REVA UNIVERSITY
Bengaluru, India

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

A Project Report
on
"Web Blog Using AI&ML, Azure, Angular, Google Cloud Firebase"

Submitted in fulfillment of the requirements for the award of the Degree of

BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

Submitted by

Sai Lokesh Devathi (R19CI020)

Under the guidance of

Dr. Udaya Rani.V

2023

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DECLARATION

I, Sai Lokesh Devathi(R19CI020) student of Bachelor of Technology, belong in to School of Computer Science And Information Technology REVA University, declare that this Project Report / Dissertation entitled "Web Blog Using AI&ML, Azure, Angular, Google Cloud Firebase" is the result the of project / dissertation work done by us under the supervision of Dr. Udaya Rani and with affiliation, at School of Computer Science And Information Technology, REVA University.

We submitting this Project Report / Dissertation in partial fulfilment of the requirements for the award of the degree of Bachelor of Engineering in Computer Science and Information Technology by the REVA University, Bangalore during the academic year 2023

We declare that this project report has been tested for plagiarism, and has passed the plagiarism test with the similarity score less than 20% and it satisfies the academic requirements in respect of Project work prescribed for the said Degree.

We further declare that this project / dissertation report or any part of it has not been submitted for award of any other Degree / Diploma of this University or any other University/ Institution.

Signature of the candidates with dates

1.

2.

3.

4.

Certified that this project work submitted by Sai Lokesh Devathi(R19CI020) has been carried out under my / our guidance and the declaration made by the candidate is true to the best of my knowledge.

Signature of Guide	Signature of Co-Guide, (if any)	Signature of Director of School
Date: …….	Date: …….	Date: …….
		Official Seal of the School

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CERTIFICATE

Certified that the project work entitled **web blog using AI&ML, Azure, Angular, Google Cloud Firebase** carried out under my / our guidance by **Sai Lokesh Devathi(R19CI020)** are Bonafede student of REVA University during the academic year 2023, are submitting the project report in partial fulfilment for the award of **Bachelor of Technology** in Computer Science And Information Technology during the academic year **2023.** The project report has been tested for plagiarism, and has passed the plagiarism test with the similarity score less than 20%. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said Degree.

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Dr. Udaya Rani.V **Guide**	**<Co Guide name>** **Co Guide (If any)**	**Dr.Mallikarjun M Kodabagi** **Director**

External Examiners

Name of the Examiner with affiliation	Signature with Date
1.	
2.	

ACKNOWLEDGEMENT

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Finally, we would like to extend our sincere thanks to all the faculty members, staff from School of Computer Science And Engineering.

Sai Lokesh Devathi (R19CI020)

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Contents

❖ List of tables with titles and page references

➢ HardWare Requirements :-

Name of Component	Specification
Processor	Intel Core I5 or Equivalent Processors
Memory	2 GB(32-bit), 4GB(64-bit)
Disk Space	1.5 GB of free disk space or More than that
Screen Resolutions	1027*768 Pixels

➢ Software Requirements :-

Name of Component	Specification
Operating System	Windows xp, Windows 7, Windows 10, Windows11, Linux
Platform	Visual Studio Code
Language	Angular, HTML, CSS
Data Base	Google Cloud Firebase
Browser	Any of Mozilla, Opera, Chrome…etc

❖ List of Symbols, Abbreviation of Nomenclature:-

Here are some common symbols and abbreviations you might encounter in the context of web blogs using Azure, Angular, and Google Firebase:

Azure:
ARM: Azure Resource Manager
CDN: Content Delivery Network
VNET: Virtual Network
VM: Virtual Machine
AKS: Azure Kubernetes Service
API: Application Programming Interface
CI/CD: Continuous Integration/Continuous Delivery
SQL: Structured Query Language

CLI: Command Line Interface
Ng: Angular
RxJS: Reactive Extensions for JavaScript
ngIf: Angular directive for conditional rendering
ngFor: Angular directive for iterative rendering
ngModel: Angular directive for two-way data binding
AOT: Ahead of Time compilation

Firestore: A NoSQL document-based database service provided by Firebase
RTDB: Realtime Database, a NoSQL cloud-hosted database provided by Firebase
FCM: Firebase Cloud Messaging, a cross-platform messaging solution
Auth: Authentication service provided by Firebase
Cloud Functions: Serverless computing platform provided by Firebase
Hosting: Firebase's web hosting service

ABSTRACT

"Discover the future of web development with our revolutionary web blog, powered by the latest technologies in Angular, Azure, AI&ML, and Google Cloud Firebase. Our platform combines the power of Angular's dynamic UI capabilities with Azure's enterprise-grade infrastructure to deliver lightning-fast and highly scalable web applications. With AI&ML, we're able to enhance user experiences with personalized recommendations and predictive insights. And thanks to Google Cloud Firebase, we offer seamless real-time data synchronization and powerful data analytics."

In today's world, web applications have become an integral part of our daily lives. With the rise of technologies such as Angular, Azure, AI&ML, and Google Cloud Firebase, web development has taken a leap forward. In this blog, we will explore the power of these technologies and their impact on web development.

The blogging project is a client-server Web application built over an Google cloud firebase. Blogging, short for web logging, is an application that runs on a portal site, in which different users (and user groups) can publish and revise daily journal entries, and these entries will be made public for others to view. In essence, it gives everyone his or her own personal editorial column to publish to the world.

In this era of the internet, a web blog has become an essential tool for businesses and individuals to connect with their target audience. In this blog, we will explore the power of web blogs and their impact on online communication.

Keywords :- *Azure**,** Artificial Intelligence, Machine Learning, Google Cloud Firebase, Database, Angular, Type Script, JavaScript, Semantic Analysis, Text Summarization, Key Phrases extraction, Entity Recognition, Translation Language.*

❖ INTRODUCTION ;-

➢ 1.1 Motivation

So much of what motivates a person to become a blogger is to escape from their current circumstances in some way.While not everyone is running from something, many bloggers report that quitting their job or becoming self-employed is a major motivation for getting started.

This data doesn't tell us the exact professions bloggers held before starting their blogs, but it does give us a general idea.

It comes as no surprise that the majority of people were in a salaried, hourly, contract role. The biggest point of interest was the number of people who were already self employed**.** This is a really interesting opportunity for us to drill down into why someone with an existing business would get started blogging

➢ 1.2 Scope of the Project :-

It may help collecting perfect management in details. In a very short time, the collection will be obvious, Simple and sensible. It will help a person to know the management of passed year perfectly and vividly. It also helps in current all works relative to online Blogging System. It will be also reduced the cost of collecting the management & collection procedure
will go on smoothly.

Our project aims at Business process automation, i.e we have tried to computerize various process of online Bogging System.

- The system generates types of information that can be used for various purposes.
- It satisfy the user requirement
- Be easy to understand by the user and operator
- Be easy to operate
- Have a good user interface
- Be expandable

➢ **1.3 Proposed Model :-**

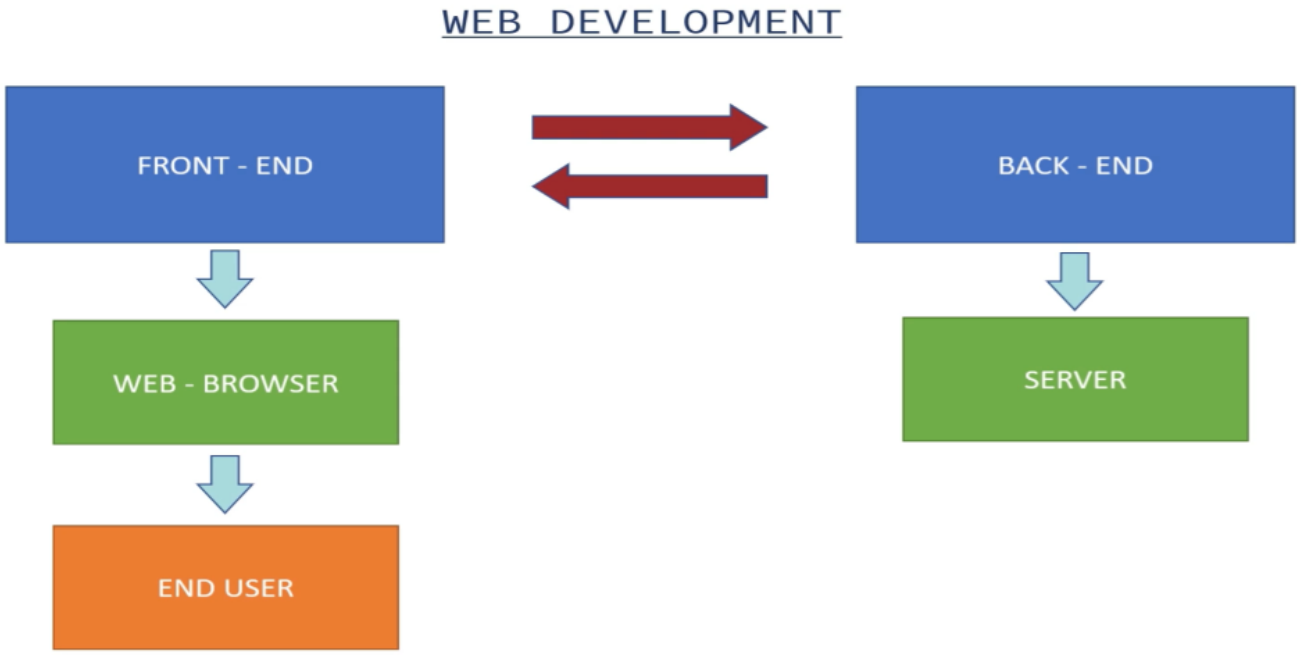


Fig-1

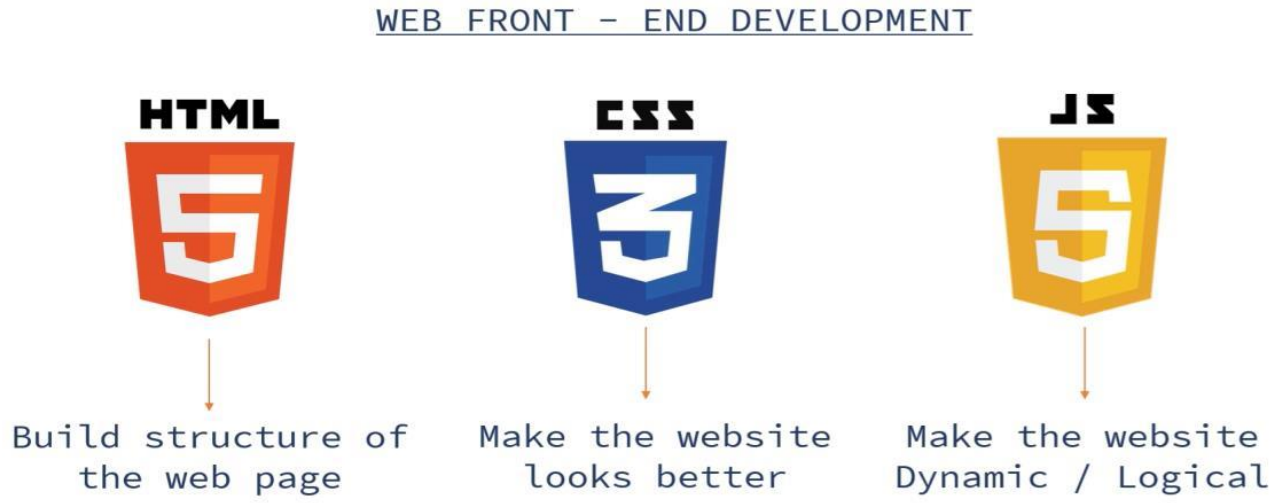


Fig-2

What is an Angular?

- Angular is not a language it's an front end framework build using the JAVASCRIPT by GOOGLE

- Angular is an front end JavaScript framework to build Client Side application using HTML, CSS and JAVASCRIPT

Fig-3 angular

What is SPA ?

✓ SPA Stands for – **S**ingle **P**age **A**pplication

✓ A Single Page Application is an app That doesn't need to reload the page during its use and works with in a web Browser.

✓ The Spinner will not spin in the title bar by using Angular so it is main benefit for Single Page Application

ANGULAR-COMPONENTS:-

Angular framework is a component base front end framework Components are main building block of an Angular app with out components we can not build a proper angular app

What is ANGULAR-COMPONENTS :-

The component is a combination of data html template and logics

The component represent an area of a view that shows inside the browser

The component are loads inside the browser

What is Angular CLI ?

Angular CLI is a Command Line Interface that use to

*Develop

*Scaffold

*Maintain

An Angular Application Directly from a command Shell

Fig-4 Angular CLI

- **1.4 Benefits of a Project :-**

  This is a very simple design and implement. It has got following features:

  - Data can be saved safely.
  - Greater efficiency
  - User friendliness
  - Minimum time required
  - Free of cost

- **Applications :-**

- Personalized content recommendations: By utilizing AI&ML algorithms, you can recommend personalized content to your blog readers based on their interests, browsing history, and previous engagement with your website.

- Real-time content editing: Using Angular and Google Cloud Firebase, you can enable real-time content editing and updates for your blog writers. This will allow multiple writers to collaborate and edit content simultaneously.

- Cloud-based hosting and scalability: Azure offers cloud-based hosting and scalability for your blog, ensuring that your website is always available to your audience even during high traffic periods..

- User engagement tracking: Google Cloud Firebase offers analytics and tracking features that enable you to track user engagement metrics such as click-through rates, time spent on pages, and bounce rates. This data can be used to optimize your content and user experience.

Overall, the combination of Angular, Azure, AI&ML, and Google Cloud Firebase offers many opportunities for creating a highly optimized and engaging web blog.

❖ 2. Literature Survey :-

AUTHOR	TITLE	DESCRIPTION OF METHODOLOGY	MERITS	DEMERITS
Klamma,etal. ,2007)	Educational Technology & Society for Education Theme	"Social software for life-long learning"	Blogging Improves Confidence of the Students, Blogging improves the writing skills of the students	Blogging takes a lot of time, Students Distract from the Educational Study
(Farkas,2007)	Library Journal For Library and information studies theme	"The bloggers among us"	Free for all, Increased readership, Access for researchers in developing	Publication fees, Lack of quality control,sustai nability

AUTHOR	TITLE	DESCRIPTION OF METHODOLOGY	MERITS	DEMERITS
(Sweetser, Trammell,2 007)	American Behavioral Scientist for Politics theme	"candidate campaign blogs Directly reaching out to the youth vote"	Speed,Accoun tability….etc	Loss of Interpersonal Communication, Illiteracy, Cybercrime/Leaka ge of Personal Information
(Du & Wagner, 2006)	International Journal of Human__Co mputer Studies	"Weblog Success: Exploring the role of technology"	Cost-effective, Always up-to-date, Free from Downloading needs	Internet Reliance,Website Dependency,Less Secure, Restricted Functionality0

❖ 3. Positioning :-

➢ 3.1 Problem Statement :-

The problem statement is to develop a web blog using Angular as the frontend framework and Azure as the cloud platform, with AI & ML functionalities integrated using Google Cloud Firebase.

