CHAT CONNECT – A real-time chat and communication app

By using android development application

Under the guidance of

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INTRODUCTION:

Overview:

- Connect Chat is a real-time messaging tool that enables users to chat with individuals and groups, quickly share files, and collaborate on any record by connecting with the right people instantly.
- Connect Chat animates communication around records, Visual Task Boards, topics of interest, or groups of people.

Preview:

- This guide shows you how to extend an app that displays messages to the user and receives the user's replies, such as a chat app, to hand message display and reply receipt off to an Auto device
- Staying connected through messages is important to many drivers.
- Chat apps can let users know if a child needs to be picked up or if a dinner location has been changed.
- The Android framework lets messaging app,s extend their services into the driving experience using a standard user interface that lets.

Problem Definition & Design Thinking:

Empathy Map:

- Let's start with the basics. An *empathy map* is a design tool that is particularly useful in UX design. This method helps you step into the shoes of your target users and understand how they think, feel, and act.

- Using an empathy map, you can paint a picture of your users—and how they engage with products, services, and the world around them. You can also map out the perceptions, motivations, and behaviors that drive their decision.

Ideation & Brainstorming Map:

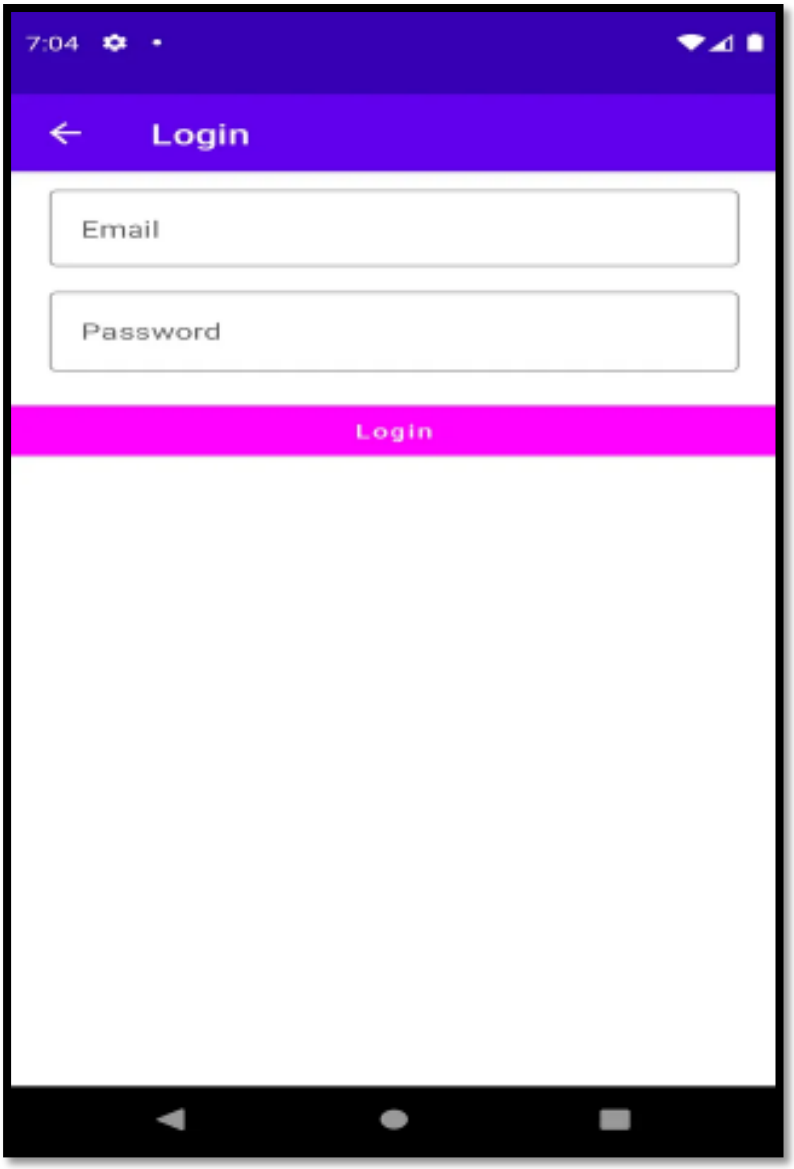
- down into smaller and smaller concepts. The big idea is like the trunk of a tree, each idea a branch, each sub-idea a smaller branch, and so on down until you get to the twigs and leaves. You can always follow any branch back to get to the main idea.

