Login Framework for Mobile Apps Using Firebase

Internship report submitted in partial fulfilment of the requirements

for the degree of B.Tech. (and M.Tech (for DD))

by

BHUKYA NAVEEN

(Roll No: COE18B008)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY,

DESIGN AND MANUFACTURING, KANCHEEPURAM

May 2022

Certificate

I, **BHUKYA NAVEEN**, with Roll No: **COE18B008** hereby declare that the material presented in the Internship Report titled **Login Framework for Mobile Apps Using Firebase** represents original work carried out by me in the **Department of Computer Science and Engineering** at the **Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram** during the year **2021**. With my signature, I certify that:

- I have not manipulated any of the data or results.

- I have not committed any plagiarism of intellectual property. I have clearly indicated and referenced the contributions of others.

- I have explicitly acknowledged all collaborative research and discussions.

- I have understood that any false claim will result in severe disciplinary action.

- I have understood that the work may be screened for any form of academic misconduct.

Date:27-10-2021   Student's Signature

In my capacity as supervisor of the above-mentioned work, I certify that the work presented in this Report is carried out under my supervision, and is worthy of consideration for the requirements of internship work during the period 24-05-2021 to 25-10-2021.

Advisor's Name:Amit Gupta   Advisor's Signature

Internship and Release Letter

From: AIEdge Technologies Private Limited   Date: 25th Oct 2020
T-Hub,
Hyderabad, Telangana

To: Bhukya Naveen
E-Mail: bhukyanaveen21@gmail.com,
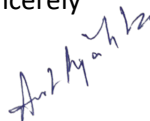Phone: +91-6302128889,

Dear Naveen,

This is to confirm your successful completion of internship as per the detail below.

1. Position: Intern – Software Engineer
2. Nature: Internship
3. Title/topic of the work done during the internship:

                                                              Login Framework for Mobile Apps Using Firebase
4. Date of joining: 24th May 2021
5. Date of completion: 25th Oct 2021
6. Location: Remote work

We wish you all the best.

Sincerely

Amit Gupta
Director
AIEdge Technologies Private Limited

Abstract

In Recent Times Android Apps Become More Popular In Different Types Of Devices Like Mobile Phones, Tablets And Web Apps.

Android Will Provide Plentiful Libraries To Make Different Types Of Apps Like Games, Classes, Content Sharing And Many More.

But While Developing any App or Web Based Framework We Have To Look Into Some Security Side As Well. So Here I Want To Build an App With **Login Framework for Mobile Apps Using Firebase**

App/ Project Includes Below Features To Get Access To App Only For Authorized Users/ Existing Users

To Do This Project I am Using Android Studios (Which Is Very Popular To Make Android/ Ios Apps) And Firebase (For Making Different Types Of Authentication Using Firebase) Description: Most software projects require secured method for users to login. Typical login for application needs to be:

1. Seamless (easy to login)

2. Unauthorised access should not be allowed

3. Password should be stored in Hidden mode (or login should be password less)

Acknowledgements

Contents

List of Figures

For/Dedicated to/To my. . .

Chapter 1

Introduction

In Today's World Most Of The Apps Needs Secure Login Framework to Protect The Information From Many External Factors. This Feature i.e Secure Login Or Authentication Login Such As Permissions And Access Tokens Make Apps Information Safe And Secure For People And Apps To Use. So That Apps Information is Only Accessible For Registered People Or Authorized People.

Any programme that surrounds essential functions should have a strong security component. It's as easy as safeguarding one's database against a few different types of attackers..

Now a Days It Is Become To Difficult to Protect Our Websites, Frameworks, Apps And Different Types Of Internet Based Contents From Hackers And Also To Improve Strength Of The Company Or Organisations By Registering Through Their Websites Or Apps, SO That Registration Become Mandatory For The Most Of The Company's And Apps.