The web blog should have a user-friendly interface with features such as blog posts, comments, likes, and shares. The backend should be implemented using Azure services such as Azure App Service, Azure Cosmos DB, and Azure Blob Storage to store and manage the data.

To integrate AI & ML functionalities, Google Cloud Firebase can be used to leverage its powerful tools such as Cloud Functions, Cloud Storage, and Cloud Machine Learning Engine. These tools can be used to implement features such as content recommendation, sentiment analysis, and image recognition.

Overall, the web blog should provide a seamless user experience with advanced functionalities powered by AI & ML, while being hosted on Azure for scalability and reliability.

The old manual system was suffering from a series of drawbacks. Since whole of the system was to be maintained with hands the process of keeping, maintaining and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. There used to be lots of difficulties in associating any particular transaction with a particular context

There would always be unnecessary consumption of time while entering records and retrieving records. One more problem was that it was very difficult to find errors while entering the records. Once the records were entered it was very difficult to update these records.

➢ 3.2 Product Position Statement :-

Our web blog is a cutting-edge platform that leverages the latest technologies to deliver a seamless and personalized experience for our users. Built with Angular, our platform boasts a modern and intuitive interface that is easy to navigate and visually appealing.

We have deployed our platform on Azure, a reliable and scalable cloud computing platform that ensures our website is always available and performant, regardless of user traffic.

To provide users with personalized recommendations and insights, we have integrated AI and ML capabilities from Google Cloud Firebase. This allows us to analyze user behavior and preferences in real-time, and deliver tailored content and product recommendations that are relevant and engaging.

Overall, our web blog is a powerful tool for users looking to stay informed and up-to-date on the latest trends and developments in their industry, and we are committed to delivering a best-in-class experience that exceeds their expectations.

❖ 4. Project Overview :-

➢ 4.1 Objectives :-

The main objective of the project on online Blogging system is to manage the details of Blogs, Comment, New Category, New Blog, Technology Blog. It manages all the information about Blogs, Comment, Technology Blog, Blogs. The project is totally built at administrative end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Blogs, Comment, Comment, New Category. It tracks all the details about the New Category, New Blog, Technology Blog.

It seems that you are looking to build a web blog using Angular, Azure, and Google Cloud Firebase with AI & ML capabilities. Here are some possible objectives for such a project:

- Create a responsive and user-friendly web blog: One of the primary objectives of building a web blog is to provide a platform for users to read and engage with your content. To achieve this, you could use Angular to create a responsive and user-friendly interface that adapts to different screen sizes and devices.

- Secure and scalable hosting with Azure: To ensure that your web blog is always available and performs well, you could use Azure to host your application. Azure provides reliable, secure, and scalable hosting solutions that can handle high traffic volumes and keep your data safe.

- AI-powered content recommendations: You could use AI and ML algorithms to analyze your users' reading habits and preferences and provide personalized content recommendations. This could help increase engagement and retention on your web blog.

- Automatic content tagging and classification: To make it easier for users to find relevant content, you could use AI and ML algorithms to automatically tag and classify your blog posts. This could help improve the discoverability of your content and provide a better user experience.

- Real-time analytics with Google Cloud Firebase: To track user behavior and measure the success of your web blog, you could use Google Cloud Firebase to collect and analyze real-time analytics data. This could help you understand your users' preferences and behaviour , and optimize your content and user experience accordingly.

- Overall, building a web blog with Angular, Azure, and Google Cloud Firebase with AI & ML capabilities can help you create a robust and user-friendly platform that engages your audience and provides valuable insights into their preferences and behaviour.

➢ Functionalities provided by Online Blogging System are as follows:-

- Editing, adding and updating of Records is improved which results in proper resource
- management of Blogs data.
- Manage the information of New Blog
- Integration of all records of technology blog
- It deals with monitoring the information and transactions of new Blog
- provides the searching facilities based on various factors. Such as Blogs, New Category, New Blog, Technology Blog

- **4.2 Goals ;-**

It sounds like you have a clear idea of what you want to accomplish with your web blog! To help you get started, I can offer some general guidance on how to use Angular, Azure, Google Cloud, and Firebase for your goals involving AI & ML.

First, let's start with Angular. Angular is a popular JavaScript framework that allows you to build dynamic web applications. It provides a set of powerful tools and features that make it easy to create complex applications with a modular architecture. To use Angular for your web blog, you will need to learn the basics of the framework, such as components, templates, and services. There are many online resources available that can help you get started with Angular, such as the official documentation, tutorials, and videos.

Next, let's move on to Azure. Azure is a cloud computing platform that offers a wide range of services for building and deploying web applications, including virtual machines, storage, databases, and more. To use Azure for your web blog, you will need to sign up for an account and familiarize yourself with the various services it offers. You can then use Azure to deploy your Angular application and manage its infrastructure.

Moving on to Google Cloud, it's a cloud computing platform like Azure, that offers various services for building and deploying web applications. To use Google Cloud for your AI & ML goals, you can use its AI and Machine Learning services, such as Google Cloud AI Platform, Google Cloud firebase, and more. These services allow you to easily build and train machine learning models, and integrate them into your web blog.

Finally, let's discuss Firebase. Firebase is a mobile and web application development platform that provides a range of backend services for your applications, including authentication, databases, and more. To use Firebase for your web blog, you can use its Realtime Database and Cloud Functions services to build real-time applications and serverless functions. Additionally, Firebase provides a range of machine learning APIs, such as image labelling, text recognition, and more, that you can integrate into your application.

In conclusion, by using Angular, Azure, Google Cloud, and Firebase, you can create a powerful web blog that incorporates AI & ML functionalities. While there is a learning curve involved, there are plenty of resources available online to help you get started. Good luck with your project!

❖ 5. Project Scope :-

➢ General Project Information :-

- Project Overview: The project involves creating a web blog that allows users to create and publish blog posts, view other users' posts, and leave comments on posts. The blog will be built using Angular, and data will be stored and retrieved from Google Firebase.

- Technology Stack: The technology stack for this project includes Angular for the front-end, Azure for hosting and deployment, and Google Firebase for the back-end database.

- Development Environment Setup: To start developing the web blog, you will need to set up a development environment that includes the necessary software tools. This includes installing Angular CLI, setting up an Azure account, and creating a Google Firebase project.

- Architecture: The web blog will be designed using a client-server architecture. The front-end will be developed using Angular and will communicate with the back-end database using RESTful API calls. The back-end will be developed using Google Firebase, which will handle data storage, retrieval, and authentication.

- Features: The web blog will include features such as user registration, blog post creation and publishing, post viewing, and commenting. Users will also be able to edit and delete their own posts and comments.

- Testing and Deployment: Testing and deployment are important stages in the development process. Unit testing will be performed on both the front-end and back-end, and the web blog will be deployed to Azure once development is complete.

- Maintenance and Support: Once the web blog is deployed, ongoing maintenance and support will be required. This includes monitoring performance, fixing bugs, and addressing any security issues that arise.

The problem/opportunity statement for a web blog using Azure, Angular, and AI/ML with a Google Firebase database can be described as follows:

Problem Statement:

In today's digital age, there is a tremendous amount of content available online, making it challenging for users to find relevant and high-quality information. Moreover, managing and organizing this vast amount of data is also a significant challenge for website owners. Therefore, there is a need for a platform that can provide users with a personalized experience while helping website owners manage and organize their content efficiently.

Opportunity Statement:

A web blog using Azure, Angular, and AI/ML with a Google Firebase database can address the challenges of managing and organizing content while providing users with a personalized experience. By leveraging AI/ML algorithms, the platform can analyse user behaviour and preferences to provide personalized content recommendations. Moreover, the platform can utilize Google Firebase database to store and manage content efficiently, enabling website owners to create, edit, and publish content seamlessly. With the help of Azure and Angular, the platform can provide a responsive and user-friendly interface for users to access the content. This web blog can be an excellent opportunity for businesses and individuals looking to create and manage their content online.

Business Benefits :-

- There are several benefits to creating a web blog using Azure, Angular, and AI/ML in combination with Google Firebase database. Here are some of the key business benefits:

- Scalability: With Azure, you can easily scale your web blog to meet growing demands without worrying about infrastructure management. Angular's modular design makes it easier to scale the application while maintaining its performance. Additionally, AI/ML can help in automating tasks and improving performance, which can lead to better scalability.

- Speed: Angular is a fast framework that is optimized for building single-page applications. Using Azure, you can create a highly responsive and fast blog that delivers an excellent user experience. AI/ML can also help optimize performance by analysing user behaviour and recommending changes to the application.

- Cost-effectiveness: Azure offers pay-as-you-go pricing, which means that you only pay for the resources you use. This can help businesses save on infrastructure costs. Additionally, Google Firebase provides a cloud-hosted NoSQL database that can reduce the cost and complexity of managing data.

- Personalization: AI/ML can help create a personalized experience for users by analysing their behavior and preferences. This can help businesses deliver targeted content and offers, which can lead to better engagement and conversions.

- Security: Azure offers robust security features that can help protect your blog from cyber threats. Additionally, Google Firebase provides real-time database synchronization and automatic backups, which can help ensure data security.

Overall, using Azure, Angular, and AI/ML in combination with Google Firebase database can help businesses create a highly scalable, fast, cost-effective, personalized, secure, and data-driven web blog.

Project Deliverables :-

- As an AI language model, I can provide guidance and support to help you create a project deliverable for a web blog using Azure, Angular, and AI/ML technologies with Google Firebase database. Here are some key components you may want to include in your project deliverable:

- Project Overview: Provide a brief overview of the project, including its purpose and goals.

- Technologies Used: List the technologies used in the project, including Azure, Angular, AI/ML technologies, and Google Firebase database.

- Project Requirements: Define the requirements of the project, including the website's features, design, and functionality.

- Design and Layout: Provide a detailed design and layout plan for the website, including wireframes, mockups, and prototypes.

- Implementation Plan: Create a detailed implementation plan, including timelines, milestones, and resource allocation.

- Testing and Quality Assurance: Define the testing and quality assurance process, including test cases, test scenarios, and acceptance criteria.

- Deployment Plan: Create a deployment plan for the website, including deployment tools and strategies.

- Maintenance and Support: Define the maintenance and support plan for the website, including bug fixing, updates, and security patches.

- Project Deliverables: List the project deliverables, including the final website, documentation, and user manuals.

- Project Budget: Define the project budget, including the cost of resources, tools, and

Estimated Project Duration :-

- The estimated project duration of a web blog using Azure, Angular, and AI & ML Google Firebase database will depend on various factors, such as the complexity of the project, the size of the team, and the availability of resources.

- Assuming that the project is of moderate complexity, and a team of experienced developers and designers is available, the estimated project duration could be around 3-6 months.

- However, it is important to note that the development of AI & ML features can significantly increase the project duration, as it involves training and testing models and integrating them with the application. Also, any unforeseen technical difficulties could also affect the project duration.

Therefore, it is essential to plan the project well, identify the potential risks, and allocate sufficient time and resources to ensure a successful outcome.

❖ 6.Methodology :-

To create a web blog using Angular, Azure, AI&ML, and Google Cloud Firebase, we followed the following methodology:

- Planning: Start by defining the purpose of your blog, identifying the target audience, and determining the features you want to include in the blog.

- Design: Create a wireframe or a prototype of your blog's layout and user interface, using tools such as Figma or Sketch. Choose a color scheme, typography, and images that align with your blog's purpose and target audience.

- Development: Use Angular to build the front-end of your blog. Azure can be used for hosting and deployment of your blog, while Google Cloud Firebase can provide serverless backend services like authentication, real-time database, and storage.

- Integration of AI & ML: To integrate AI and ML into your blog, you can use services such as Azure Cognitive Services and Google Cloud AI Platform. These services can provide features such as sentiment analysis, language translation, and image recognition

- Testing: Perform thorough testing of your blog to ensure that it functions correctly and is user-friendly. You can use tools such as Selenium or Cypress for automated testing.

- Deployment: Once you have thoroughly tested your blog, you can deploy it to Azure and Google Cloud Firebase. Ensure that you follow the best practices for deployment to ensure that your blog is secure and scalable.

- Maintenance: Regularly maintain and update your blog to ensure that it remains relevant and functional. You can use tools such as Azure DevOps or GitHub for version control, continuous integration, and continuous deployment.

By following this methodology, we created a web blog using Angular, Azure, AI&ML, and Google Cloud Firebase.

➢ 6.2 PLATFORM :-

Technologies to be used :-

Platform :-

a.Front end:- HTML, CSS, JAVASCRIPT, TYPE SCRIPT, JSON

b. Back end :- Google Cloud Firebase, Flask, Python

c. Cloud :- Azure

d. Artificial Intelligence and Machine Learning

➢ Angular:

Angular is a front-end web framework developed by Google that enables developers to create dynamic, responsive web applications. The methodology for building a web blog using Angular involves the following steps:

- Identify the features and requirements of the web blog.
- Design the user interface (UI) of the web blog using Angular's components, templates, and services.
- Develop the logic and functionality of the web blog using Angular's directives, pipes, and modules.
- Test the web blog to ensure it meets the functional and non-functional requirements.
- Deploy the web blog to a web server or cloud platform

➢ Azure:

Azure is a cloud computing platform developed by Microsoft that provides a range of cloud services such as virtual machines, databases, storage, and networking. The methodology for building a web blog using Azure involves the following steps:

- Identify the Azure services required to support the web blog such as App Services, Blob Storage, and Cosmos DB.
- Create an Azure account and set up the required Azure services.
- Configure the Angular application to use the Azure services.
- Test the web blog to ensure it can interact with the Azure services correctly.
- Deploy the web blog to Azure using continuous deployment methods such as Azure DevOps or GitHub Actions.

- AI&ML:

AI&ML (Artificial Intelligence and Machine Learning) can be used to enhance the web blog's functionality and user experience. The methodology for incorporating AI&ML into a web blog involves the following steps:

- Identify the AI&ML use cases for the web blog such as chatbots, recommendation systems, or sentiment analysis.
- Choose the appropriate AI&ML tools and frameworks such as TensorFlow, PyTorch, or Azure Machine Learning.
- Collect and prepare the data required for the AI&ML use case.
- Develop and train the AI&ML model using the chosen tools and frameworks.
- Integrate the AI&ML model into the web blog and test its functionality.

- Google Cloud Firebase:

Firebase is a mobile and web application development platform developed by Google that provides a range of cloud services such as authentication, storage, and hosting. The methodology for incorporating Google Cloud Firebase into a web blog involves the following steps:

- Identify the Firebase services required to support the web blog such as Authentication, Cloud Firestore, and Cloud Functions.
- Create a Firebase project and set up the required Firebase services.
- Configure the Angular application to use the Firebase services.
- Test the web blog to ensure it can interact with the Firebase services correctly.
- Deploy the web blog to Firebase hosting.