- We've got a full tutorial on mind mapping, Mind Mapping 101, so if you're not familiar with the concept, you should check it out before continuing. In today's article we're going to look at some of the best mind mapping apps available for both individual users and small teams.

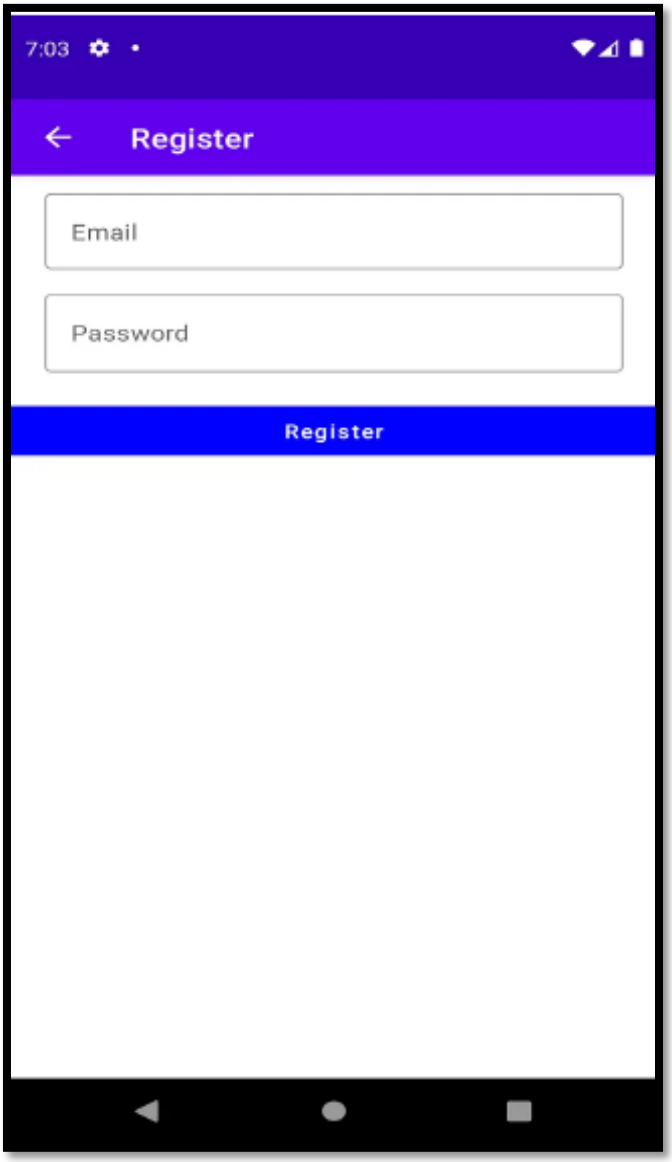
RESULT

First Screen:

