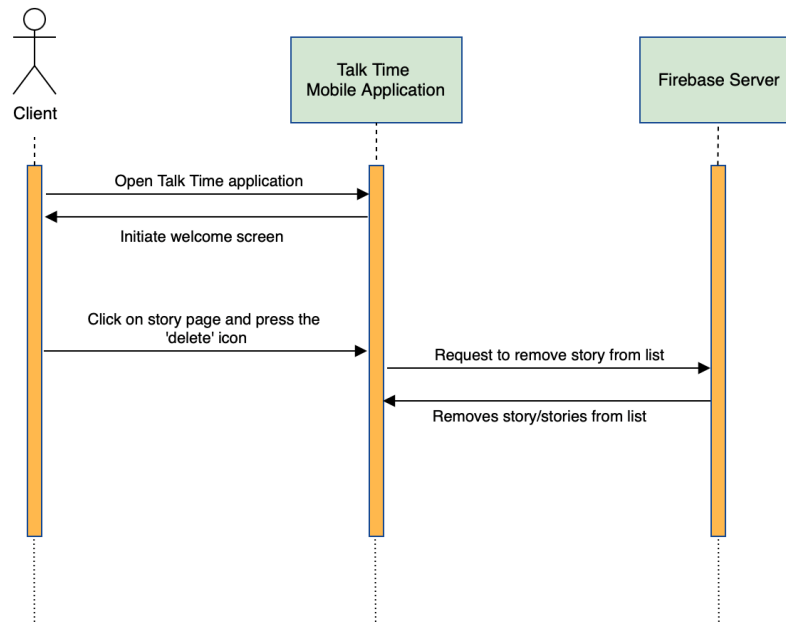
Talk Time Process View
(Sequence Diagram)
Logout



Description:

The client will open the application, which will initiate the welcome screen. Given that the client is still on the homepage, they can choose to logout, which will take them back to main page, which asks users to either sign in or register to continue using the application. If the client wishes to stay logged in, they will remain on the application homepage.

Talk Time Process View
(Sequence Diagram)
Delete Story



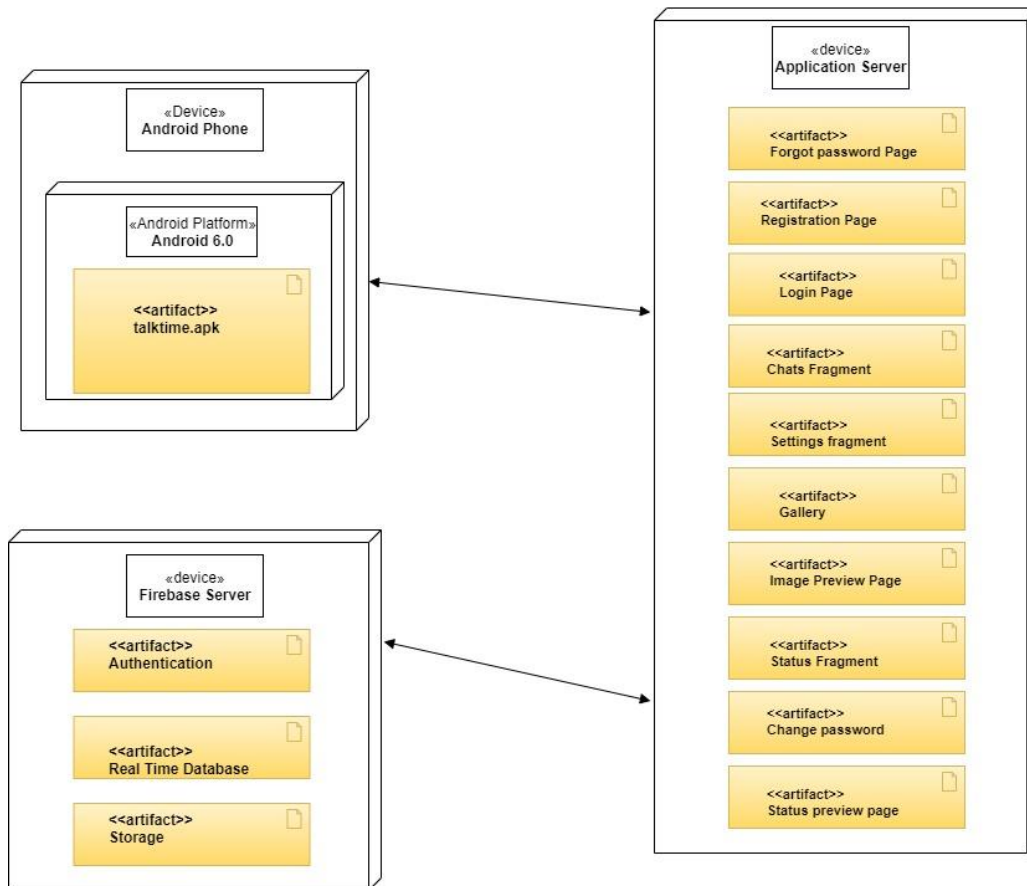
Description:

The client will open the application, which will initiate the welcome screen. The client can go to the story page and click the relevant button to delete their story. This will send a request to the Firebase server to remove the story (or stories) from the list, which, in turn, will make the story (or stories) disappear from the list.

5. Physical View

a. Deployment Diagram

Talk Time Deployment Diagram



Description:

The deployment diagram shows the device the server as well as the Application. The three aspects of the diagram are the “device” which is an android operating system, the “firebase server” which is the database that stores all the information that is needed and the “application server” which is the actual application.

The phone has the talktime.apk installed in it and the android version is 6.0. This is then linked to the application server.

The application server consists of the following artifacts:

- [Forgot password](#)
- [Registration page](#)
- [Login page](#)

- [Chat's fragment](#) – which contains all the chats the logged in user has.
- [Settings fragment](#) – contains edit profile, edit username, edit email, edit password, and edit phone number.
- [Gallery](#) of the device
- [Image preview page](#) – where you can preview your image or your multiple images and then add in a caption if you wish.
- [The status fragment](#) – which is where you can view other people's stories/statuses,
- [Change password](#)
- [Status preview page](#) – where you can preview your status and add a caption if you want to.

Lastly, this is linked to the firebase server, which is a real-time database. It functions as a storage facility as well as for authentication of users.