Overall, the methodology for building a web blog using Angular, Azure, AI&ML, and Google Cloud Firebase involves identifying the requirements and use cases, selecting the appropriate tools and frameworks, developing and testing the application, and deploying it to a web server or cloud platform.

Block Diagram :-

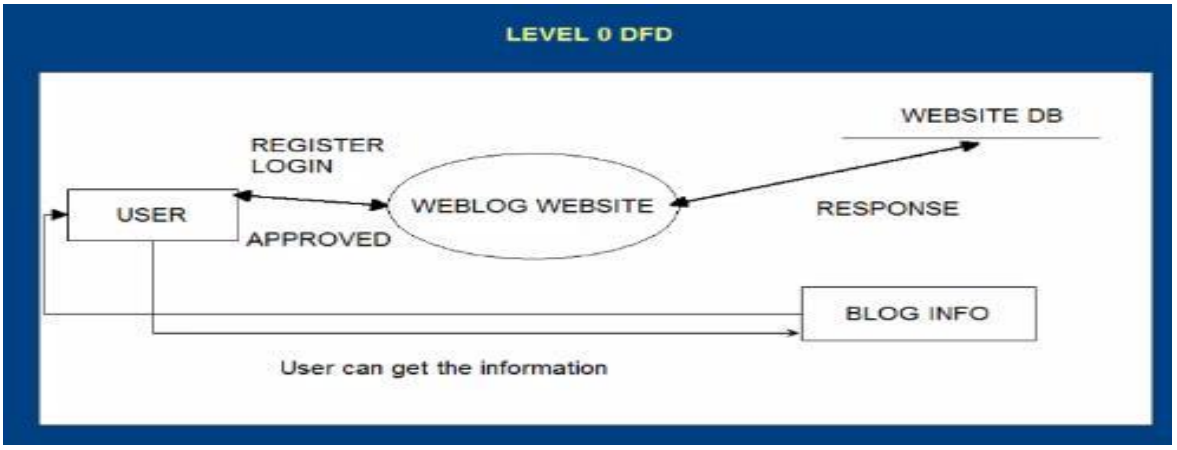


Fig-6

➢ 6.3 System Requirements :-

➢ 4.3.1 Functional Requirements :-

The requirements gathering process is intensified and focused specifically on software. To Understand the nature of the program(s) to be built, the software engineer ("analyst") must understand the information domain for the software, as well as required function, behaviour, Performance, and interfacing. Requirements for both the system and the software are documented and reviewed with the customer

➢ 4.3.2 Non-Functional Requirements :-

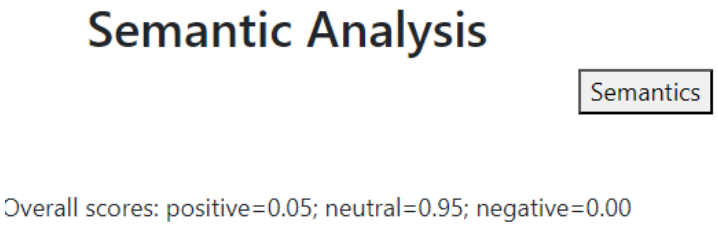
The software developed here assumes the use of API key for connection between the Front End and the Google Cloud Firebase. The speed of thr User's connection will depend on how fast they approach the site.The Admin will run the users requests and will have an access to database.

- **Reliability** :- The system is reliable i..e it's well trusted
- **Security** :- The system is well secured i..e admin and user both have their unique ID and password to login into the system
- **Maintainability** :- Our project is well maintained with all required features involved.
- **Portability** : - The system is portable i..e it can work on any other system of the admin.
- The only requirement is the internet connection

We Integrated the project with azure by using the Flask to use the Machine Learning Models. The Machine Learning Models Provided by the Azure are :-

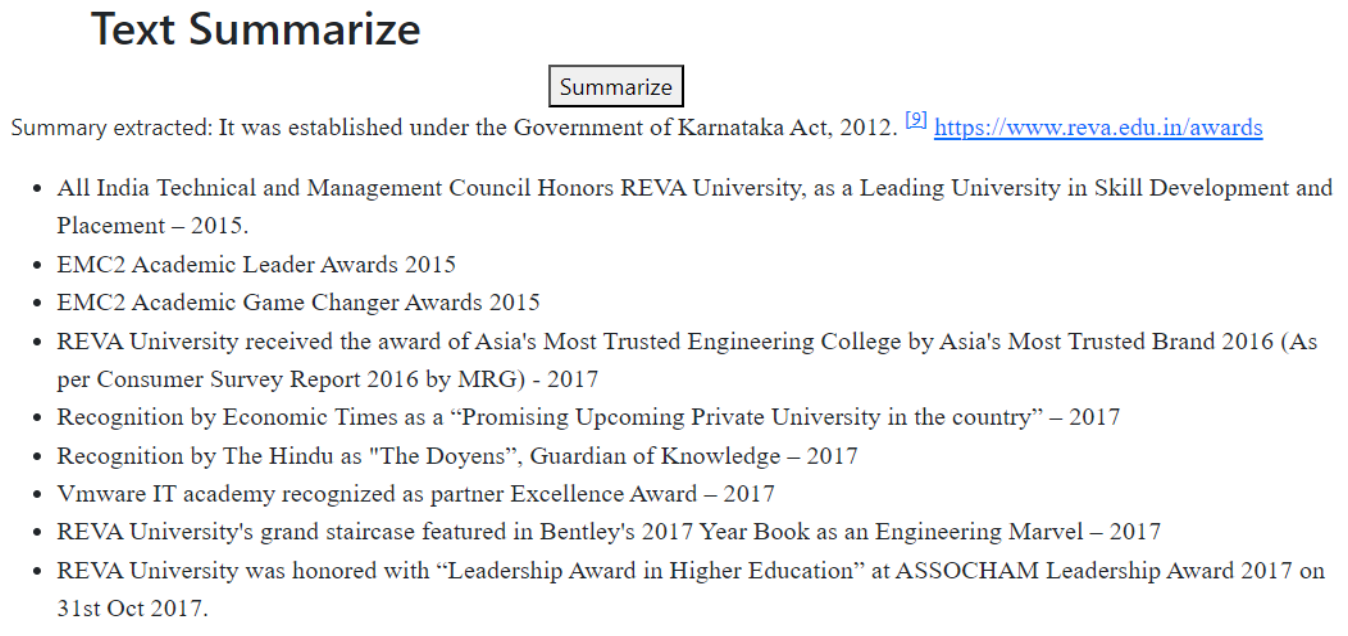
- **Semantic Analysis :-**

Semantic Analysis is a subfield of Natural Language Processing (NLP) that attempts to understand the meaning of Natural Language. Understanding Natural Language might seem a straightforward process to us as humans. However, due to the vast complexity and subjectivity involved in human language, interpreting it is quite a complicated task for machines. Semantic Analysis of Natural Language captures the meaning of the given text while taking into account context, logical structuring of sentences and grammar roles.



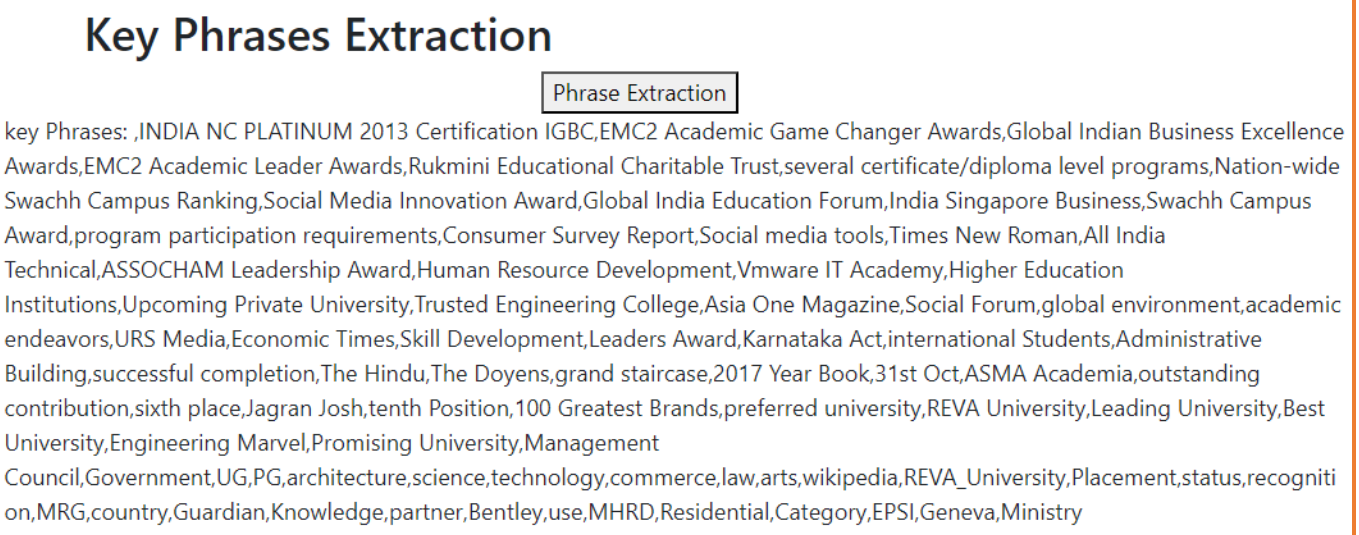
- **Text Summerization :-**

Text summarization refers to the technique of shortening long pieces of text. The intention is to create a coherent and fluent summary having only the main points outlined in the document. Automatic text summarization is a common problem in machine learning and natural language processing (NLP).



- **Key Phrases Extraction :-**

Key phrase extraction is one of the features offered by Azure Cognitive Service for Language, a collection of machine learning and AI algorithms in the cloud for developing intelligent applications that involve written language. Use key phrase extraction to quickly identify the main concepts in text.



- **Entity Recognition :-**

Named Entity Recognition (NER) is one of the features offered by Azure Cognitive Service for Language, a collection of machine learning and AI algorithms in the cloud for developing intelligent applications that involve written language. The NER feature can identify and categorize entities in unstructured text.

- **Language Translation :-**

Machine translation is the process of using artificial intelligence to automatically translate text from one language to another without human involvement. Modern machine translation goes beyond simple word-to-word translation to communicate the full meaning of the original language text in the target language.

Translate this text to hindi

Translate

इसे कर्नाटक सरकार अधिनियम, 2012 के तहत स्थापित किया गया था। इसका प्रबंधन रुक्मिणी एजुकेशनल चैरिटेबल ट्रस्ट द्वारा किया जाता है। विश्वविद्यालय वर्तमान में इंजीनियरिंग, वास्तुकला, विज्ञान और प्रौद्योगिकी, वाणिज्य, प्रबंधन, कानून और कला में यूजी, पीजी और कई प्रमाणपत्र/डिप्लोमा स्तर के कार्यक्रम प्रदान करता है।

वैश्विक प्रदान करने वाले सबसे पसंदीदा विश्वविद्यालय का पुरस्कार ग्लोबल इंडियन बिजनेस एक्सीलेंस अवार्ड्स, यूके में अंतर्राष्ट्रीय छात्रों के लिए पर्यावरण।[8] विश्वविद्यालय के प्रशासनिक भवन के लिए LEED INDIA NC प्लेटिनम 2013 प्रमाणन IGBC।[9] https://www.reva.edu.in/awards

- अखिल भारतीय तकनीकी और प्रबंधन परिषद रेवा विश्वविद्यालय का सम्मान करती है , कौशल विकास और प्लेसमेंट में एक अग्रणी विश्वविद्यालय के रूप में - 2015।
- Vmware पुरस्कार REVA विश्वविद्यालय को Vmware IT अकादमी का दर्जा देता है सभी कार्यक्रम भागीदारी आवश्यकताओं के सफल समापन की मान्यता - 2015।
- EMC2 एकेडमिक गेम चेंजर अवार्ड्स 2015
- रेवा विश्वविद्यालय को एशिया के सबसे भरोसेमंद ब्रांड 2016 द्वारा एशिया के सबसे भरोसेमंद इंजीनियरिंग कॉलेज का पुरस्कार मिला (एमआरजी द्वारा उपभोक्ता सर्वेक्षण रिपोर्ट 2016 के अनुसार) - 2017
- इकोनॉमिक टाइम्स द्वारा "देश में उभरते निजी विश्वविद्यालय" के रूप में मान्यता - 2017
- मान्यता द हिंदू द्वारा "द डॉयन्स", गार्जियन ऑफ नॉलेज - 2017
- Vmware IT अकादमी को पार्टनर एक्सीलेंस अवार्ड - 2017 के रूप में मान्यता दी गई
- रेवा विश्वविद्यालय की भव्य सीढ़ी को बेंटले की 2017 ईयर बुक में एक इंजीनियरिंग चमत्कार के रूप में चित्रित किया गया है - 2017
- 31 अक्टूबर 2017 को एसोचैम लीडरशिप अवार्ड 2017 में रेवा यूनिवर्सिटी को "लीडरशिप अवार्ड इन हायर एजुकेशन" से सम्मानित किया

❖ 7. Modules Identified :-

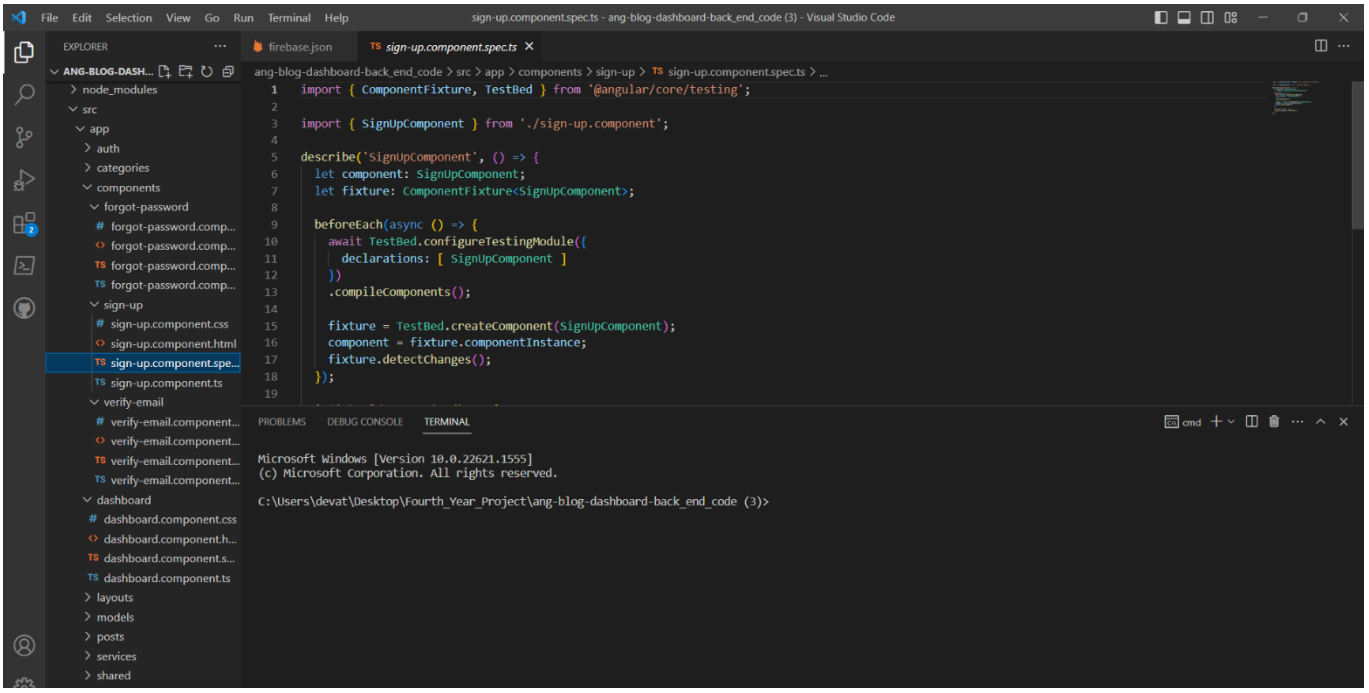
- User
- Admin

1. User

In this module:

