

CHATCONNECT – A REAL – TIME CHAT AND COMMUNICATION APP

1. INTRODUCTION

1.1 Project Description:

ChatConnect is a sample project built using the Android Compose UI toolkit. It demonstrates how to create a simple chat app using the Compose libraries. The app allows users to send and receive text messages. The project showcases the use of Compose's declarative UI and state management capabilities. It also includes examples of how to handle input and navigation using composable functions and how to use data from a firebase to populate the UI.

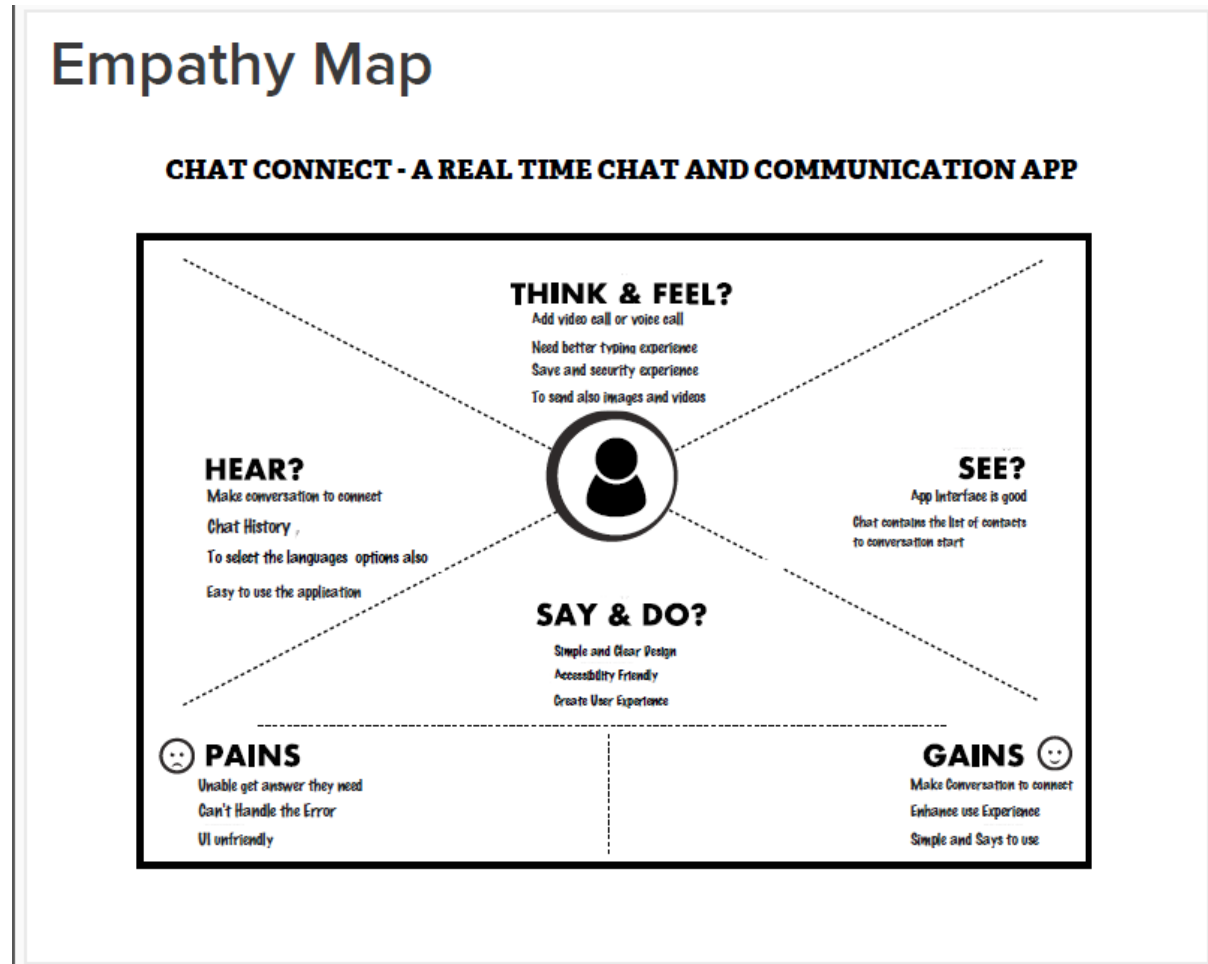
1.2 Purpose of this project:

The primary purpose of "Chat connect" is to allow people to stay connected and communicate effectively in real-time. The app can be used for a wide range of purposes, including personal communication, business communication, and online collaboration. It can be used by individuals, teams, organizations, and communities to facilitate communication and collaboration.

