VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JNANASANGAMA", BELGAVI - 590018

ABA Report on

Subject : Cloud Computing

ACTIVITY-BASED ASSESSMENT

on

Topic : Deploying a App on Firebase

Faculty :

Prof Spoorthi M

Assistant Professor
Dept.of ISE
VVCE, Mysuru

Submitted by,

Pranav Thejaswi N M (4VV21IS077)

U J Krishna(4VV21IS111)

Parikshith Kamal D N(4VV20IS066)

Raman K S(4VV21IS084)

ACKNOWLEDGMENT :

I would like to express my special thanks to our mentor **Prof. Spoorthi M** for the time and efforts he provided throughout the year. Your useful advice and suggestions were beneficial to us during the project's completion.

I would like to thank the Principal, College, and our Parents for providing us with this opportunity.

Table of Contents

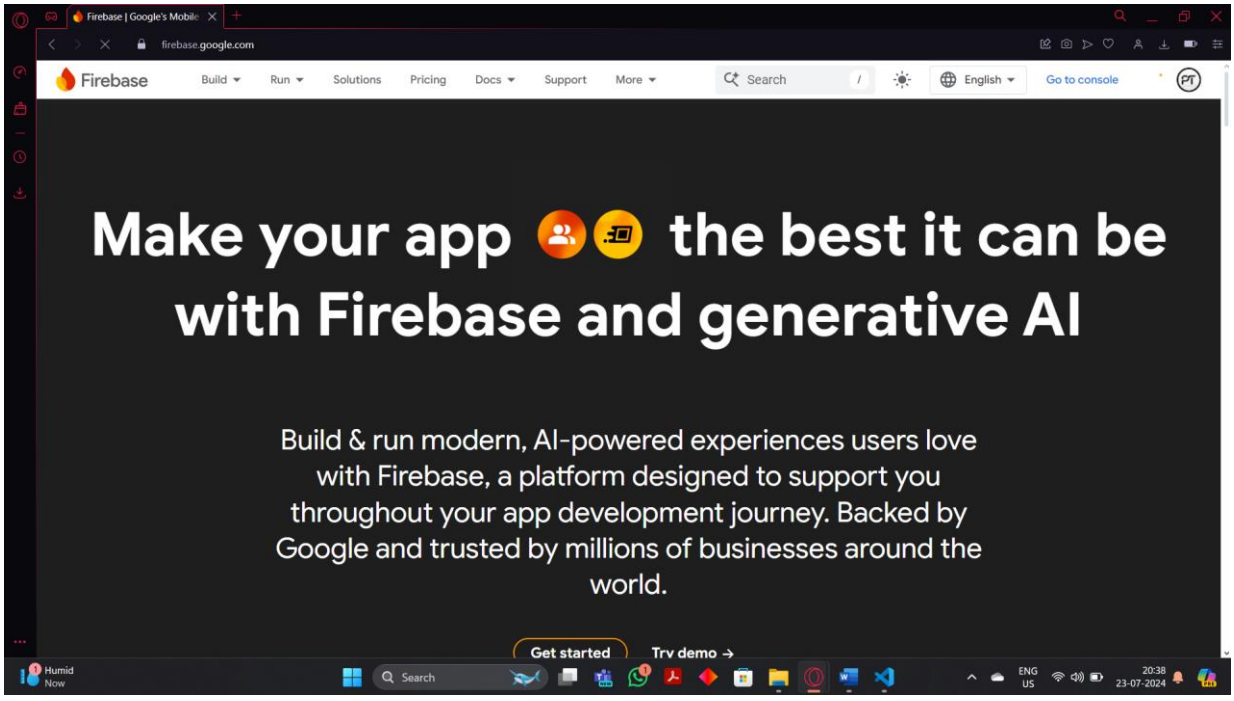
1. Introduction

In the modern era cloud computing and the adoption of cloud-based solutions has revolutionized the way applications are developed, deployed, and managed. Cloud computing offers scalable, flexible, and cost-effective infrastructure, making it an integral part of contemporary software development. This report describes about deployment of a to-do list application, leveraging the capabilities of Firebase—a powerful platform provided by Google for building and nurturing web and mobile applications.

Our to-do list application is developed using Python's Streamlit library, a popular framework for creating interactive and data-driven web applications with minimal effort. The primary focus of this report is to illustrate the process of deploying the application on Firebase, showcasing the seamless integration and benefits of using cloud-based services.