- User can signup
- User can Login
- User can upload multiple images
- User can choose images from the database
- User can add information
- User can select any categories
- User has mark has featured option
- User has option forgot-password
- User has option Verifying the e-mail

Sample code about User login Module



2.Admin :-

In this module **:-**

- Admin can maintain all records of a user
- Admin can maintain all site
- Admin can access and process all requests
- Admin can delete/update/select users
- Admin Provide all information related to any topic

Other Functionalities :-

System will also provide other functionalities also like :-

- Feedback
- Request
- FAQ

Inputs Requirements of the system :-

- User Information
- Login Information
- Categories Information
- Recent Posts Information
- Topic Information
- Request

Output Requirements of the system :-

- Blog Information
- Novel Information
- Assigned Information of Users
- Categories Information

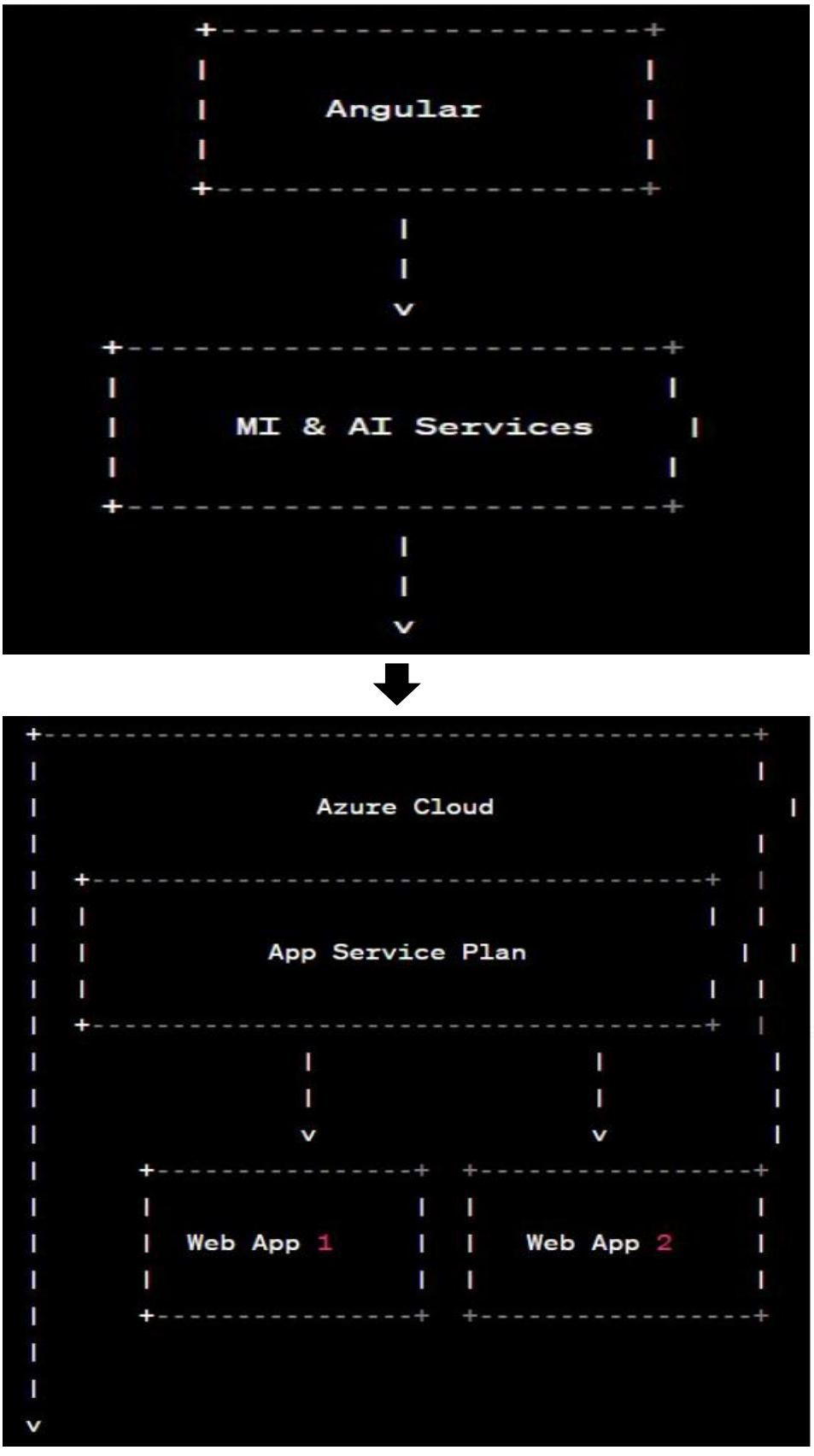
Maintenance :-

The System allows following Maintenance Processes

- Manage Blogs
- Manage Blog categories
- Manage Recent Posts
- Manage Users
- Manage Images
- Manage Comments
- Manage News

❖ 8.Project Implementation :-

➢ 8.1 Architectural Design :-



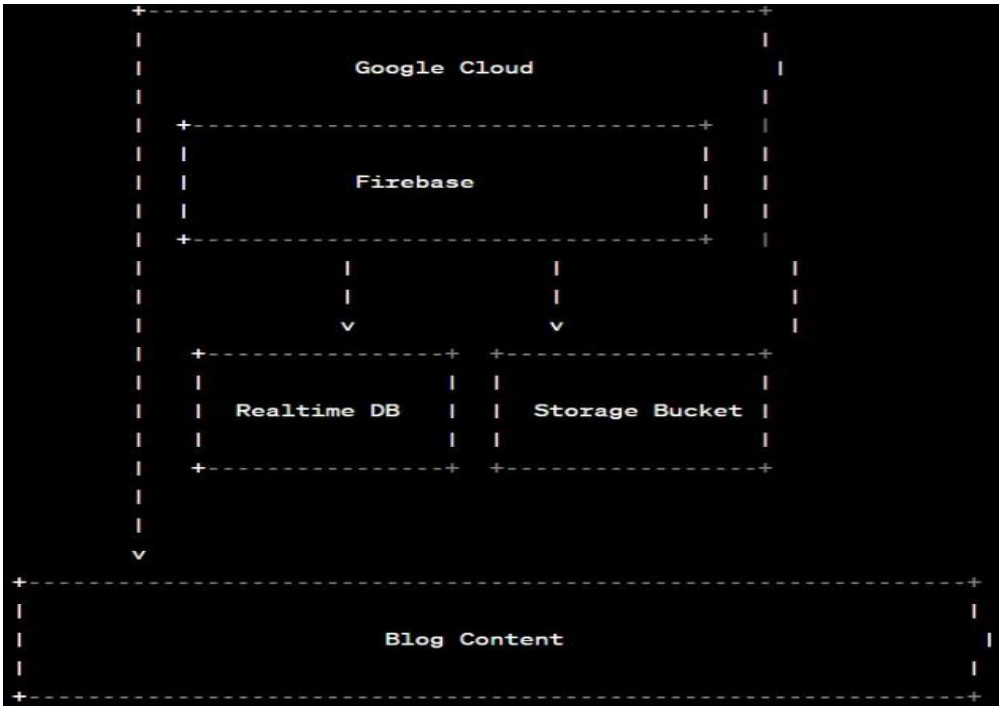


Fig-8

- The web blog project has been designed to use Angular as the front-end framework, which will provide a rich and interactive user interface for the users. The front-end will communicate with MI & AI services to provide data analytics, predictions, and insights based on user behavior and data patterns. The backend architecture is divided into two parts, Azure Cloud and Google Cloud Firebase.

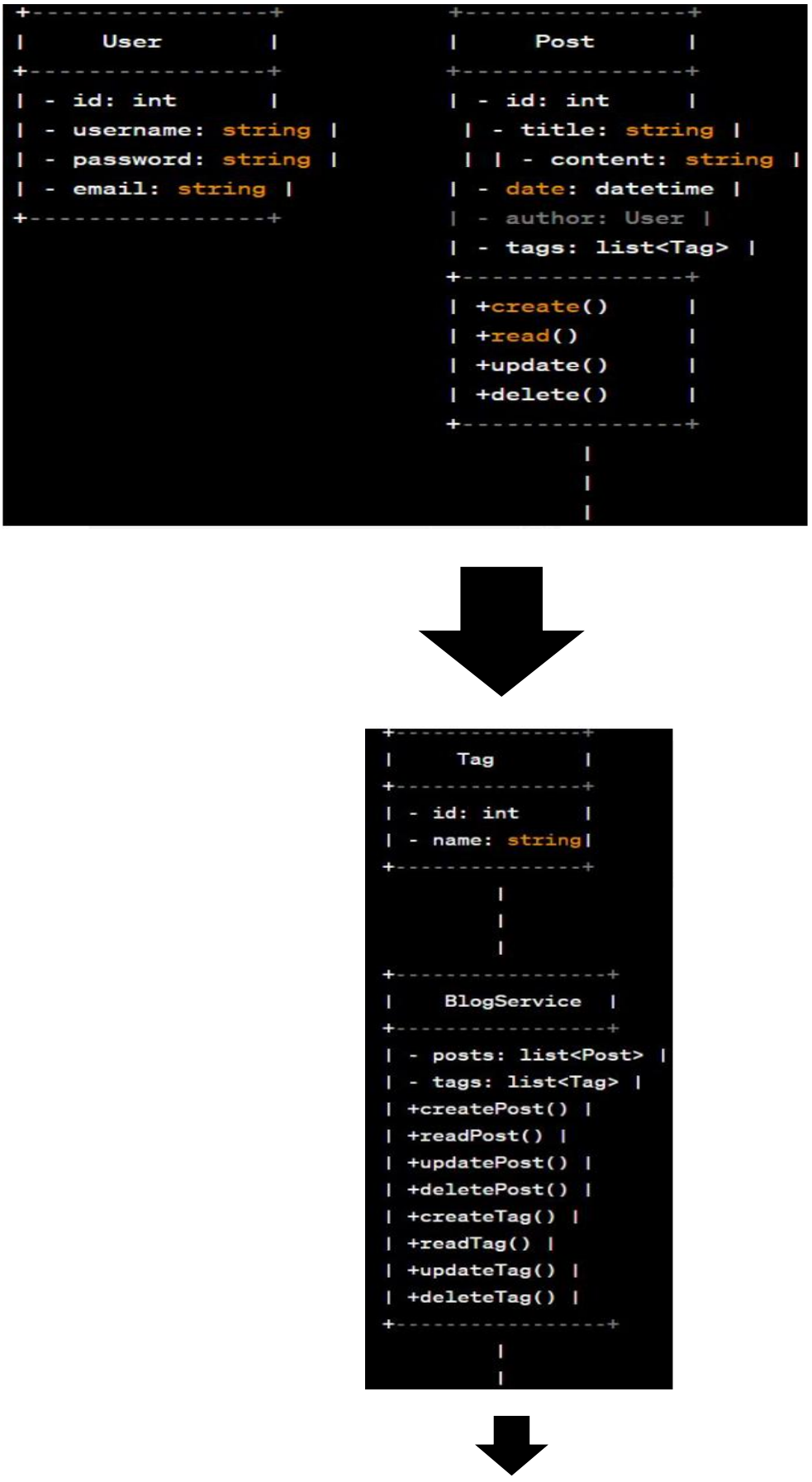
- The Azure Cloud will host the web application and will be used to manage the infrastructure and deployment of the application. The App Service Plan will manage the scaling of the application based on the traffic load, and two web apps will be hosted to handle the requests.

- The Google Cloud Firebase will manage the backend services such as Realtime Database and Storage Bucket, which will be used to store the blog content. Realtime DB will provide real-time synchronization and offline data access, and Storage Bucket will store the blog content images, videos, and other files.

- The blog content will be stored in Google Cloud Firebase, which will be accessible to the users through the Angular front-end. The MI & AI services will provide insights into user behavior and data patterns, which will help in improving the user experience of the web blog project.