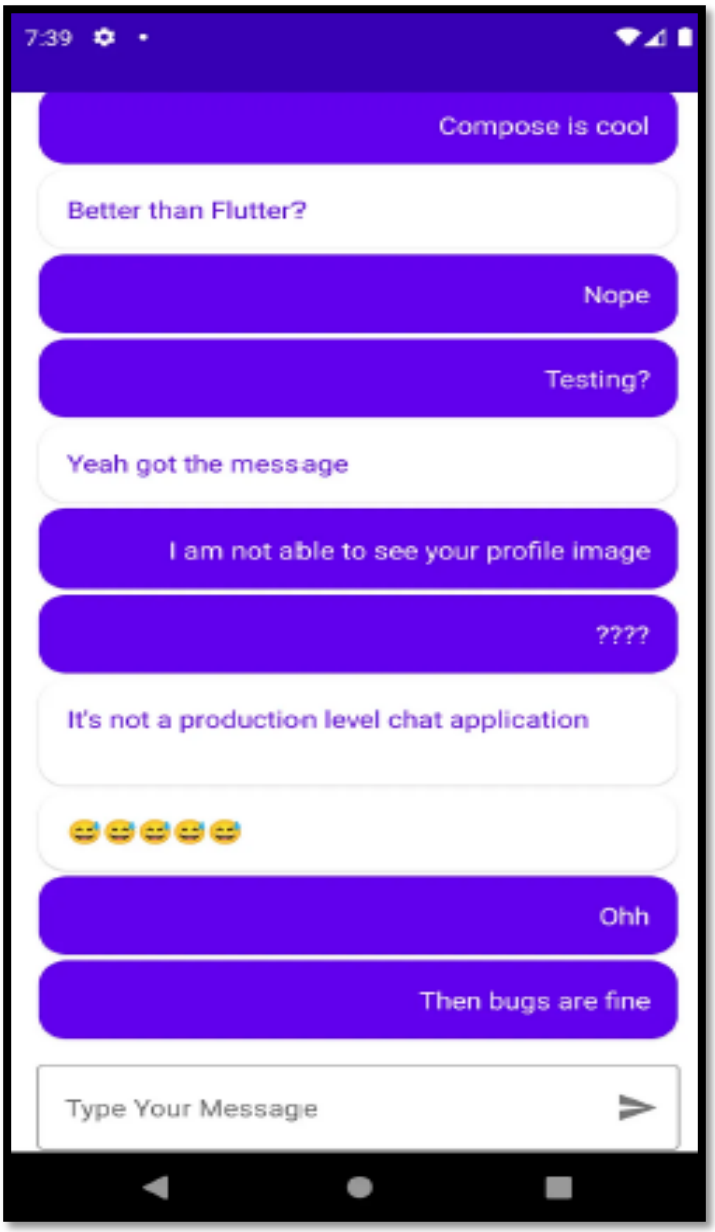
Login Page :



Register Page :



Home Screen:


7:39
Compose is cool
Better than Flutter?
Nope
Testing?
Yeah got the message
I am not able to see your profile image
????
It's not a production level chat application
😅😅😅😅😅
Ohh
Then bugs are fine
Type Your Message

ADVANTAGES & DISADVANTAGES

ADVANTAGES:

1. Real-time text preview
2. Clear context
3. File transfer
4. Multilingual support
5. Mobile Messaging Integrations
6. 24/7 support
7. Personal
8. Data security

DISADVANTAGES:

1. The need to be online to offer support
2. Online Trolls
3. Doesn’t work well for older demographics

CONCLUSION

- The main objective of the project is to develop a Secure Chat Application. I had taken a wide range of literature review in order to achieve all the tasks.

- As a result, the product has been successfully developed in terms of extendability, portability, and maintainability and tested in order to meet all requirements that are Authentication , Integrity and Confidentiality

FUTURE SCOPE

- With the knowledge I have gained by developing this application,I am confident that in the future I can make the application more effectively by adding this services.

  - Extending this application by providing Authorization service.
  - Creating Database and maintaining users.
  - Increasing the effectiveness of the application by providing Voice Chat.
  - Extending it to Web Support.