2. What is a Firebase ?

Firebase is a set of backend cloud computing services and application development platforms provided by Google. It provides a variety of tools and services to help developers build high-quality apps, improve their user base, and make more money. It is built on Google's infrastructure and is designed to scale to support apps with growing user bases. It hosts databases, services, authentication, and integration for a variety of applications, including Android, iOS, JavaScript, Node.js, Java, Unity, PHP, and C++. It helps developers to build their apps faster and in a more secure way. It helps developers to build their apps faster and in a more secure way. It uses NoSQL for the database for the storage of data.



3. The Key Features of Firebase

Firebase is a comprehensive app development platform from Google that provides a suite of integrated tools and services to help developers build, deploy, and grow high-quality apps quickly and cost-effectively. Firebase supports a variety of client platforms including iOS, Android, Web, Unity, Flutter, and more with client-side SDKs.

Real-time Database: Firebase offers a real-time NoSQL database that allows you to store and sync data between your users in real-time.

Authentication: Firebase Authentication makes it easy to authenticate users using only client-side code. It supports authentication using passwords, phone numbers, popular federated identity providers like Google, Facebook, and Twitter, and more.

Cloud Firestore: A flexible, scalable database for mobile, web, and server development from Firebase and Google Cloud Platform.

Cloud Storage: Firebase provides a powerful, simple, and cost-effective object storage service built for Google scale.

Scalability: It uses cloud services like firestore, which automatically scales your applications.

Hosting: Firebase Hosting provides fast and secure static hosting for your web app. It can host your web app, static assets, and dynamic content and serve it via a global CDN (Content Delivery Network).

Firebase Performance Monitoring: It gives you insights into the performance characteristics of your app, helping you understand where and when your app's performance can be improved.

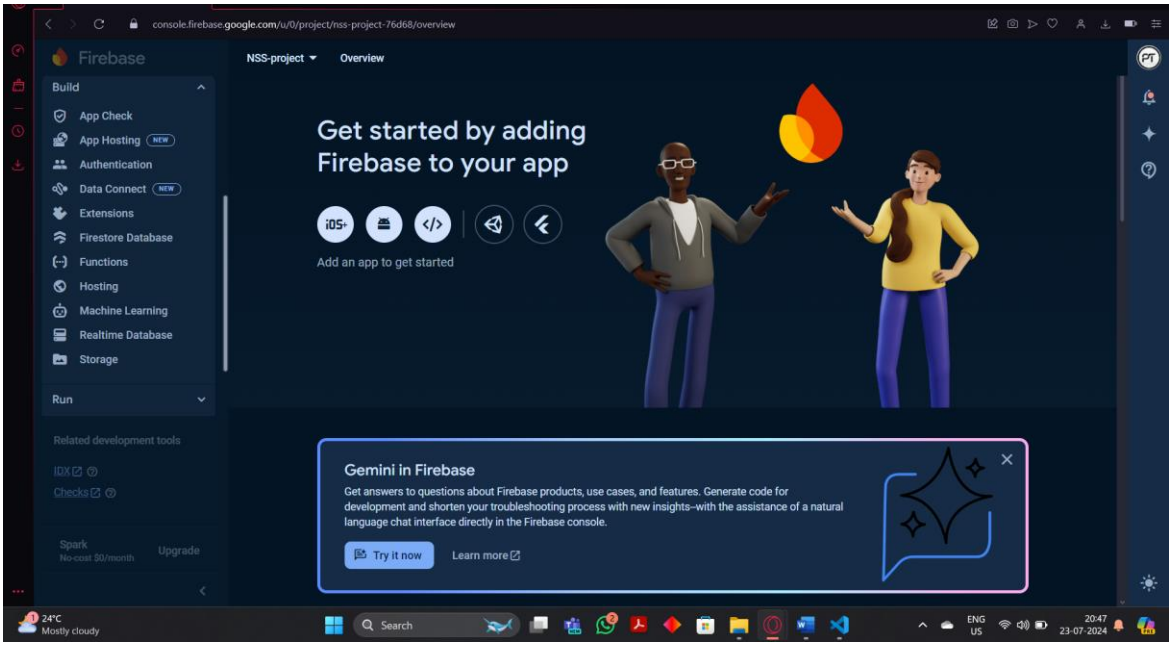
Cost Management: It monitors usage and sets budget alerts to avoid unexpected loss. It monitors to gain insights into application performance and health. Firebase offers a free tier and a pay-as-you-go "Blaze" plan for scaling usage. It is designed to be cost-effective and easy to use for developers.