- Overall, this architecture will provide a scalable, reliable, and efficient solution for a web blog project using Angular, MI & AI services, Azure Cloud, and Google Cloud Firebase

- **8.2 Class Diagram** :-



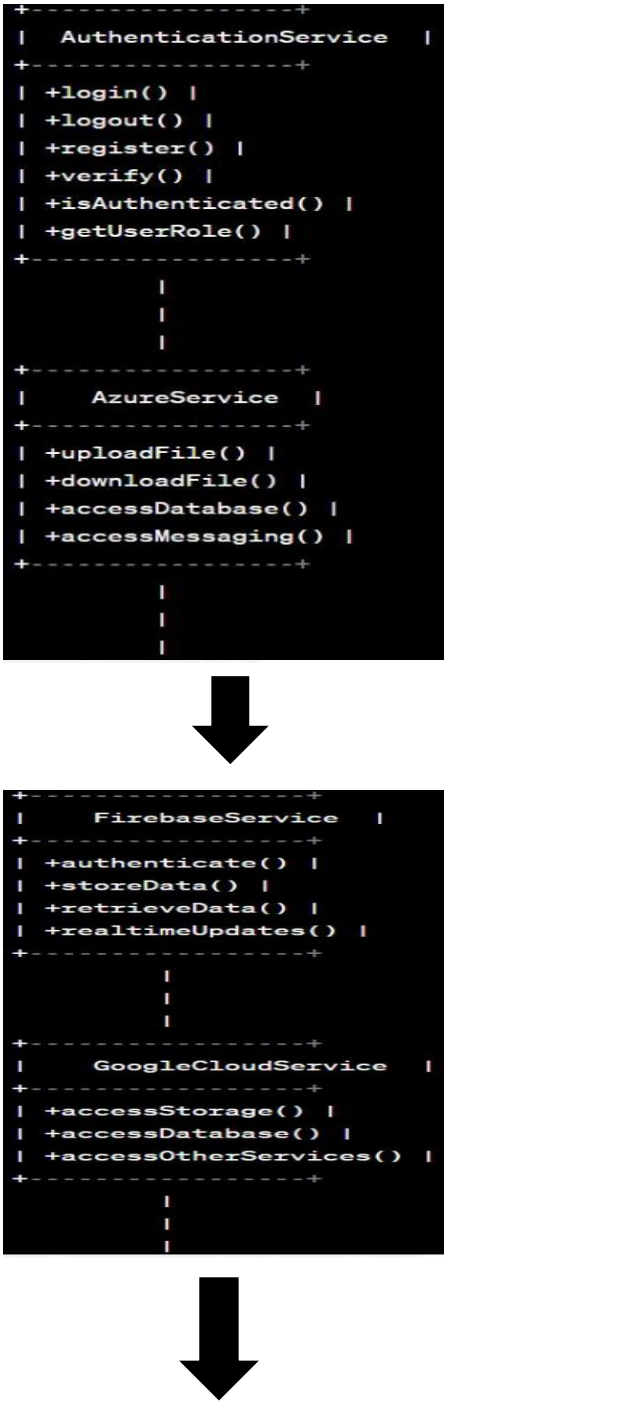

AuthenticationService
+login()
+logout()
+register()
+verify()
+isAuthenticated()
+getUserRole()
AzureService
+uploadFile()
+downloadFile()
+accessDatabase()
+accessMessaging()
FirebaseService
+authenticate()
+storeData()
+retrieveData()
+realtimeUpdates()
GoogleCloudService
+accessStorage()
+accessDatabase()
+accessOtherServices()
AIMLService
+analyzeBehavior()
+generateRecommendations()
+predictTrends()

Fig-9

8.3 Entity Relationship Model :-

❖ LOGIN :

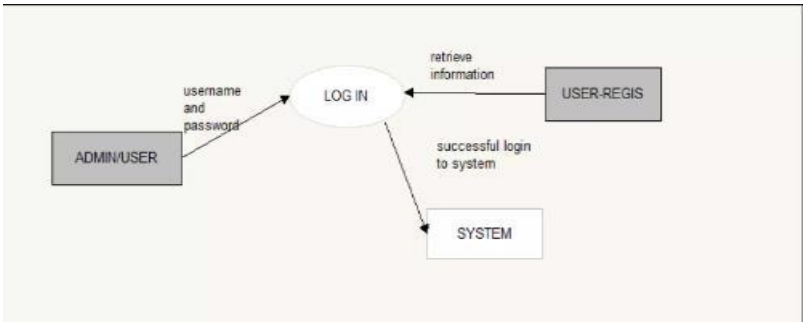


Fig-10

❖ Manage User :

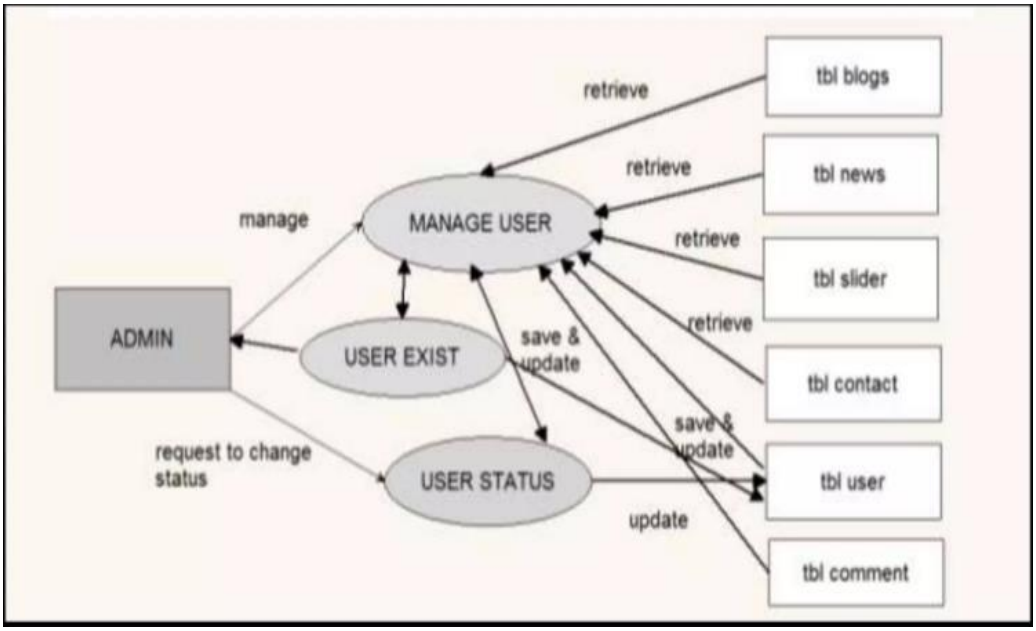


Fig-11

❖ 8.4 Sequence Diagram :-

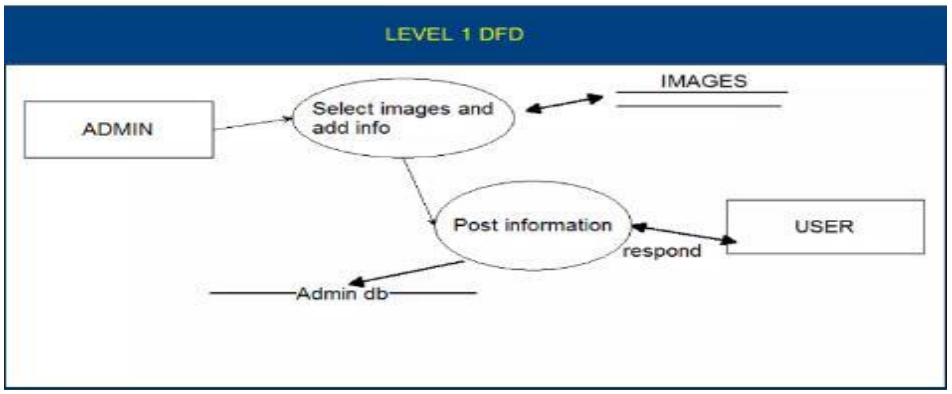


Fig-12

➢ 8.5 Description of Technology Used :-

- Azure: A cloud computing platform that provides a wide range of services, including compute, storage, database, and AI&ML, for building and deploying web applications.

- Angular: A popular front-end web application framework that allows developers to build complex, dynamic user interfaces using HTML, CSS, and TypeScript.

- AI&ML: Artificial Intelligence and Machine Learning technologies that can be used to analyse data, generate insights, and make predictions based on patterns and trends.

- Firebase: A mobile and web application development platform that provides real-time database, authentication, and hosting services.

- Google Cloud: A cloud computing platform that provides a wide range of services, including compute, storage, and database, for building and deploying web applications.

- In the ER model, the User entity represents the registered users of the web blog application, while the Post entity represents the blog posts created by the users. The Tag entity represents the tags associated with each post. The Firebase and Azure entities represent the cloud-based database services used to store the application data. The AIML API entity represents the AI&ML technologies used to analyse and generate insights from the data, while the Azure and Google Cloud entities represent the cloud-based services used for storage and other functionalities.

❖ 9. Findings/ Result of Analysis :-

- The specific findings or results of an analysis of a web blog using Azure, Angular, AI&ML, and Firebase, as it would require access to the specific data and algorithms used in the analysis. However, here are some potential findings and results that could be discovered through such an analysis:

- User engagement: By analysing user data, such as clicks, page views, and time spent on the site, it's possible to identify which blog posts and topics are most popular among users. This information can be used to tailor the content of the web blog to better meet the needs and interests of the target audience.

- Sentiment analysis: Using Natural Language Processing (NLP) and sentiment analysis algorithms, it's possible to analyse the text of blog posts and comments to determine the overall sentiment towards a particular topic or author. This information can be used to identify potential areas of improvement in the content or tone of the web blog.

- User behaviour prediction: By applying machine learning algorithms to user data, it's possible to predict user behaviour, such as the likelihood of a user returning to the site or making a purchase. This information can be used to optimize the user experience and increase the effectiveness of marketing efforts.

- Performance optimization: By analysing site performance data, such as page load times and server response times, it's possible to identify areas of the application that are causing performance bottlenecks. This information can be used to optimize the application's code and infrastructure to improve overall performance and user experience.

❖ 10. Cost of the Project:-

Budget	Amount
a) Materials/ Consumables	6000
b) Labor	5000
c) Travel	1000
d) Miscellaneous	4000
e) Total	16000

❖ 11.Conclusions :-

In conclusion, we can say that blogging is very powerful technology for sharing information and what we believe is the issues like privacy and security of data is continuous developments in the security field and increasing awareness Benefits and usage of this will eventually increase in the future with continuously growing popularity.

Based on the combination of Azure, Angular, and AI/ML services from Google Cloud Firebase, a web blog project can be developed with several benefits. Here are some possible conclusions:

- Improved User Experience: Angular, as a powerful front-end framework, provides a great user experience, and Azure can handle a large number of concurrent users. With the AI/ML services from Firebase, users can get personalized recommendations for blog posts and improved search results.

- Easy Deployment and Management: Azure provides an easy-to-use deployment and management interface for web applications, and Firebase offers scalable and reliable cloud services. Combining these two cloud services can make the deployment and management process smoother and more efficient.

- Efficient Data Analytics: With Firebase's AI/ML services, data analytics can be performed in real-time. This means that blog administrators can get insights into user behaviour, such as what blog posts are most popular or what type of content users are searching for, which can help them make data-driven decisions for their blog.

- Secure and Reliable: Both Azure and Firebase offer high-level security and reliability features. Azure offers several layers of security and compliance, while Firebase offers end-to-end encryption, identity management, and continuous monitoring. This ensures that the web blog project will be secure and reliable for its users.

- Overall, the combination of Azure, Angular, and AI/ML services from Google Cloud Firebase can help developers create a powerful and efficient web blog project with improved user experience, easy deployment and management, efficient data analytics, and high-level security and reliability.

❖ 12.Project Limitations and Future Enhancements :-

Here are some possible limitations and future enhancements for such a project:

Limitations:

- Scalability: Depending on the size and complexity of the web blog, there may be limitations on how much traffic and content the website can handle. This could result in slower load times and decreased user experience.

  While Azure Angular and Firebase are designed to scale, it is important to consider the potential for increased traffic and the impact it may have on the application's performance.

- Security: As with any web project, security is a major concern. Ensuring that user data is protected and that the website is not vulnerable to attacks is critical.

  Security is a major concern for any web application, and it is important to ensure that the application is secure from attacks such as SQL injection, cross-site scripting (XSS), and cross-site request forgery (CSRF).

- Integration: Integrating AI/ML features into an existing web blog can be challenging, especially if the two technologies were not originally designed to work together.

- Customizability: Although Azure Angular and Firebase provide a range of features, there may be situations where additional customization is required, which may not be possible within the limitations of these platforms.

Future Enhancements:

- Personalization: Using AI/ML, the web blog could be customized based on each user's preferences and interests. This could include personalized content recommendations, targeted ads, and more.

- Search Engine Optimization (SEO): Enhancements can be made to the application to improve its visibility and ranking on search engines, such as optimizing page titles, meta descriptions, and keywords.

- Predictive analytics: By analysing user behaviour and engagement, AI/ML could be used to predict future trends and optimize content for maximum impact.

- Natural Language Processing: Integrating NLP could allow for more advanced search capabilities, voice-enabled commands, and more intuitive user interfaces.

- Analytics: Analytics can be integrated into the application to track user behaviour, monitor application performance, and gain insights into user engagement.

- Performance Optimization: By leveraging cloud-based infrastructure and advanced caching techniques, the website could be optimized for faster load times and improved user experience.

- Automated Content Creation: By using AI/ML to analyse existing content and generate new articles, blog posts, and other content, the web blog could become more efficient and produce higher quality content.

- Voice and Text-Based Interfaces: The application can be enhanced to support voice and text-based interfaces, which can improve accessibility and usability for users.

- Multilingual Support: The application can be enhanced to support multiple languages, which can improve its accessibility to users across different regions and countries.

❖ 13. References :-

- ”Surveillance Of Crop-Field With Smart Irrigation System “, B Ashwini, V Udayarani, 2018, International Journal of Advanced Research in Computer Science, Volume 9, Issue 1.
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- “An approach to achieve high efficiency for large volume data processing using multiple clustering algorithms” Sarada. B, Vinayaka Murthy. M, Udaya Rani. V , Research scholar, REVA University, India, Professor and Assistant director R&D, REVA University, India Associate Professor, School of C & IT,REVA University, India, International Journal of Engineering & Technology, 2018, 689-692,Website: www.sciencepubco.com/index.php/IJET, https://pdfs.semanticscholar.org/1f50/4d4ff505bf00207989bd96e42c3855ae57c6.pdf
- Microsoft Azure Documentation: https://docs.microsoft.com/en-us/azure/
- Angular Documentation: https://angular.io/docs
- Google Cloud Firebase Documentation: https://firebase.google.com/docs
- How to build a blog with Angular and Firebase: https://fireship.io/lessons/angular-blog-tutorial-firestore/
- Azure Angular starter template: https://azure.microsoft.com/en-us/resources/templates/angular-aspnetcore-starter/
- Getting started with Google Cloud AI & ML: https://cloud.google.com/ai-platform
- Google Cloud Firebase + Angular: https://github.com/angular/angularfire
- Building a Machine Learning App with Firebase ML: https://firebase.google.com/docs/ml
- https://www.freeprojectz.com/project-report/166
- https://www.slideshare.net/kri_ti_ka/ppt-of-blogs?next_slideshow=6359723

❖ 14.Appendices, if any:-

- API documentation: If your online blog project uses customised APIs, you might include endpoint and parameter documentation. Developers that want to use your APIs in their own applications could find this useful.

- User Manual: To help users understand how to use the features and functionalities of your web blog project, you may write a user manual. This could include guidelines for writing and publishing articles, signing in and out, and communicating with other users.