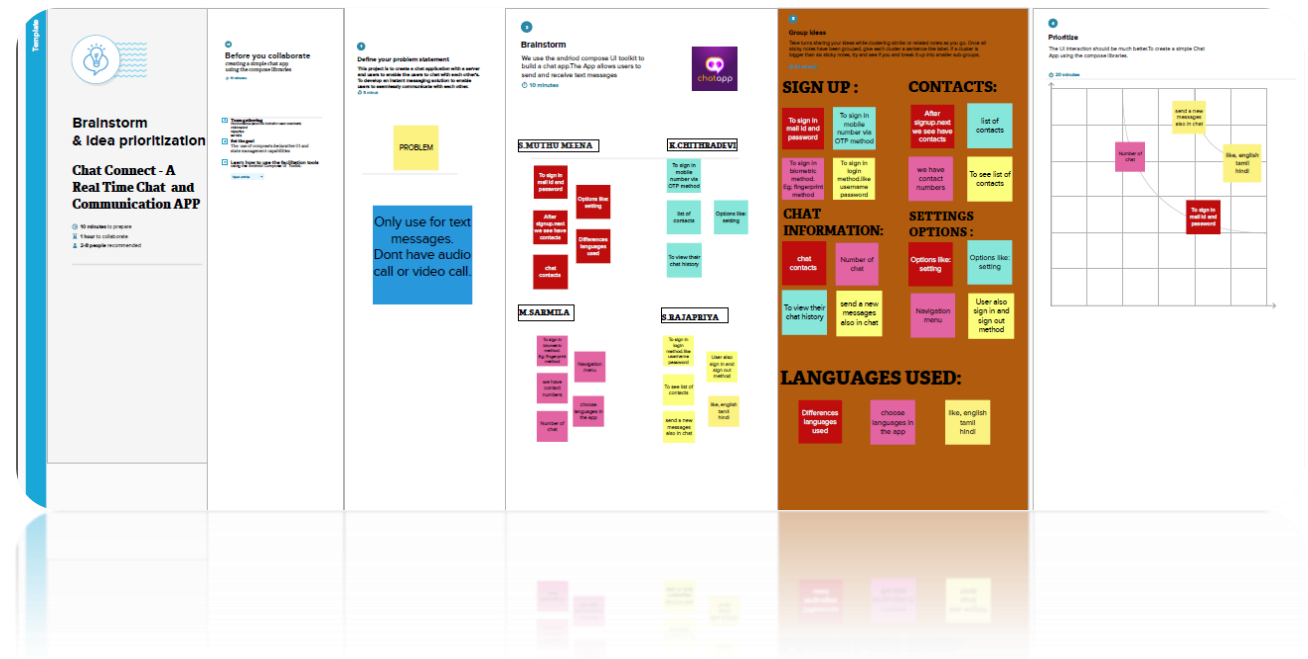
One of the key benefits of "Chat connect" is its ability to help people stay connected in real-time, regardless of their location. With the app, users can chat with friends, family, and colleagues from anywhere in the world. This can be especially useful for people who travel frequently or have family and friends living in different parts of the world.

2. PROBLEM DEFINITION & DESIGN THINKING

2.1 Empathy Map:



2.2 Brainstorming Map:



3. RESULT

⚡ Chat Connect

Register
Login

← Register

Email

sarmila9903@gmail.com

Password

.....

Register



Login

Email

rajapriyasankar13@gmail.com

Password

.....