Firebase Cloud Messaging(FCM): The FCM service provides a connection between the server and the application end users, which can be used to receive and send messages and notifications. These connections are reliable and battery-efficient.

Test lab: This service helps to test your applications on real and virtual devices provided by Google which are hosted on the Google Datacenters. It is a cloud-based app-testing infrastructure which supports testing the application on a wide variety of devices and device configurations

Crashlytics: It is used to get real-time crash reports. These reports can further be used to improve the quality of the application. The most interesting part of this service is that it gives a detailed description of the crash which is easier to analyze for the developers.

App Distribution: This service is used to pre-release applications that can be tested by trusted testers. It comes in handy as decreases the time required to receive feedback from the testers.



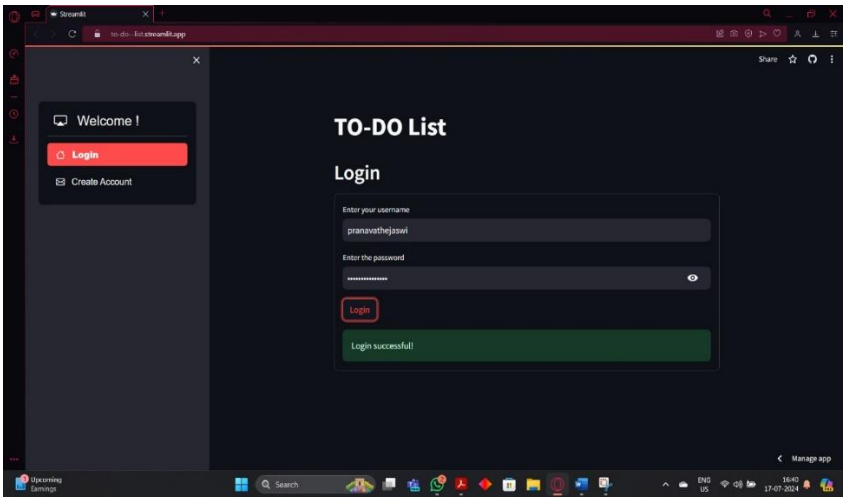
4. The Working of the app (code)

Our to-do list application is developed using Python's Streamlit library, a popular framework for creating interactive and data-driven web applications with minimal effort.

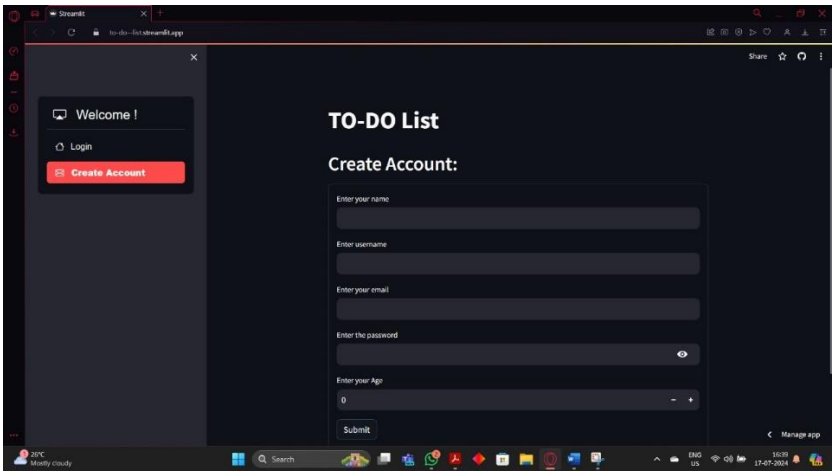
This Streamlit app sets up a simple interface with a sidebar menu allowing users to either log in or create a new account.

The sidebar contains radio buttons for navigation, and based on the user's selection, the appropriate function (login_page or signin_page) is called to handle the respective actions.

The login_page and signin_page functions, imported from separate modules, manage the login and account creation processes, respectively. This structure ensures a clean separation of concerns, making the app modular and easier to maintain.