APPENDIX

Source code:

MainActivity.kt file:

```
package com.project.pradyotprakash.flashchat


import android.os.Bundle
import androidx.activity.ComponentActivity
import androidx.activity.compose.setContent
import com.google.firebase.FirebaseApp


/**
 * The initial point of the application from where it gets started.
 *
 * Here we do all the initialization and other things which will be required
 * thought out the application.
 */
class MainActivity : ComponentActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        FirebaseApp.initializeApp(this)
        setContent {
```

```
            NavComposeApp()
        }
    }
}
```

Navigation.kt file:

```
package com.project.pradyotprakash.flashchat.nav

import androidx.navigation.NavHostController

import com.project.pradyotprakash.flashchat.nav.Destination.Home

import com.project.pradyotprakash.flashchat.nav.Destination.Login

importcom.project.pradyotprakash.flashchat.nav.Destination.Regist
er


/**
 * A set of destination used in the whole application
 */
object Destination {
    const val AuthenticationOption = "authenticationOption"
    const val Register = "register"
    const val Login = "login"
    const val Home = "home"
}


/**
```

```
 * Set of routes which will be passed to different composable so
that

 * the routes which are required can be taken.

 */

class Action(navController: NavHostController) {

    val home: () -> Unit = {

        navController.navigate(Home) {

            popUpTo(Login) {

                inclusive = true

            }

            popUpTo(Register) {

                inclusive = true

            }

        }

    }

    val login: () -> Unit = { navController.navigate(Login) }

    val register: () -> Unit = {
navController.navigate(Register) }

    val navigateBack: () -> Unit = {
navController.popBackStack() }

}
```

AuthenticationOption.kt file

```
package com.project.pradyotprakash.flashchat.view


import androidx.compose.foundation.layout.Arrangement

import androidx.compose.foundation.layout.Column

import androidx.compose.foundation.layout.fillMaxHeight

import androidx.compose.foundation.layout.fillMaxWidth

import androidx.compose.foundation.shape.RoundedCornerShape

import androidx.compose.material.*

import androidx.compose.runtime.Composable

import androidx.compose.ui.Alignment

import androidx.compose.ui.Modifier

import androidx.compose.ui.graphics.Color

import
com.project.pradyotprakash.flashchat.ui.theme.FlashChatTheme


/**

 * The authentication view which will give the user an option to
choose between

 * login and register.

 */


@Composable
```

```
fun AuthenticationView(register: () -> Unit, login: () -> Unit) {
    FlashChatTheme {
        // A surface container using the 'background' color from the
theme
        Surface(color = MaterialTheme.colors.background) {
            Column(
                modifier = Modifier
                    .fillMaxWidth()
                    .fillMaxHeight(),
                horizontalAlignment = Alignment.CenterHorizontally,
                verticalArrangement = Arrangement.Bottom
            ) {
                Title(title = "⚡ Chat Connect")
                Buttons(title = "Register", onClick = register,
backgroundColor = Color.Blue)
                Buttons(title = "Login", onClick = login, backgroundColor
= Color.Magenta)
            }
        }
    }
}
```