Login

hi

bye

hi

helo

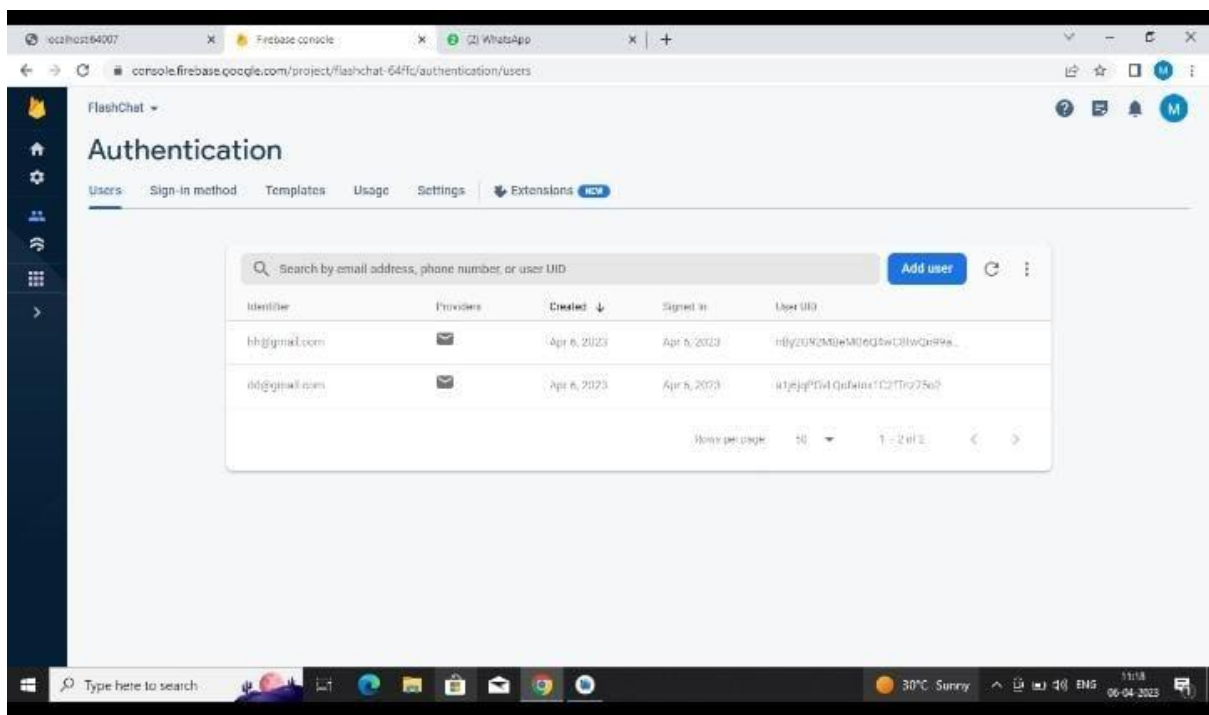
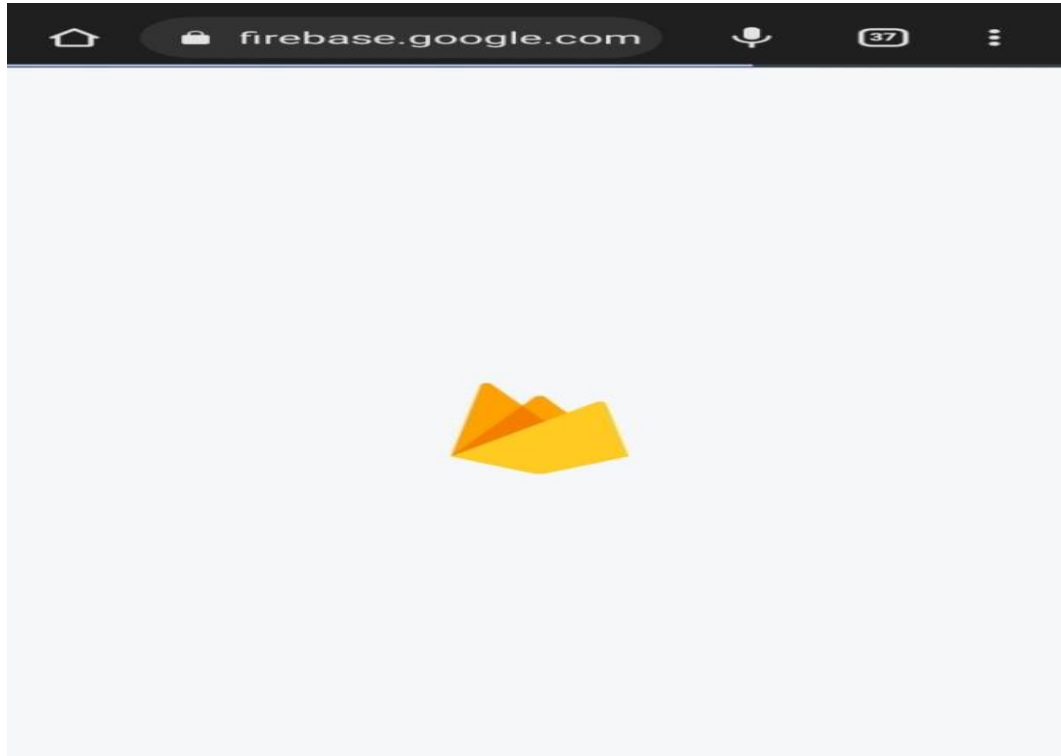
hii