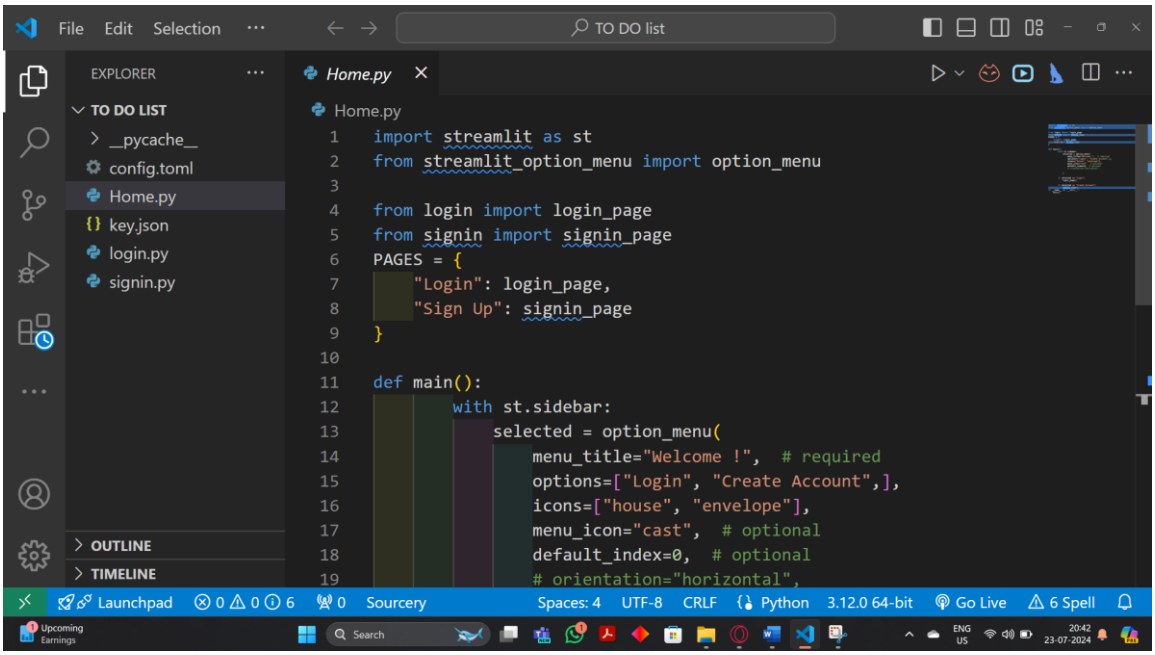


The above image shows the login page of the app



The above image shows the Signin/ create account page of the app

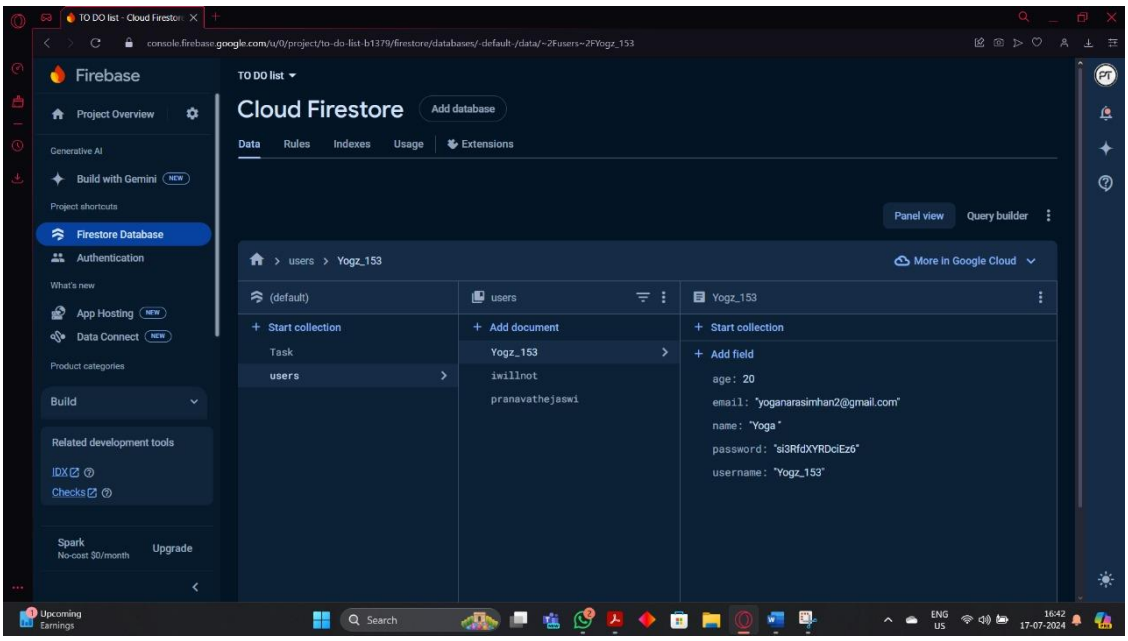
A configuration file for setting up the server details for your Streamlit application is included in the code.