Widgets.kt:

```
package com.project.pradyotprakash.flashchat.view
```

```
import androidx.compose.foundation.layout.fillMaxHeight
import androidx.compose.foundation.layout.fillMaxWidth
import androidx.compose.foundation.layout.padding
import androidx.compose.foundation.shape.RoundedCornerShape
import androidx.compose.foundation.text.KeyboardOptions
import androidx.compose.material.*
import androidx.compose.material.icons.Icons
import androidx.compose.material.icons.filled.ArrowBack
import androidx.compose.runtime.Composable
import androidx.compose.ui.Modifier
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.text.font.FontWeight
import androidx.compose.ui.text.input.KeyboardType
import androidx.compose.ui.text.input.VisualTransformation
import androidx.compose.ui.text.style.TextAlign
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import com.project.pradyotprakash.flashchat.Constants

/**
 * Set of widgets/views which will be used throughout the application.
 * This is used to increase the code usability.
```

```
 */


@Composable
fun Title(title: String) {
    Text(
        text = title,
        fontSize = 30.sp,
        fontWeight = FontWeight.Bold,
        modifier = Modifier.fillMaxHeight(0.5f)
    )
}


// Different set of buttons in this page
@Composable
fun  Buttons(title: String, onClick: () -> Unit, backgroundColor:
Color) {
    Button(
        onClick = onClick,
        colors = ButtonDefaults.buttonColors(
            backgroundColor = backgroundColor,
            contentColor = Color.White
        ),
        modifier = Modifier.fillMaxWidth(),
```

```
        shape = RoundedCornerShape(0),
    ) {
        Text(
            text = title
        )
    }
}

@Composable
fun Appbar(title: String, action: () -> Unit) {
    TopAppBar(
        title = {
            Text(text = title)
        },
        navigationIcon = {
            IconButton(
                onClick = action
            ) {
                Icon(
                    imageVector = Icons.Filled.ArrowBack,
                    contentDescription = "Back button"
                )
```

```
            }
        }
    )
}


@Composable
fun TextFormField(value: String, onValueChange: (String) -> Unit,
label: String, keyboardType: KeyboardType, visualTransformation:
VisualTransformation) {
    OutlinedTextField(
        value = value,
        onValueChange = onValueChange,
        label = {
            Text(
                label
            )
        },
        maxLines = 1,
        modifier = Modifier
            .padding(horizontal = 20.dp, vertical = 5.dp)
            .fillMaxWidth(),
        keyboardOptions = KeyboardOptions(
            keyboardType = keyboardType
```

```
        ),
        singleLine = true,
        visualTransformation = visualTransformation
    )
}

@Composable
fun SingleMessage(message: String, isCurrentUser: Boolean) {
    Card(
        shape = RoundedCornerShape(16.dp),
        backgroundColor = if (isCurrentUser)
MaterialTheme.colors.primary else Color.White
    ) {
        Text(
            text = message,
            textAlign =
            if (isCurrentUser)
                TextAlign.End
            else
                TextAlign.Start,
            modifier = Modifier.fillMaxWidth().padding(16.dp),
            color = if (! isCurrentUser) MaterialTheme.colors.primary
else Color.White
```

```
        )
    }
}
```

Home.kt file:

```
package com.project.pradyotprakash.flashchat.view.home

import androidx.compose.foundation.background
import androidx.compose.foundation.layout.*
import androidx.compose.foundation.lazy.LazyColumn
import androidx.compose.foundation.lazy.items
import androidx.compose.foundation.text.KeyboardOptions
import androidx.compose.material.*
import androidx.compose.material.icons.Icons
import androidx.compose.material.icons.filled.Send
import androidx.compose.runtime.Composable
import androidx.compose.runtime.getValue
import androidx.compose.runtime.livedata.observeAsState
import androidx.compose.ui.Alignment
import androidx.compose.ui.Modifier
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.text.input.KeyboardType
import androidx.compose.ui.unit.dp
```

```
import androidx.lifecycle.viewmodel.compose.viewModel

import com.project.pradyotprakash.flashchat.Constants

import com.project.pradyotprakash.flashchat.view.SingleMessage


/**

 * The home view which will contain all the code related to the view for HOME.

 *

 * Here we will show the list of chat messages sent by user.

 * And also give an option to send a message and logout.

 */


@Composable

fun HomeView(

    homeViewModel: HomeViewModel = viewModel()

) {

    val message: String by homeViewModel.message.observeAsState(initial = "")

    val messages: List<Map<String, Any>> by homeViewModel.messages.observeAsState(

        initial = emptyList<Map<String, Any>>().toMutableList()

    )


    Column(
```

```
        modifier = Modifier.fillMaxSize(),
        horizontalAlignment = Alignment.CenterHorizontally,
        verticalArrangement = Arrangement.Bottom
    ) {
        LazyColumn(
            modifier = Modifier
                .fillMaxWidth()
                .weight(weight = 0.85f, fill = true),
            contentPadding = PaddingValues(horizontal = 16.dp,
vertical = 8.dp),
            verticalArrangement = Arrangement.spacedBy(4.dp),
            reverseLayout = true
        ) {
            items(messages) { message ->
                val isCurrentUser =
message[Constants.IS_CURRENT_USER] as Boolean


                SingleMessage(
                    message = message[Constants.MESSAGE].toString(),
                    isCurrentUser = isCurrentUser
                )
            }
        }
```

```
OutlinedTextField(
    value = message,
    onValueChange = {
        homeViewModel.updateMessage(it)
    },
    label = {
        Text(
            "Type Your Message"
        )
    },
    maxLines = 1,
    modifier = Modifier
        .padding(horizontal = 15.dp, vertical = 1.dp)
        .fillMaxWidth()
        .weight(weight = 0.09f, fill = true),
    keyboardOptions = KeyboardOptions(
        keyboardType = KeyboardType.Text
    ),
    singleLine = true,
    trailingIcon = {
        IconButton(
            onClick = {
```

```
                homeViewModel.addMessage()
            }
        ) {
            Icon(
                imageVector = Icons.Default.Send,
                contentDescription = "Send Button"
            )
        }
    }
  )
 }
}
```