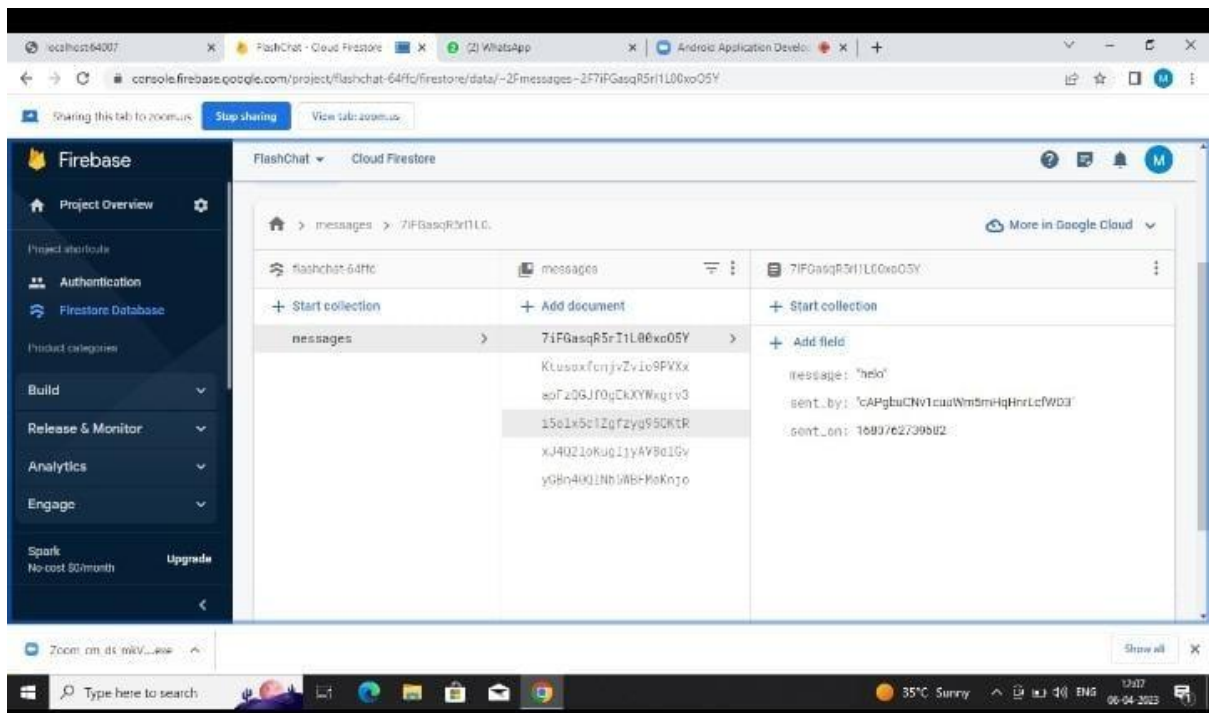
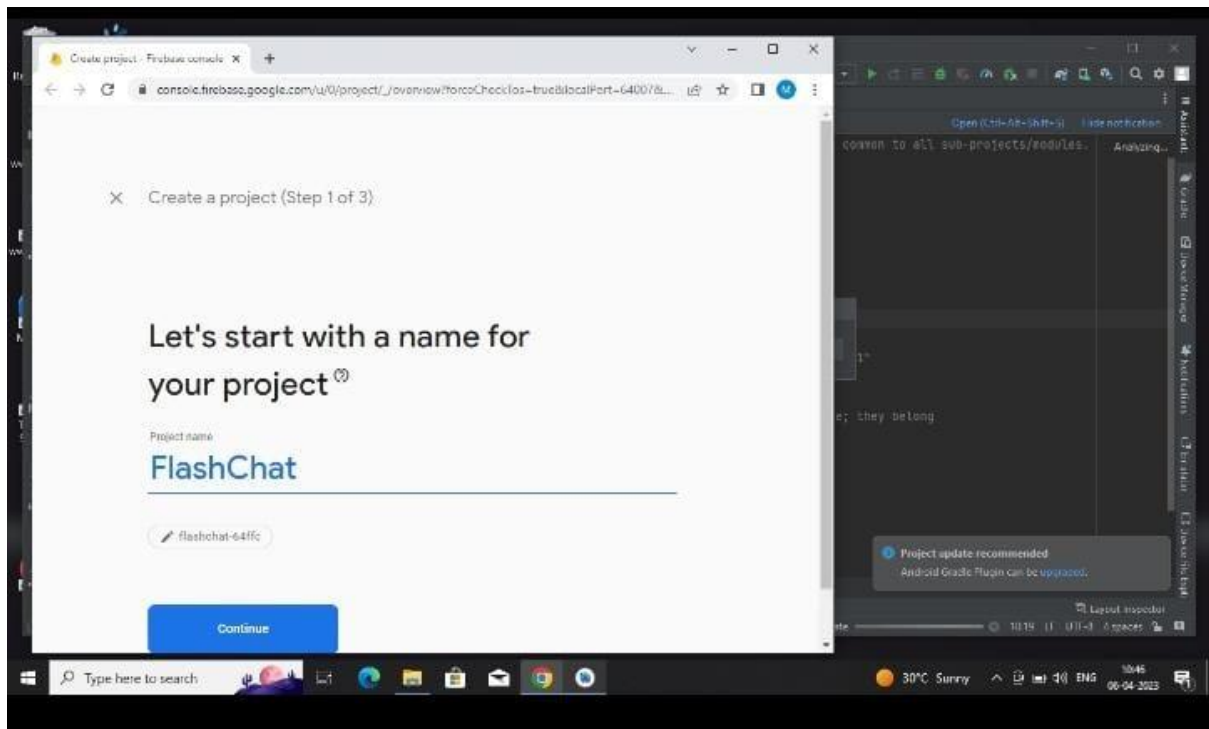
hi