As I Have Mentioned Above Most Of The Apps Need To Know The Users Identity, Knowing Their Identity Allows Our App Securely Same Users Data In The Cloud And Provides The Personalized Experience Across All Of The Users Devices.

In This Project I have Done Secure Login Framework Using Fire base. To authenticate users in our app, Authentication can provide back-end services as well as ready-to-use UI libraries.Passwords, phone numbers, identity providers such as Facebook, Google, and Twitter, and other methods of authentication are all supported by Firebase.

In This Project Technologies I Have Used:

1.Android Studios

2.Flutter

3.Dart Language

4.Firebase For Authentication

1.1 Background

In This Project I Have Used Android Studios To Build An App Also Technologies Which I Have Used are Flutter, Dart Language And Firebase For Authentication And To Store The Users Details.

1.2 Motivation

Authentication of a user is a critical step in preventing unauthorised individuals from accessing sensitive data.User X, for example, has access to only relevant information and is unable to see User Y's sensitive information.

Now a Days Cyber criminals Are Stealing Information Of An User Or Organisation When Their Login System Is Insecure. Lot Of Companies like Adobe and Yahoo Already Faced Data Breach Problems are examples of what happens when organizations fail to secure their user authentication.

1.3 Objectives of the work

The objective of the Project is that a Person Who is Anywhere In The World accessing his web accounts is assured that no one can crack what his password is by anyone. his identity and Login Crendentials are safe. The aim of This Project Is to overcome the flaws in the current System. Allows Users securely logging in a user to the system from Anywhere In the world. This Can be used for many security projects. An efficient IT project for students.

Chapter 2

Methodology

2.1 Main Section 1

In This Project Home Page Will Be Login Page Which Consists Of Few Buttons Called

1. Login(On Tap Authorized User Can Login Into His/Her Account)

2. Create Account (On Tap We Can Navigate To The Page Where One Can Register By Using His/Her Email Id And Password)

3. Reset Password (On Tap We Can Navigate To The Reset Password page)

4. Passwordless Login (On Tap User Can Get An Email To Login Using Without Password)

Application needs to be:

- Seamless (easy to login).

- Secured (unauthorised access should not be allowed)

- Password should be stored in encrypted mode (or login should be password less).As application login is required for almost all software

- The Login Framework is a software will Login features (described below) – with a dummy home page. (Home page will be designed outside Login Framework project).

- The Login Framework should have the following features:
  User Registration:

  - a. Allow registration of new user using email ID or phone number.
  - b. Password should be of minimum strength (the minimum strength should be configurable in database) (or implement password less login using Firebase)
  - c. Password should be stored in DB in encrypted form.
  - e. Forgot password feature

- Screen design should look good. Proper response to user should be provided (such as LoginFailed etc.)

- Password less login will be preferred.

2.1.1 Create Account

Create Account (On Tap We Can Navigate To The Page Where One Can Register By Using His/Her Email Id And Password).
In a Create Account Page To Register We Have To Fill Few Empty Fields And Every Field Should Be Non-Empty.
On Successful Registration We Can See "Account Created Successfully" And User Details Will Be Stored In Firebase.

2.1.2 Reset Password

Reset Password (On Tap We Can Navigate To The Reset Password page)
User May Forget His/Her Passwords Or They May Feel Password Is No More Secure, This Is Where Reset Password Come Into The Picture

By Entering Our Email Id We On Tap On The Reset Password Button We Can Get An Email With The Link Where We Can Reset Our Password Frequently If Users Feel Insecure Or When We Forgotten Password

2.2 Home Screen

On Successful Login Using His/her Credentials User Can Successfully Navigate tO The Home Screen Which Consists Of Apps Main Information, In This Project I Have Made Sample Homepage Called **Showcase Hyderabad**

On Successful Login By User Using His/Her Credentials He/She Can Successfully Navigate To The Home Screen Whatever We Include As Home Screen.
Here I Have Made "Showcase Hyderabad" As Home Screen In This "Showcase Hyderabad" Page We Can See Visiting Places Of Hyderabad With Its Image Including History Of That Particular Visiting Place

Also I Have Added Few Navigation At The Bottom (Using Bottom Navigation Bar) Including
1.Maps
2.Hotels
3.Images
Also I Have Added Side Menu Bar With Few Items Where We Can Add Useful Stuff For The Users Comfort. On Tap On That Side Menu Bar We Can Navigate TO The Particular Information.