HomeViewModel class:

```
package com.project.pradyotprakash.flashchat.view.home

import android.util.Log
import androidx.lifecycle.LiveData
import androidx.lifecycle.MutableLiveData
import androidx.lifecycle.ViewModel
import com.google.firebase.auth.ktx.auth
import com.google.firebase.firestore.ktx.firestore
import com.google.firebase.ktx.Firebase
```

```
import com.project.pradyotprakash.flashchat.Constants

import java.lang.IllegalArgumentException


/**

 * Home view model which will handle all the logic related to
HomeView

 */

class HomeViewModel : ViewModel() {

    init {

        getMessages()

    }


    private val _message = MutableLiveData("")

    val message: LiveData<String> = _message


    private var _messages =
MutableLiveData(emptyList<Map<String, Any>>().toMutableList())

    val messages: LiveData<MutableList<Map<String, Any>>> =
_messages


    /**

     * Update the message value as user types

     */

    fun updateMessage(message: String) {
```

```
        _message.value = message
    }


    /**
     * Send message
     */
    fun addMessage() {
        val message: String = _message.value ?: throw
IllegalArgumentException("message empty")
        if (message.isNotEmpty()) {

Firebase.firestore.collection(Constants.MESSAGES).document().se
t(
                hashMapOf(
                    Constants.MESSAGE to message,
                    Constants.SENT_BY to
Firebase.auth.currentUser?.uid,
                    Constants.SENT_ON to System.currentTimeMillis()
                )
            ).addOnSuccessListener {
                _message.value = ""
            }
        }
    }
```

```
    /**
     * Get the messages
     */
    private fun getMessages() {
        Firebase.firestore.collection(Constants.MESSAGES)
            .orderBy(Constants.SENT_ON)
            .addSnapshotListener { value, e ->
                if (e != null) {
                    Log.w(Constants.TAG, "Listen failed.", e)
                    return@addSnapshotListener
                }

                val list = emptyList<Map<String, Any>>().toMutableList()

                if (value != null) {
                    for (doc in value) {
                        val data = doc.data
                        data[Constants.IS_CURRENT_USER] =
                            Firebase.auth.currentUser?.uid.toString() ==
data[Constants.SENT_BY].toString()

                        list.add(data)
```

```
                }
            }


            updateMessages(list)
        }
    }


    /**
     * Update the list after getting the details from firestore
     */
    private fun updateMessages(list: MutableList<Map<String,
Any>>) {
        _messages.value = list.asReversed()
    }
}
```