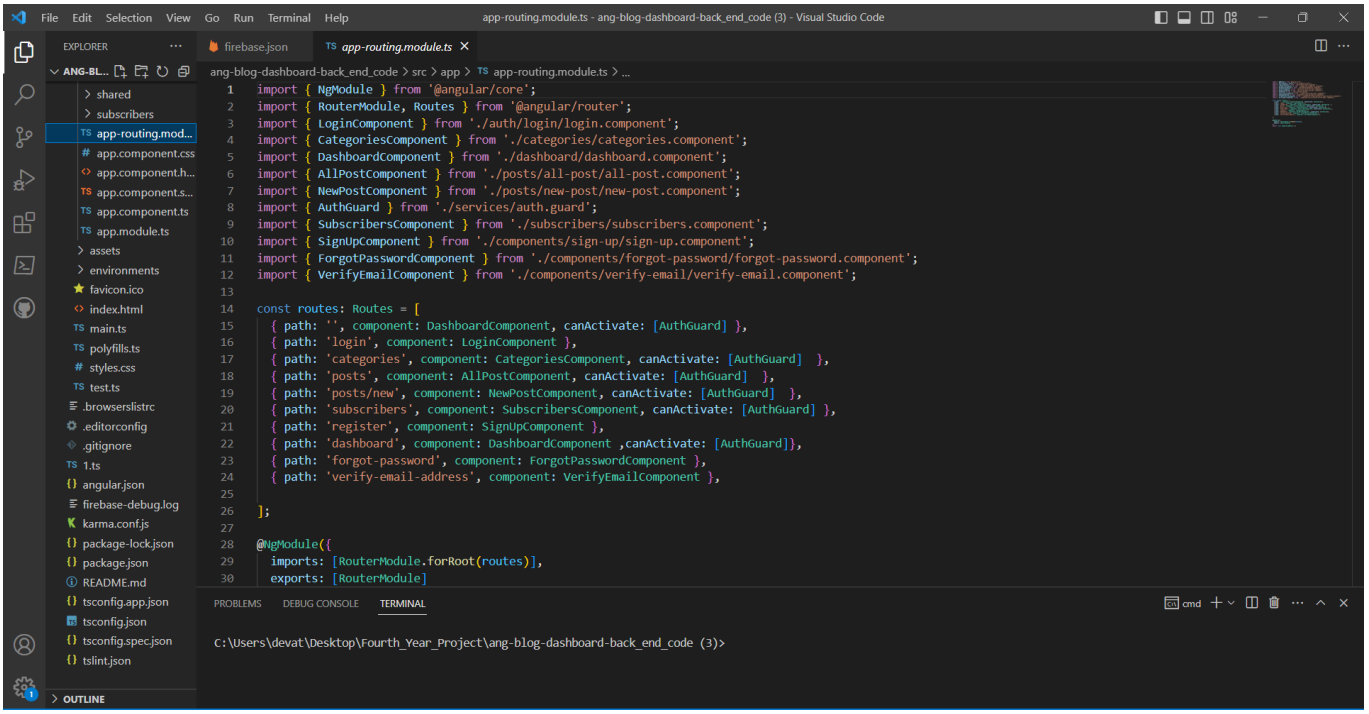
- Data Schema: A data schema that describes the layout of your database tables and their connections may be included. This might make it easier for other programmers to comprehend how your data is set up and how they can interact with it.

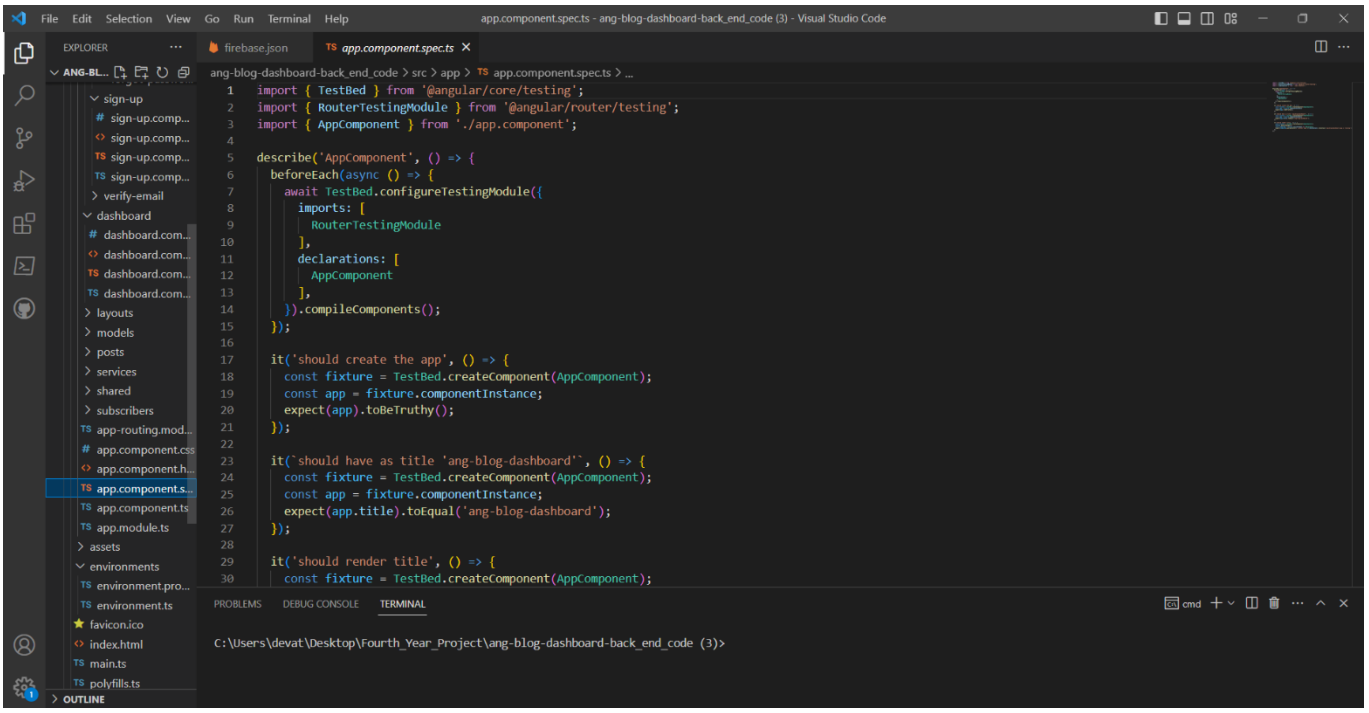
- Documentation for Machine Learning Models: If your web blog project uses AI/ML models, you could provide the model's documentation. This might include details about the training procedure, the performance indicators, and the input and output data.

- Deployment Guide: You may choose to incorporate a deployment guide that details how to upload your online blog project to a cloud computing provider like Azure or Google Cloud Firebase. This might include guidelines for deploying the code, installing the infrastructure, and establishing any required services.

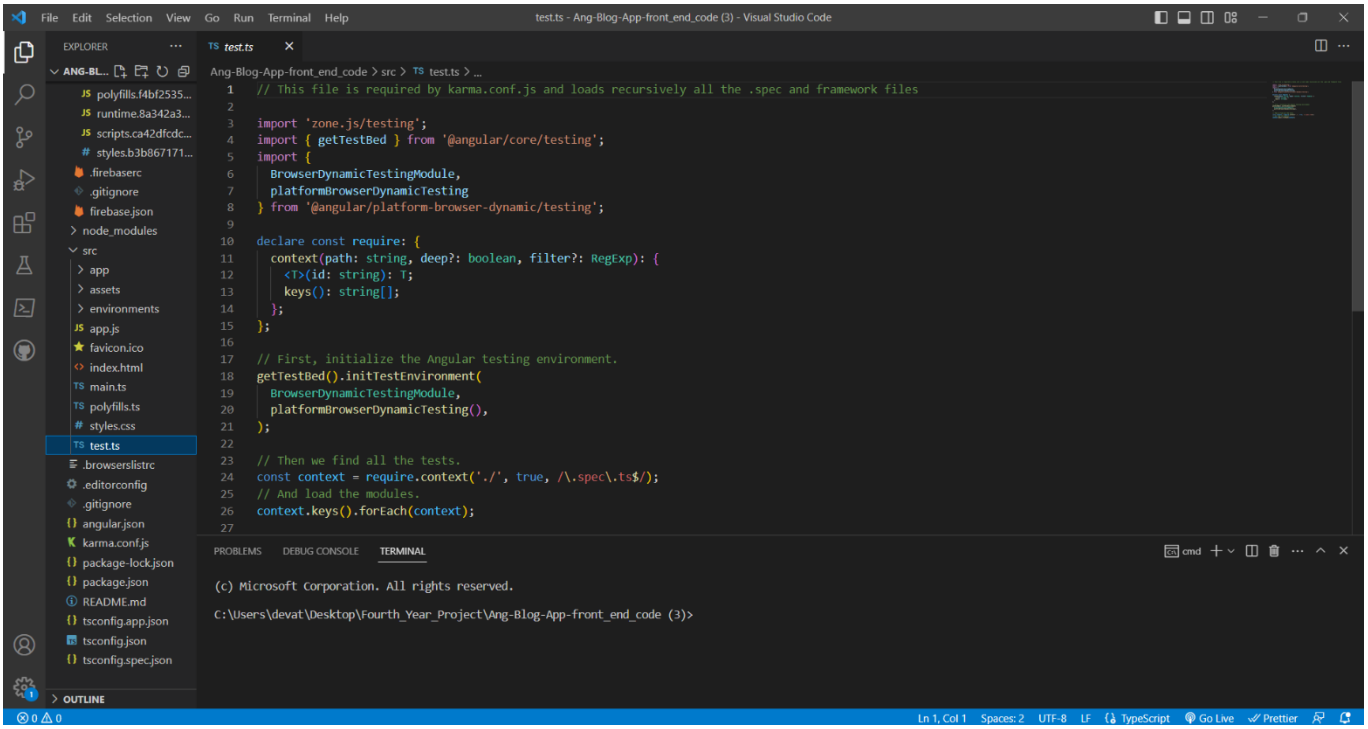
❖ List of illustrations / Screen Shots :-