hi

helo

INTEGRATING FIREBASE





ADVANTAGES AND DISADVANTAGES

Advantages:

- **Faster support**
- **Real-time test preview**
- **No waiting queues**
- **Familiarity**
- **Convenience**

Disadvantages:

- **No video calls**
- **No audio calls**
- **Not to send for the transfer**

5. APPLICATIONS

Personal communication:

"Chat connect" can be used for personal communication, allowing individuals to stay connected with their friends and family in real-time, regardless of their location.

Social networking:

"Chat connect" can be used for social networking, enabling like-minded individuals to connect and communicate with one another in real-time.

Healthcare:

"Chat connect" can be used in the healthcare sector, enabling doctors, nurses, and other healthcare professionals to communicate and collaborate more effectively, especially in emergency situations.

6. CONCLUSION

"Chat connect" is a real-time chat and communication app that provides users with a simple and user-friendly interface for staying connected and communicating with one another. The app can be used in various areas, including personal communication, business communication, online collaboration, education, healthcare, customer support, and social networking.

With its ability to facilitate real-time communication and collaboration, "Chat connect" can help individuals, teams, organizations, and communities stay connected and achieve their goals more efficiently. Its features, such as file sharing, chat rooms, and voice and video calling capabilities, make it a versatile tool for staying connected and collaborating in real-time.

Overall, "Chat connect" is a powerful solution for those seeking a user-friendly and efficient means of communication and collaboration in real-time. Its potential applications are numerous, and it has the potential to make a significant impact in many different fields.

7. FUTURE SCOPE

There is always some place for enhancements in any software application, however good and efficient the application may be.

Right now, we are dealing with only the instant messaging between the peers. In future the application may further developed to include some features such as

1. Voice messaging.
2. Group calling
3. Live streaming
4. Messages auto delete after a given time.
5. Personalized message tunes.