Login.kt file:

```
package com.project.pradyotprakash.flashchat.view.login


import androidx.compose.foundation.layout.*
import androidx.compose.material.CircularProgressIndicator
import androidx.compose.runtime.Composable
import androidx.compose.runtime.getValue
import androidx.compose.runtime.livedata.observeAsState
```

```
import androidx.compose.ui.Alignment

import androidx.compose.ui.Modifier

import androidx.compose.ui.graphics.Color

import androidx.compose.ui.text.input.KeyboardType

import
androidx.compose.ui.text.input.PasswordVisualTransformation

import androidx.compose.ui.text.input.VisualTransformation

import androidx.compose.ui.unit.dp

import androidx.lifecycle.viewmodel.compose.viewModel

import com.project.pradyotprakash.flashchat.view.Appbar

import com.project.pradyotprakash.flashchat.view.Buttons

import com.project.pradyotprakash.flashchat.view.TextFormField


/**

 * The login view which will help the user to authenticate
themselves and go to the

 * home screen to show and send messages to others.

 */


@Composable

fun LoginView(

    home: () -> Unit,

    back: () -> Unit,
```

```
    loginViewModel: LoginViewModel = viewModel()
) {
    val email: String by loginViewModel.email.observeAsState("")
    val password: String by
loginViewModel.password.observeAsState("")
    val loading: Boolean by
loginViewModel.loading.observeAsState(initial = false)


    Box(
        contentAlignment = Alignment.Center,
        modifier = Modifier.fillMaxSize()
    ) {
        if (loading) {
            CircularProgressIndicator()
        }
        Column(
            modifier = Modifier.fillMaxSize(),
            horizontalAlignment = Alignment.CenterHorizontally,
            verticalArrangement = Arrangement.Top
        ) {
            Appbar(
                title = "Login",
                action = back
```

```
        )
        TextFormField(
            value = email,
            onValueChange = { loginViewModel.updateEmail(it) },
            label = "Email",
            keyboardType = KeyboardType.Email,
            visualTransformation = VisualTransformation.None
        )
        TextFormField(
            value = password,
            onValueChange = { loginViewModel.updatePassword(it)
},
            label = "Password",
            keyboardType = KeyboardType.Password,
            visualTransformation = PasswordVisualTransformation()
        )
        Spacer(modifier = Modifier.height(20.dp))
        Buttons(
            title = "Login",
            onClick = { loginViewModel.loginUser(home = home) },
            backgroundColor = Color.Magenta
        )
    }
```

```
    }
}
```

LoginViewModel class:

```
package com.project.pradyotprakash.flashchat.view.login

import androidx.lifecycle.LiveData
import androidx.lifecycle.MutableLiveData
import androidx.lifecycle.ViewModel
import com.google.firebase.auth.FirebaseAuth
import com.google.firebase.auth.ktx.auth
import com.google.firebase.ktx.Firebase
import java.lang.IllegalArgumentException

/**
 * View model for the login view.
 */
class LoginViewModel : ViewModel() {
    private val auth: FirebaseAuth = Firebase.auth

    private val _email = MutableLiveData("")
    val email: LiveData<String> = _email
```

```
    private val _password = MutableLiveData("")
    val password: LiveData<String> = _password

    private val _loading = MutableLiveData(false)
    val loading: LiveData<Boolean> = _loading

    // Update email
    fun updateEmail(newEmail: String) {
        _email.value = newEmail
    }

    // Update password
    fun updatePassword(newPassword: String) {
        _password.value = newPassword
    }

    // Register user
    fun loginUser(home: () -> Unit) {
        if (_loading.value == false) {
            val email: String = _email.value ?: throw
IllegalArgumentException("email expected")
            val password: String =
```

```
            _password.value ?: throw
IllegalArgumentException("password expected")


        _loading.value = true


        auth.signInWithEmailAndPassword(email, password)
            .addOnCompleteListener {
                if (it.isSuccessful) {
                    home()
                }
                _loading.value = false
            }
    }
  }
}
```