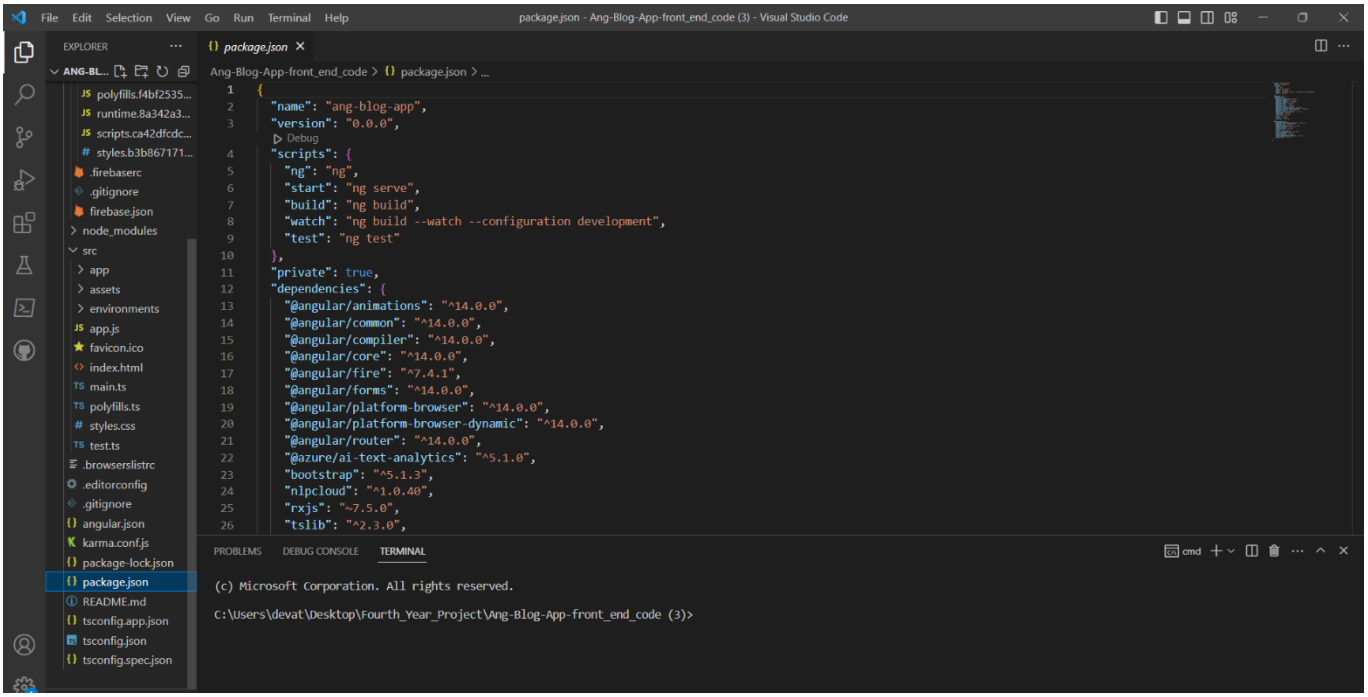
Some Screenshots of the Backend Code :-



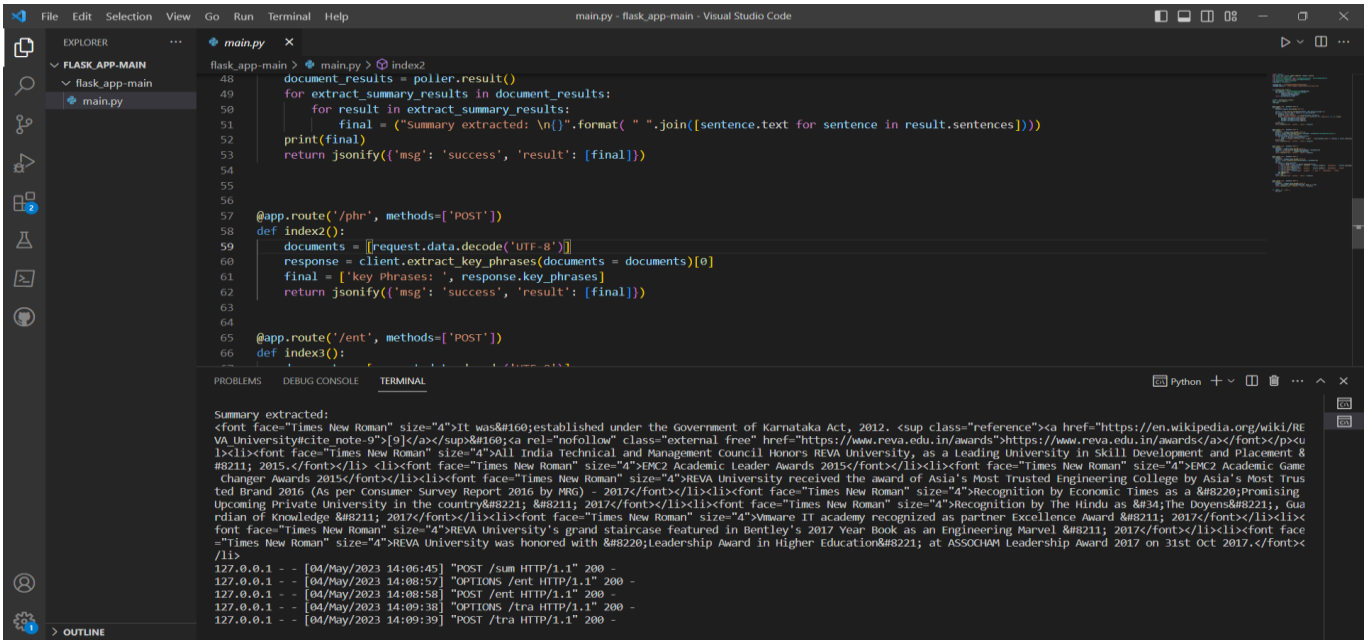


Some Screen shots for Front end Code:-

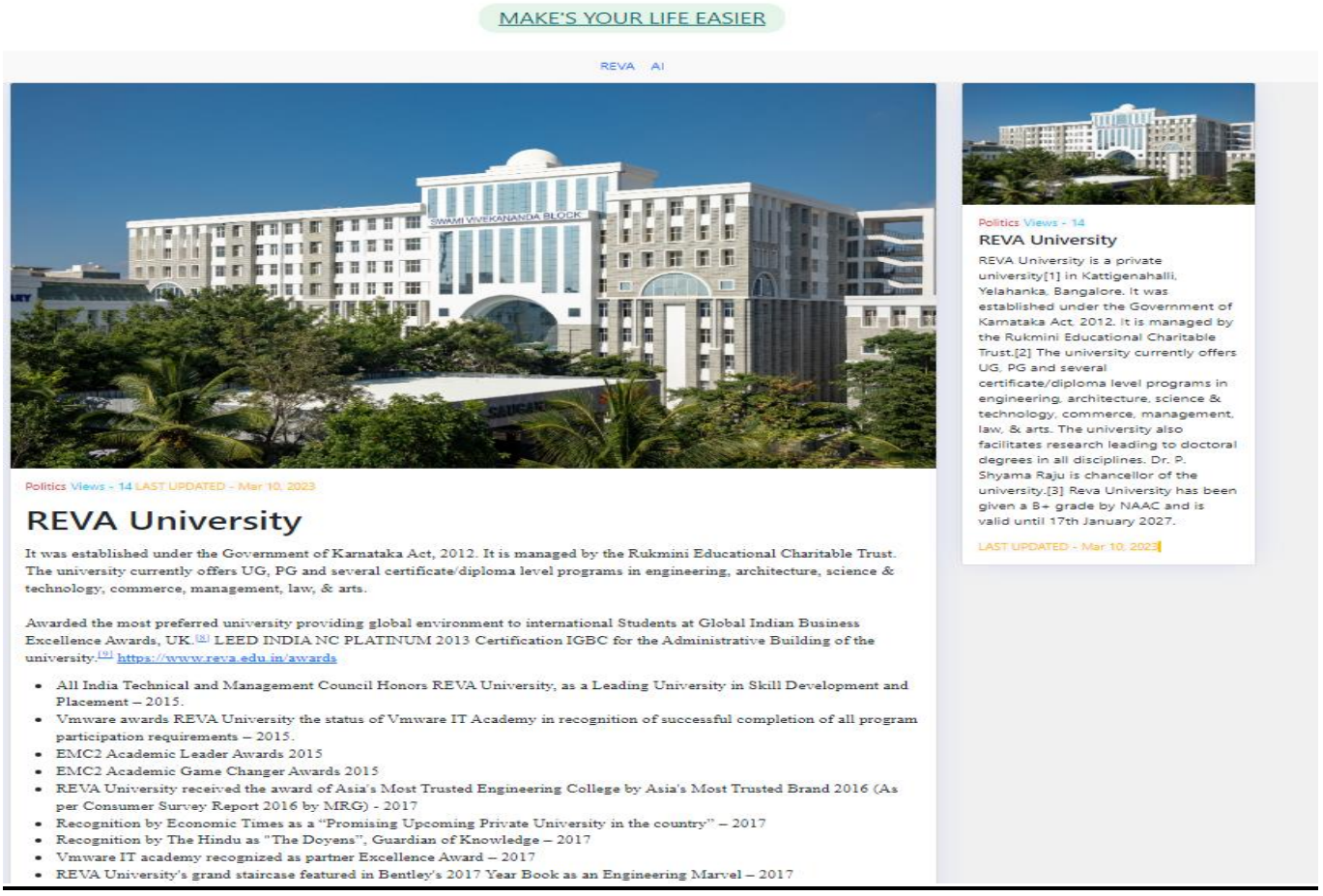


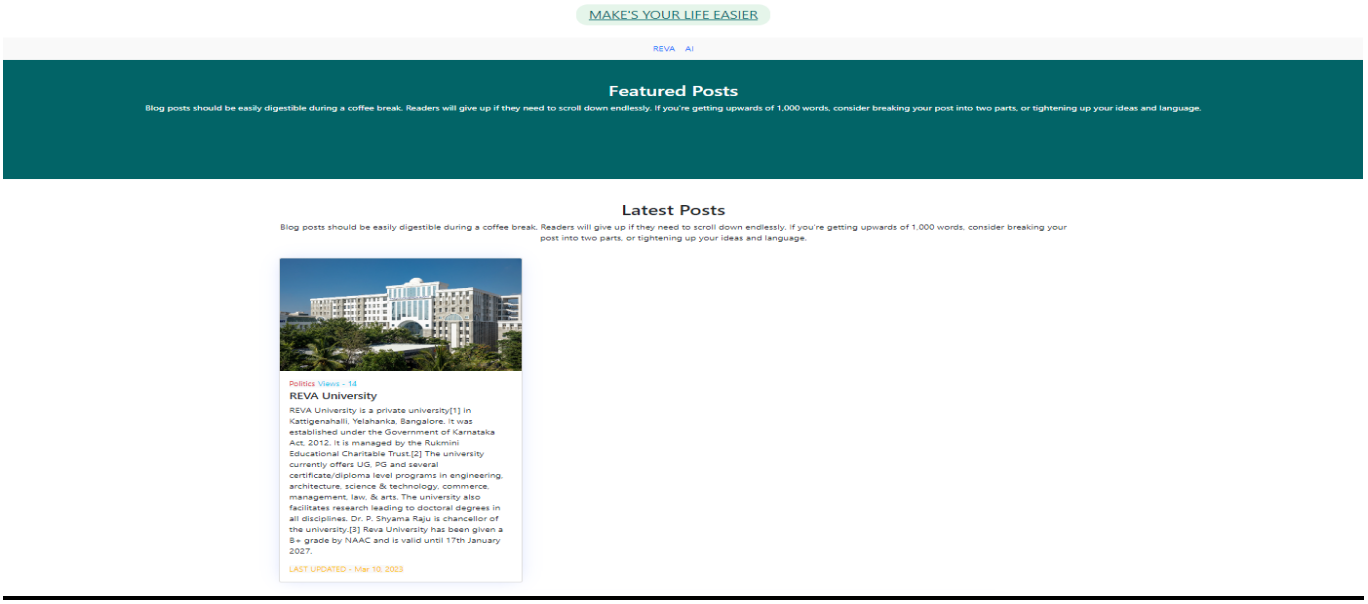


Screenshot of Flask :-



Screenshots Output :-

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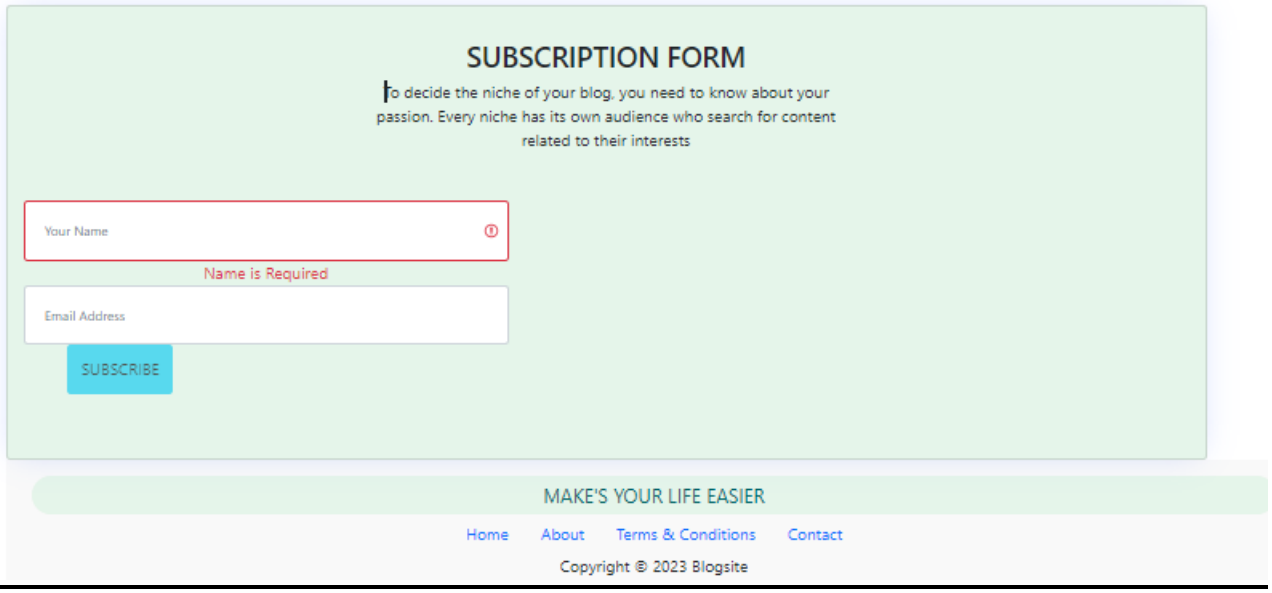
REVA AI
Featured Posts
Blog posts should be easily digestible during a coffee break. Readers will give up if they need to scroll down endlessly. If you're getting upwards of 1,000 words, consider breaking your post into two parts, or tightening up your ideas and language.
Latest Posts
Blog posts should be easily digestible during a coffee break. Readers will give up if they need to scroll down endlessly. If you're getting upwards of 1,000 words, consider breaking your post into two parts, or tightening up your ideas and language.
Politics Views - 14
REVA University
REVA University is a private university[1] in Kattigenahalli, Yelahanka, Bangalore. It was established under the Government of Karnataka Act, 2012. It is managed by the Rukmini Educational Charitable Trust.[2] The university currently offers UG, PG and several certificate/diploma level programs in engineering, architecture, science & technology, commerce, management, law, & arts. The university also facilitates research leading to doctoral degrees in all disciplines. Dr. P. Shyama Raju is chancellor of the university.[3] Reva University has been given a B+ grade by NAAC and is valid until 17th January 2027.
LAST UPDATED :- Mar 10, 2023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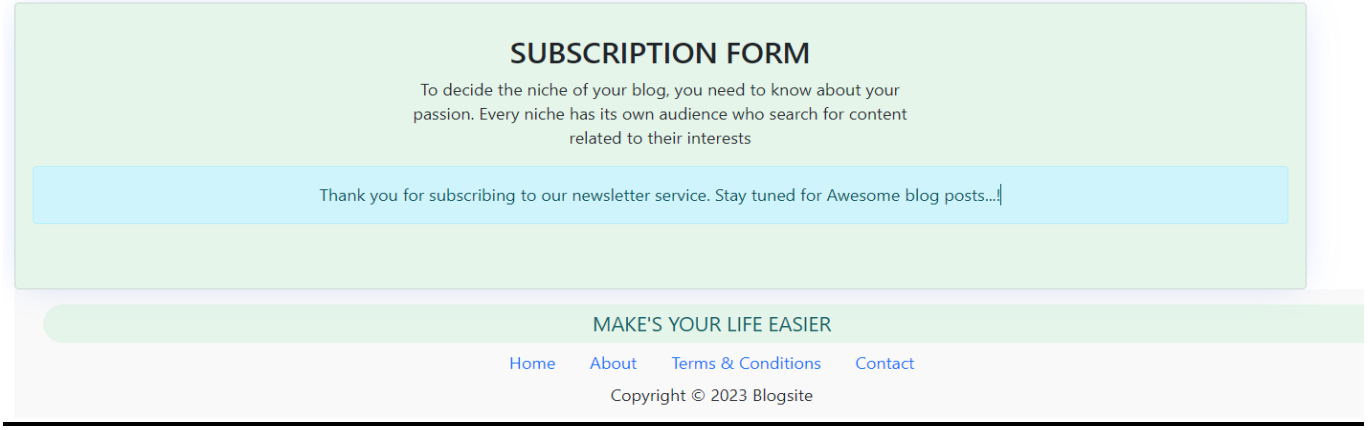
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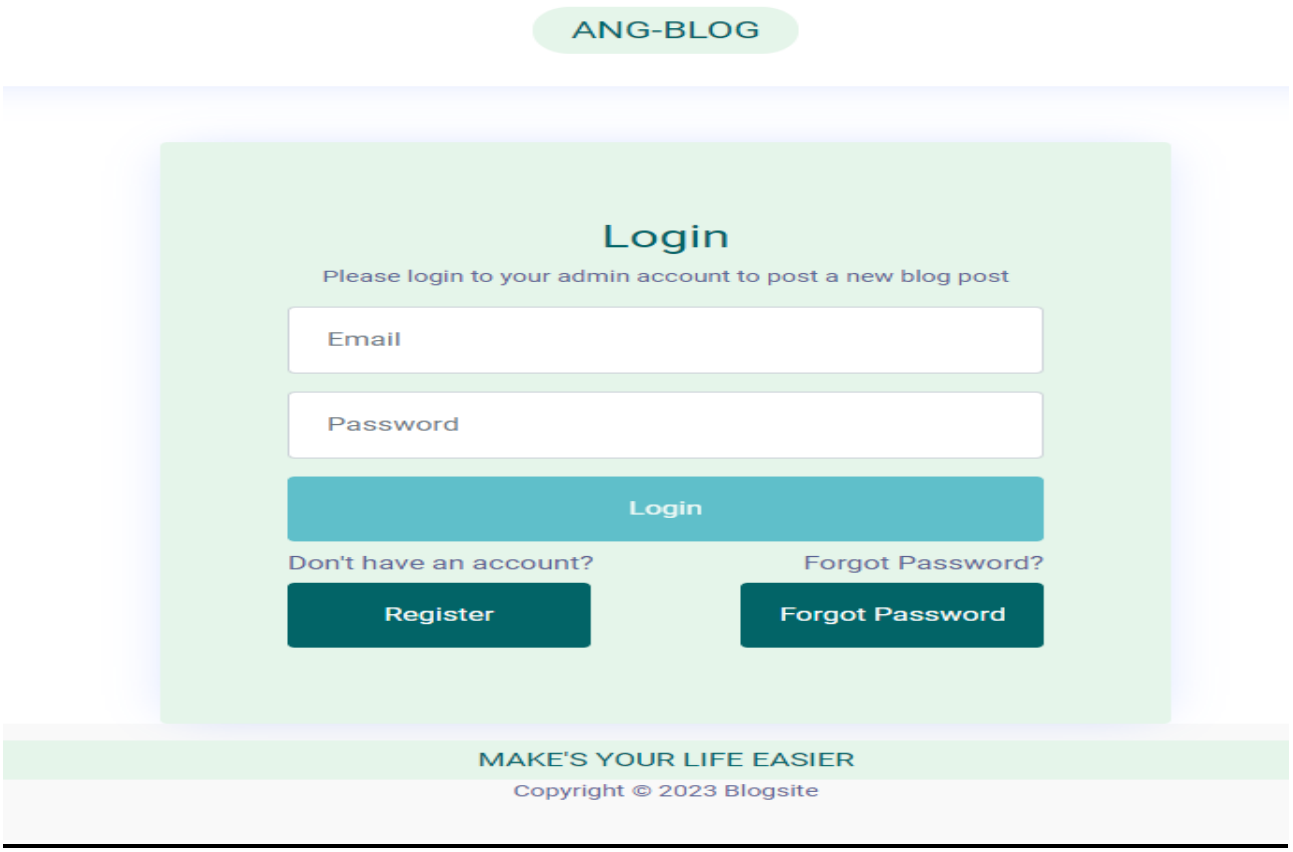
Screenshots of Login :-