And a messaging application feature which allows the user to create chat room while in conversation with another user by just sending the chatroom name with the hash symbol at the beginning

8. APPENDIX

a) Source code

```
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()
}
}
}
```

```
Package  
com.project.prad  
yotprakash.flash  
chat
```

```
import  
androidx.compose.runtime.Composabl  
e  
import  
androidx.compose.runtime.remember  
import  
androidx.navigation.compose.NavHos  
t  
import  
androidx.navigation.compose.compos  
able  
import  
androidx.navigation.compose.rememb  
erNavController  
import  
com.google.firebase.auth.FirebaseAuth  
import  
com.project.pradyotprakash.flashch  
at.nav.Action  
import  
com.project.pradyotprakash.flashch  
at.nav.Destination.AuthenticationO  
ption  
import  
com.project.pradyotprakash.flashch  
at.nav.Destination.Home  
import  
com.project.pradyotprakash.flashch  
at.nav.Destination.Login  
import  
com.project.pradyotprakash.flashch  
at.nav.Destination.Register  
import  
com.project.pradyotprakash.flashch
```

```

at.ui.theme.FlashChatTheme
import
com.project.pradyotprakash.flashch
at.view.AuthenticationView
import
com.project.pradyotprakash.flashch
at.view.home.HomeView
import
com.project.pradyotprakash.flashch
at.view.login.LoginView
import
com.project.pradyotprakash.flashch
at.view.register.RegisterView
/**
 * The main Navigation composable
 * which will handle all the
 * navigation stack.
 */
@Composable
fun NavComposeApp() {
    val navController =
rememberNavController()
    val actions =
remember(navController) {
Action(navController) }
    FlashChatTheme {
NavHost(
navController = navController,
startDestination =
if
(FirebaseAuth.getInstance().currentUser != null)
Home
else
AuthenticationOption
) {
composable(AuthenticationOption) {
AuthenticationView(
register = actions.register,
login = actions.login
)
}
}
}

```

```

composable(Register) {
    RegisterView(
        home = actions.home,
        back = actions.navigateBack
    )
}
composable(Login) {
    LoginView(
        home = actions.home,
        back = actions.navigateBack
    )
}
composable(Home) {
    HomeView()
}
}
}
}
}

```

```

package
com.project.pradyotprakash.flashchat

```

```

object Constants {
    const val TAG =
        "flash-chat"
    const val MESSAGES =
        "messages"
    const val MESSAGE =
        "message"
    const val SENT_BY =
        "sent_by"
    const val SENT_ON =
        "sent_on"
    const val
        IS_CURRENT_USER =
        "is_current_user"
}

```

```

package com.project.pradyotprakash.flashchat.nav

```

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

```
import androidx.compose.f  
import androidx.compose.f
```



```

import androidx.compose.f
import androidx.compose.f
import androidx.compose.f
import androidx.compose.m
import androidx.compose.r
import androidx.compose.u
import androidx.compose.u
import androidx.compose.u
import
com.project.pradyotprakas
/**
 * The authentication view
 * to choose between
 * login and register.
 */
@Composable
fun AuthenticationView(re
Unit) {
    FlashChatTheme {
        // A surface container us
        theme
        Surface(color = MaterialT
        Column(
            modifier = Modifier
                .fillMaxWidth()
                .fillMaxHeight(),
            horizontalAlignment = Ali
            verticalArrangement = Arr
        ) {
            Title(title = "🔪 Chat Co
            Buttons(title = "Reg
                backgroundColor = Color.B
            Buttons(title = "Login",
                Color.Magenta)
        }
    }
}

```

```
package
com.project.pradyotpraka
sh.flashchat.view
```

```
import
androidx.compose.foundation.lay
out.fillMaxHeight
import
androidx.compose.foundation.lay
out.fillMaxWidth
import
androidx.compose.foundation.lay
out.padding
import
androidx.compose.foundation.sha
pe.RoundedCornerShape
import
androidx.compose.foundation.tex
t.KeyboardOptions
import
androidx.compose.material.*
import
androidx.compose.material.icons
.Icons
import
androidx.compose.material.icons
.filled.ArrowBack
import
androidx.compose.runtime.Compos
able
import
androidx.compose.ui.Modifier
import
androidx.compose.ui.graphics.Co
lor
import
androidx.compose.ui.text.font.F
ontWeight
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.flas
hchat.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