Chapter 3

Work Done

3.1   Login Page

As Part Of Secured Login System Here First I Have Designed Login Page With Few Extra Navigations I.e Create Password, Reset Password And Passwordless Login.

Login(On Tap Authorized User Can Login Into His/Her Account)
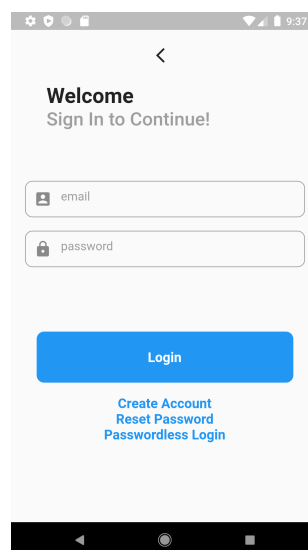Here I am Attaching Screenshot Of The Login Page

FIGURE 3.1: Login Page

3.1.1 Create Account

Create Account Page Will Have a Form Like Registration Which Includes Name(Name Of A User), Email (Users Email) And Password(Password With Few Characters In Encrypted Form).
Bottom Of The Page There Will Be Two Buttons Named Create Account(On Tap It Will Navigate To The Page "Successfully Created") And Login Button(On Tap Authorized User Can Login Into His/Her Account)

FIGURE 3.2: Create Account Page

3.1.2 Reset Password

In a Create Account Page To Register We Have To Fill Few Empty Fields And Every Field Should Be Non-Empty.
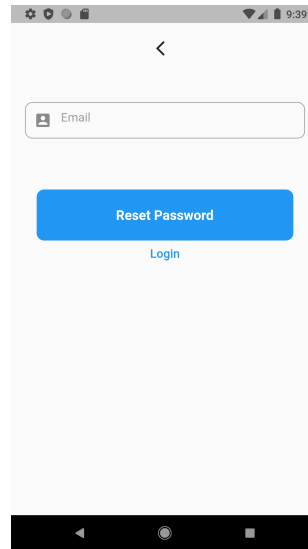
FIGURE 3.3: Reset Password

After Successfully Entering Three Fields By Clicking On The Button (Bottom Of The Page) We Can See The Page Of Suucessfully Created Account Like This

3.2 Home Screen
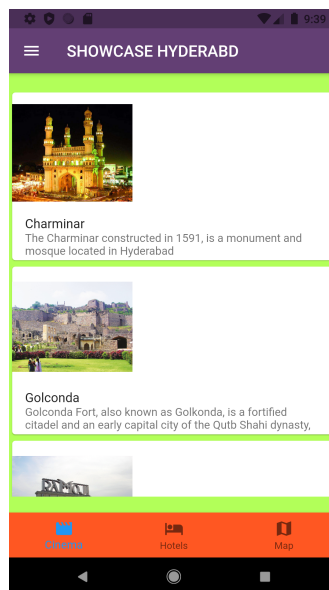
FIGURE 3.4: Home Page

On Successful Login By User Using His/Her Credentials He/She Can Successfully Navigate To The Home Screen Whatever We Include As Home Screen.

Here I Have Made "Showcase Hyderabad" As Home Screen In This "Showcase Hyderabad" Page We Can See Visiting Places Of Hyderabad With Its Image Including History Of That Particular Visiting Place.