Register.kt file

```
package com.project.pradyotprakash.flashchat.view.register


import androidx.compose.foundation.layout.*
import androidx.compose.material.CircularProgressIndicator
import androidx.compose.runtime.Composable
import androidx.compose.runtime.getValue
import androidx.compose.runtime.livedata.observeAsState
```

```
import androidx.compose.ui.Alignment

import androidx.compose.ui.Modifier

import androidx.compose.ui.graphics.Color

import androidx.compose.ui.text.input.KeyboardType

import
androidx.compose.ui.text.input.PasswordVisualTransformation

import androidx.compose.ui.text.input.VisualTransformation

import androidx.compose.ui.unit.dp

import androidx.lifecycle.viewmodel.compose.viewModel

import com.project.pradyotprakash.flashchat.view.Appbar

import com.project.pradyotprakash.flashchat.view.Buttons

import com.project.pradyotprakash.flashchat.view.TextFormField


/**

 * The Register view which will be helpful for the user to register
themselves into

 * our database and go to the home screen to see and send
messages.

 */


@Composable

fun RegisterView(

    home: () -> Unit,

    back: () -> Unit,
```

```
    registerViewModel: RegisterViewModel = viewModel()
) {
    val email: String by registerViewModel.email.observeAsState("")
    val password: String by
registerViewModel.password.observeAsState("")
    val loading: Boolean by
registerViewModel.loading.observeAsState(initial = false)


    Box(
        contentAlignment = Alignment.Center,
        modifier = Modifier.fillMaxSize()
    ) {
        if (loading) {
            CircularProgressIndicator()
        }
        Column(
            modifier = Modifier.fillMaxSize(),
            horizontalAlignment = Alignment.CenterHorizontally,
            verticalArrangement = Arrangement.Top
        ) {
            Appbar(
                title = "Register",
                action = back
```

```
        )
        TextFormField(
            value = email,
            onValueChange = { registerViewModel.updateEmail(it) },
            label = "Email",
            keyboardType = KeyboardType.Email,
            visualTransformation = VisualTransformation.None
        )
        TextFormField(
            value = password,
            onValueChange = {
registerViewModel.updatePassword(it) },
            label = "Password",
            keyboardType = KeyboardType.Password,
            visualTransformation = PasswordVisualTransformation()
        )
        Spacer(modifier = Modifier.height(20.dp))
        Buttons(
            title = "Register",
            onClick = { registerViewModel.registerUser(home =
home) },
            backgroundColor = Color.Blue
        )
```

```
        }
    }
}
```

RegisterViewModel class:

```
package com.project.pradyotprakash.flashchat.view.register

import androidx.lifecycle.LiveData
import androidx.lifecycle.MutableLiveData
import androidx.lifecycle.ViewModel
import com.google.firebase.auth.FirebaseAuth
import com.google.firebase.auth.ktx.auth
import com.google.firebase.ktx.Firebase
import java.lang.IllegalArgumentException

/**
 * View model for the login view.
 */
class RegisterViewModel : ViewModel() {
    private val auth: FirebaseAuth = Firebase.auth

    private val _email = MutableLiveData("")
    val email: LiveData<String> = _email
```

```
    private val _password = MutableLiveData("")
    val password: LiveData<String> = _password

    private val _loading = MutableLiveData(false)
    val loading: LiveData<Boolean> = _loading

    // Update email
    fun updateEmail(newEmail: String) {
        _email.value = newEmail
    }

    // Update password
    fun updatePassword(newPassword: String) {
        _password.value = newPassword
    }

    // Register user
    fun registerUser(home: () -> Unit) {
        if (_loading.value == false) {
            val email: String = _email.value ?: throw
IllegalArgumentException("email expected")
            val password: String =
```

```
                _password.value ?: throw
IllegalArgumentException("password expected")


            _loading.value = true


            auth.createUserWithEmailAndPassword(email, password)
                .addOnCompleteListener {
                    if (it.isSuccessful) {
                        home()
                    }
                    _loading.value = false
                }
        }
    }
}
```