```

```
)  
}  
}
```

```
package  
com.project.pradyotprakas  
h.flashchat.view.home
```

```
import  
androidx.compose.foundation.back  
ground  
import  
androidx.compose.foundation.la  
yout.*  
import  
androidx.compose.foundation.la  
zy.LazyColumn  
import  
androidx.compose.foundation.la  
zy.items  
import  
androidx.compose.foundation.te  
xt.KeyboardOptions  
import  
androidx.compose.material.*  
import  
androidx.compose.material.icon  
s.Icons  
import  
androidx.compose.material.icon  
s.filled.Send  
import  
androidx.compose.runtime.Compo  
sable  
import  
androidx.compose.runtime.getVa  
lue  
import  
androidx.compose.runtime.lived  
ata.observeAsState  
import
```

```

androidx.compose.ui.Alignment
import
androidx.compose.ui.Modifier
import
androidx.compose.ui.graphics.C
olor
import
androidx.compose.ui.text.input
.KeyboardType
import
androidx.compose.ui.unit.dp
import
androidx.lifecycle.viewmodel.c
ompose.viewModel
import
com.project.pradyotprakash fla
shchat.Constants
import
com.project.pradyotprakash fla
shchat.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.observeA
sState(initial = "")
val messages: List<Map<String,
Any>> by
homeViewModel.messages.observe
AsState(

```

```

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_U
SER] as Boolean
SingleMessage(
message                                     =
message[Constants.MESSAGE].toS
tring(),
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.sendMessage()
        }
    ) {
        Icon(
            imageVector =
                Icons.Default.Send,
            contentDescription = "Send
                Button"
        )
    }
}
}
}
}
}
}

```

```

package
com.project.pradyotprak
ash.flashchat.view.home

```

```

import android.util.Log

```

```

import
androidx.lifecycle.LiveData
import
androidx.lifecycle.MutableLiveDat
a
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.flashc
hat.Constants
import
java.lang.IllegalArgumentException
n
/**
 * 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<Str
ing, 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(Con
stants.MESSAGES).document().set(
        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(Con
stants.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.to
    String()
    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()
    }
    }

```

```

package
com.project.pradyotprakas
h.flashchat.view.login

```

```

import
androidx.compose.foundation.lay
out.*
import
androidx.compose.material.Circu
larProgressIndicator
import
androidx.compose.runtime.Compos
able

```

```
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.observeAsS
    tate("")
    val password: String by
    loginViewModel.password.observe
    AsState("")
    val loading: Boolean by
    loginViewModel.loading.observeA
    sState(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,
                onChange = {
                    loginViewModel.updateEmail(it)
                }
            )
        }
    }
}

```

```

    },
    label = "Email",
    keyboardType =
    KeyboardType.Email,
    visualTransformation =
    VisualTransformation.None
    )
    TextFormField(
    value = password,
    onChange = {
    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
    )
    }
    }
    }

```

```

package
com.project.pradyotprakash.flas
hchat.view.login

```

```

import
androidx.lifecycle.LiveDa
ta
import
androidx.lifecycle.Mutabl
eLiveData
import

```

```

androidx.lifecycle.ViewModel
import
com.google.firebase.auth.
FirebaseAuth
import
com.google.firebase.auth.
ktx.auth
import
com.google.firebase.ktx.F
irebase
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(newPasswor
d: 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.signInWithEmailAndPa
        ssword(email, password)
        .addOnCompleteListener {
            if (it.isSuccessful) {
                home()
            }
        }
        _loading.value = false
    }
}
}
}
}

```

```

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

```

```

import
androidx.compose.foundation.la
yout.*
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.observe
    AsState("")
    val password: String by
    registerViewModel.password.obs
    erveAsState("")
    val loading: Boolean by
    registerViewModel.loading.obse
    rveAsState(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.updatePasswo
            rd(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
    )
}
}
}

```

```

package
com.project.pradyotprakash.fl

```

shchat.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(newPasswor
d: 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.createUserWithEmailA
ndPassword(email,
password)
.addOnCompleteListener {
if (it.isSuccessful) {
home()
}
}
_loading.value = false
}
}
}
}

```