Also I Have Added Few Navigation At The Bottom (Using Bottom Navigation Bar) Including

1.Maps

2.Hotels

3.Images

Also I Have Added Side Menu Bar With Few Items Where We Can Add Useful Stuff For The Users Comfort. On Tap On That Side Menu Bar We Can Navigate TO The Particular Information. Here How It Will Look Like
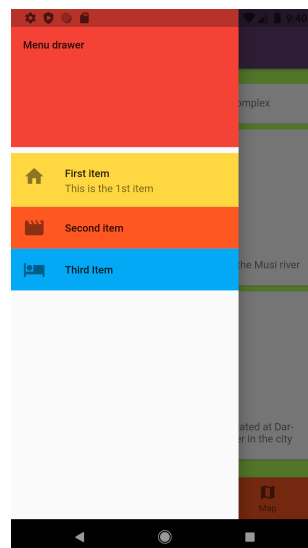
FIGURE 3.5: Home Page

Chapter 4

Results and Discussions

4.1 Login Page

After Implementation Of The Main Idea Now I am Able To See Or Show Login Page When I am Opening The App And Can Enter The Email Id And Password (If I Already Registered)/ Click The Create Account Button To Create Account/ Register New User In The Registration Form
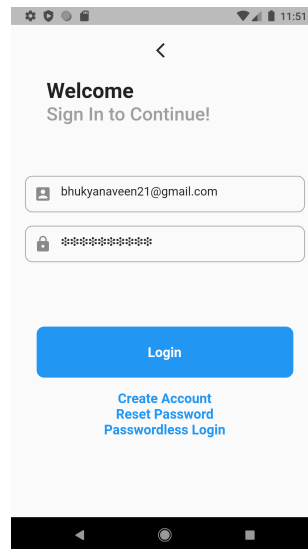
As I Have Mentioned In The Methodology Password Should Be Hidden While Entering, Here We Can See While Entering The Password It Is Hidden.

4.1.1 Create Account

In a Create Account Page To Register We Have To Fill Few Empty Fields And Every Field Should Be Non-Empty.
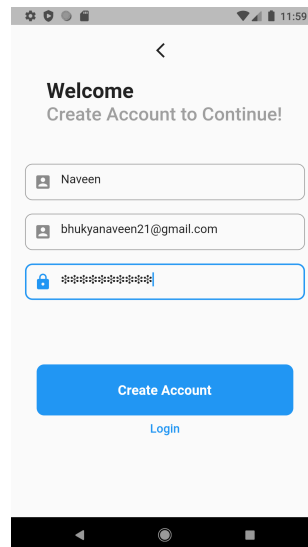
FIGURE 4.2: Create Account Page

After Successfully Entering Three Fields By Clicking On The Button (Bottom Of The Page) We Can See The Page Of Suucessfully Created Account Like This
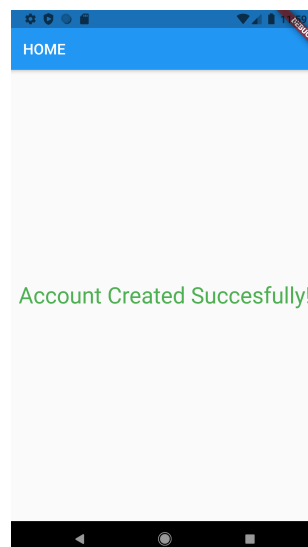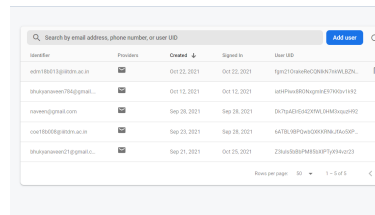

FIGURE 4.3: Successfull

On Succesfull Creation Of An Account User Details Will Stores In The Firebase Like This.

FIGURE 4.4: Successfull

4.1.2 Reset Password

In Homepage (Login Page) Along With Create Account, Passwordless Buttons We Have One More Useful Button Called Reset Password.

Sometimes User May Forget His/her Password . In This Situation One Should Not Miss His/Her Information To Overcome This By Entering Users Email In The Given Field He/She Will get An Email With a Link Saying Reset Your Password. So We Can Reset Our Password By Entering New Password And We Can Login Through That New Password.