Then there is a JSON file that contains all the necessary credentials and configuration details required for your application to authenticate and interact with Firebase services securely.

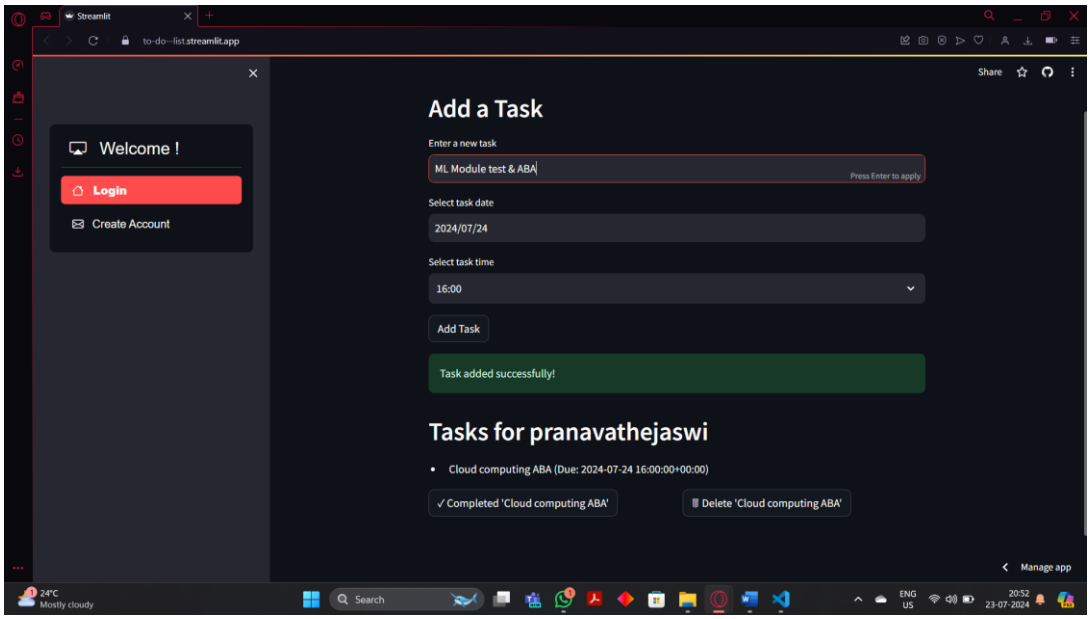
It is used to establish a secure connection between your application and Firebase, allowing you to perform various operations such as database reads/writes, user authentication, and more.

This Streamlit application provides a to-do list functionality where users can log in, add tasks with specified dates and times, view their tasks, and modify or delete them.



The above image represents the Firestore Database , here we can see the data entered by the users of this app

The application uses Firebase Firestore to store and retrieve user data and tasks. This Streamlit application allows users to create accounts for a to-do list app using Google Firestore for data storage.



The View of To-Do list Addition of tasks and tasks display

Task Management:

- **Add Tasks**: Users can add new tasks with a description, date, and time.
- **Display Tasks**: Users can view their list of tasks, each with a description and due date/time.
- **Modify Tasks**: Users can modify the description and due date/time of existing tasks.
- **Delete Tasks**: Users can delete tasks from their list.

5. Conclusion

In conclusion, the use of Firebase in deploying our to-do list app exemplifies the advantages of cloud-based solutions in application development. Its scalability, real-time capabilities, ease of use, and cost-effectiveness make it an indispensable tool for modern developers aiming to build efficient, secure, and user-friendly applications.

Firebase not only simplifies the development process but also ensures that the app remains robust and scalable, capable of meeting the evolving needs of users and the market.