Reset Password Page Will Look Like This

4.2 Password less Login

Even Though Password Login Systems Are There Some Of The Users Are Feeling Passwords Become Nuisance To Users And It Is Become Difficult To Remember Different Types Of Passwords For Different Apps Or Websites So Most Of The Companies Are Moving Towards Password less Login.

Here In This Project I Have Developed A Page Called Password less Login , In The Home Page Itself On The Bottom We Can See Password less Login Button On Clicking On That Button We Can Navigate To The Password less Login Page Which Consists Of Below Fields In The Above Field User Need To Enter His/Her Email Id (Registered)

After Entering The Registered Email ID User Should Click On The Button "Password less Login" Then User Will Receive A link Through His/Her Email With Login Link ,On Clicking On That Link User Can Navigate To The Home screen Saying That Successful Login
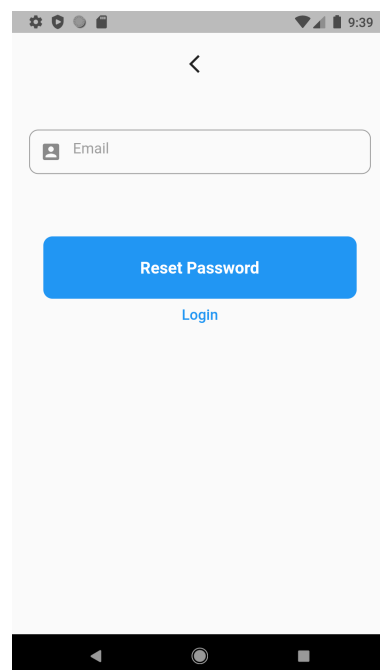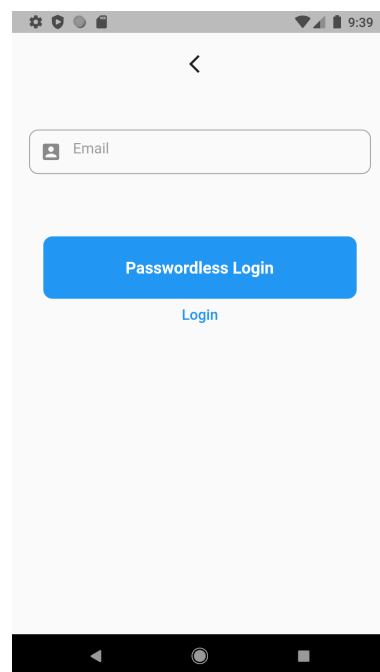

FIGURE 4.5: Password less

FIGURE 4.6: Password less

Chapter 5

Conclusions and Extensions

At The End, After Completion Of Project Now User Can Do Below Tasks Without Any Diificulties

1. User Can Create His/Her Own Account Using Their Mail Ids And Password

2. On Successful Creation We Can Store Their Details In Fire base Database

3. On Successful Creation Of An Account User Can Login In To Home Screen Using His Email And Password.

4. If User Forget Their Password They Can Reset Their Password Using Reset Password Button

5. User Can Login Using Without Password Using Button "Passwordless Login".

Although I Have Made Secure Login Framework Using Firebase, Still I Can Extend The Difficulty Of Password By Adding Few More Conditions To The Users Password.

- We Can Make Users Passwords More Stronger By Using Some Conditions Like These

- In Users Password There Should Be Some Characters

- Password Length Should Be More Than Certain Number Of Characters.

- Password Must Contain All Types Of Characters Like Special Characaters, Numbers And Alpha Numeric Values.

- We Can Add Two Way Protection Like After Entering The Credentials Of An User To Login, We Have TO Ask Few More Questions Regarding Persons Identity Which Are Already Stored In The Database

- If User Enters Wrong Password More Than Three Times Account Should Be Blocked Immediately For Sometime

xyz