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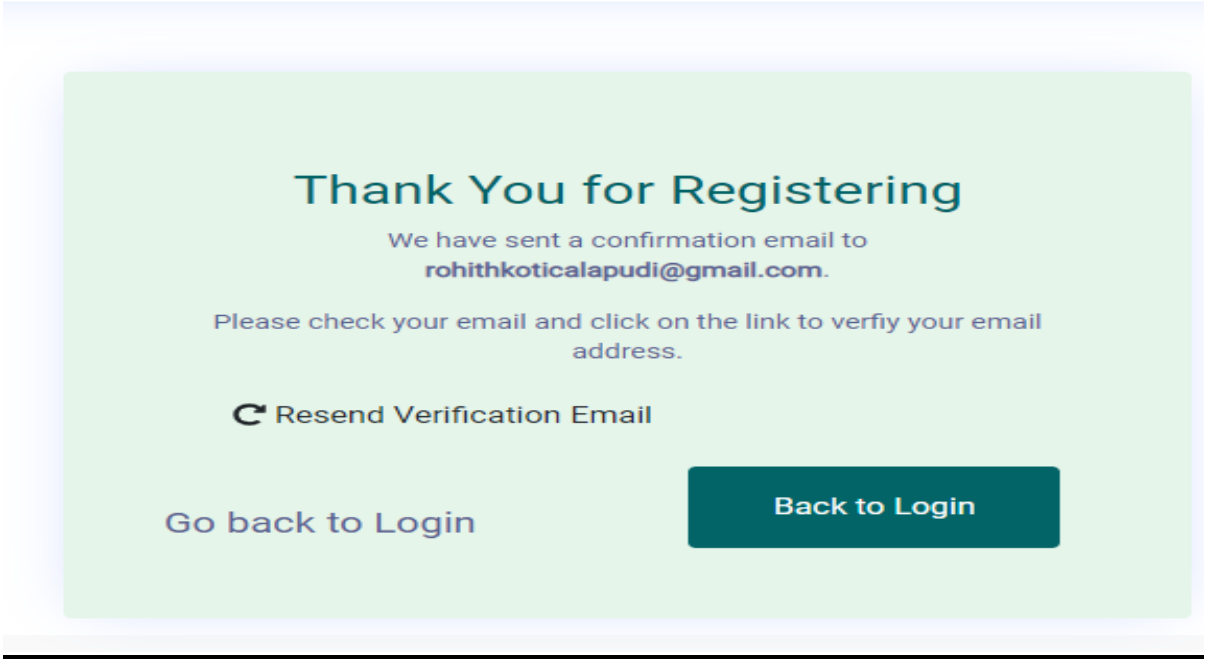
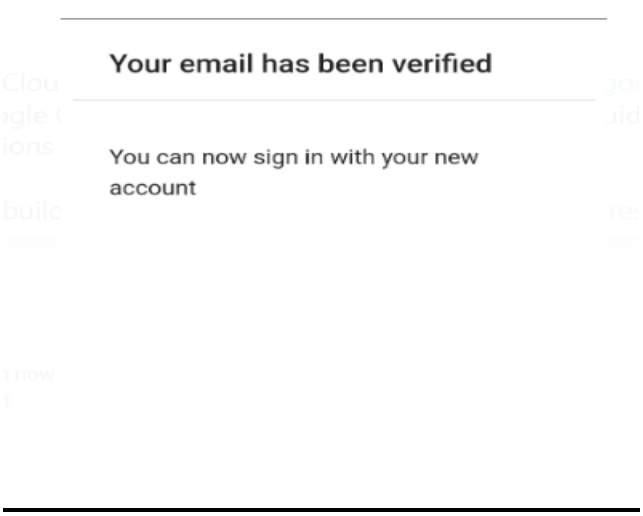
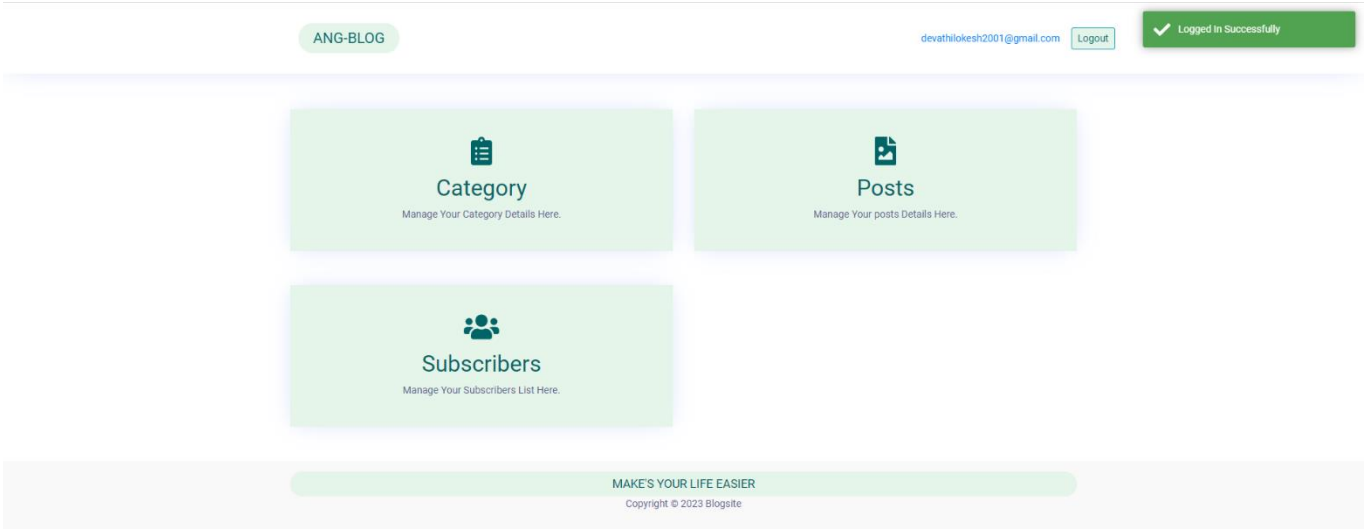
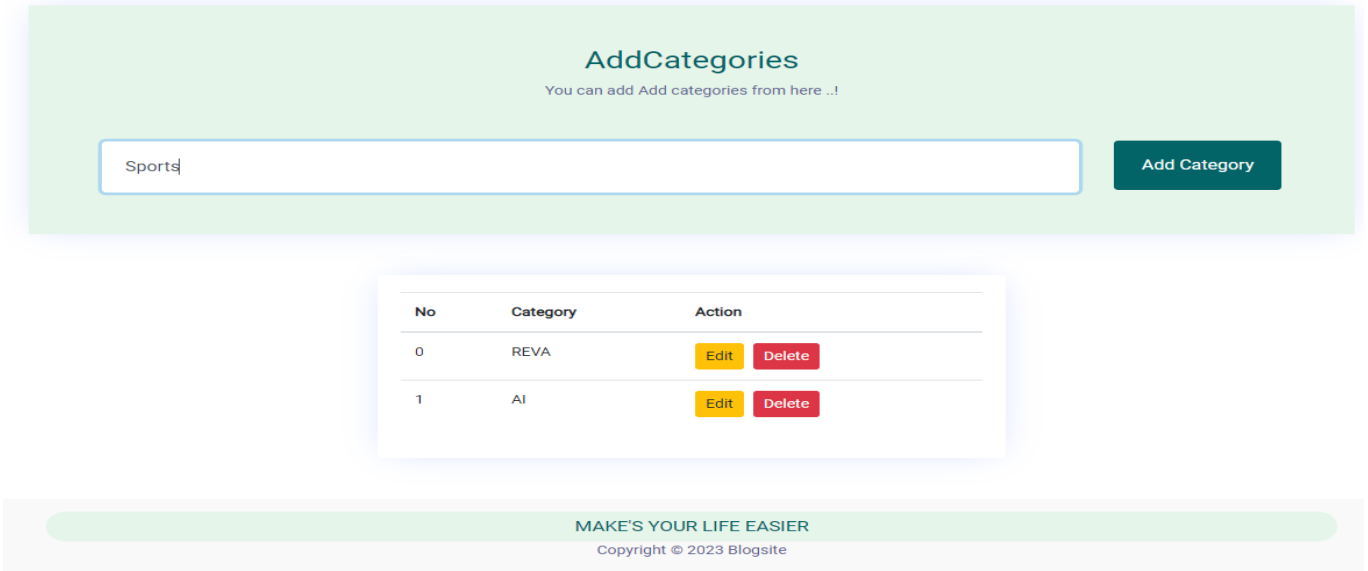




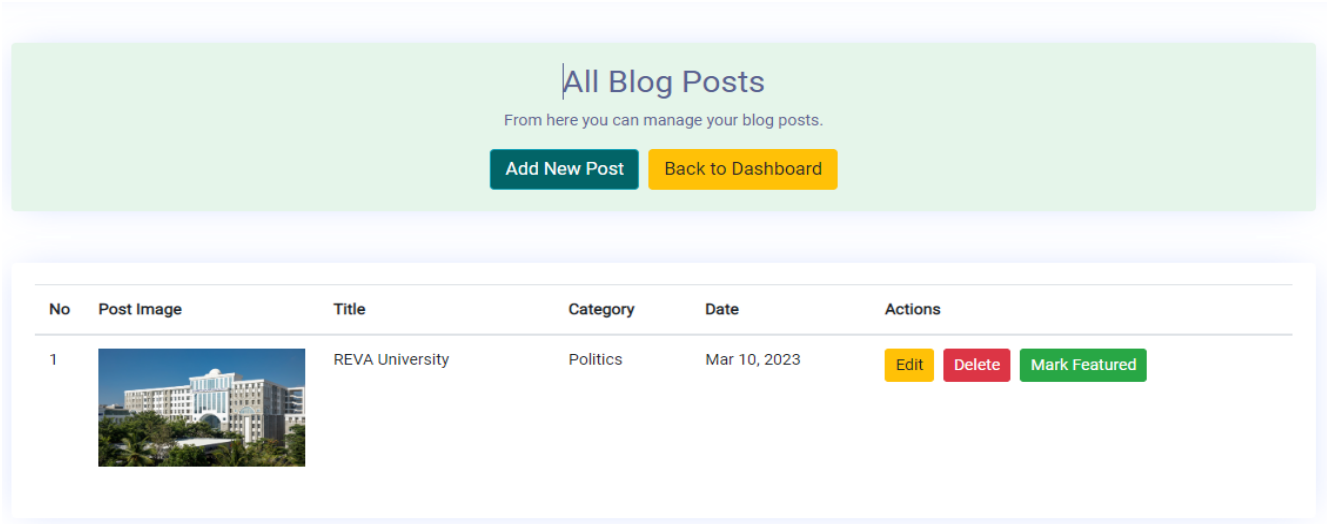
ScreenShot of After Login :-

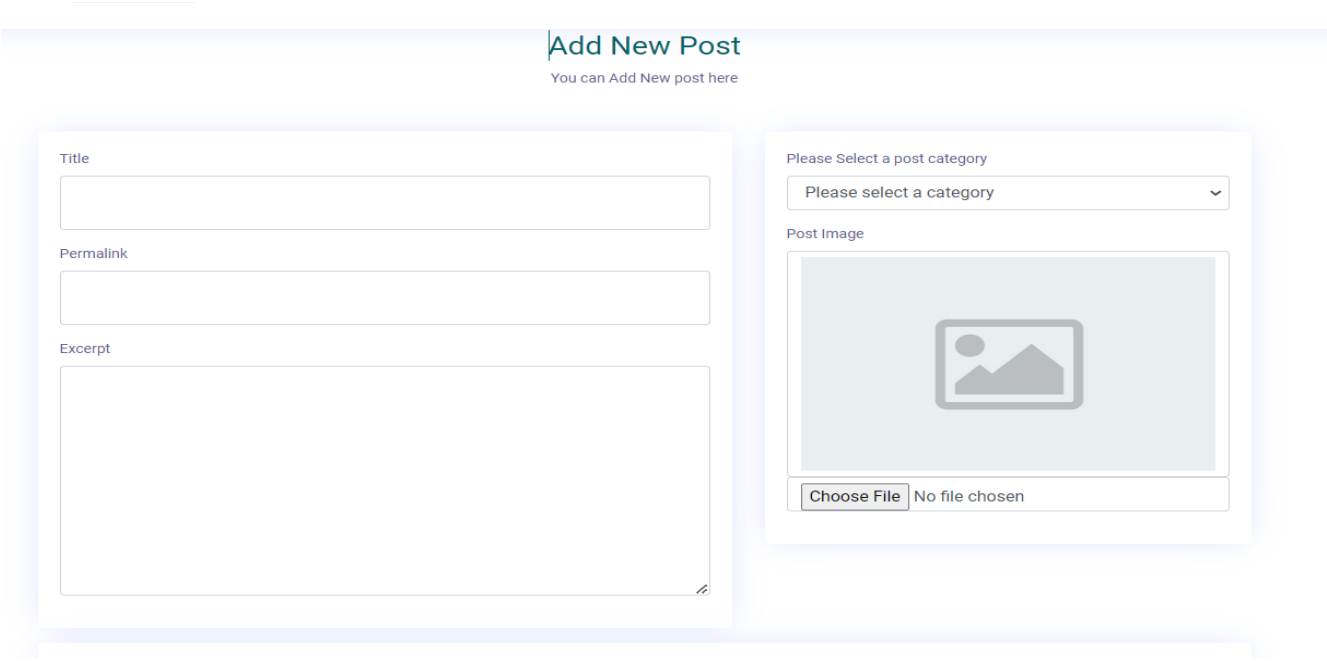


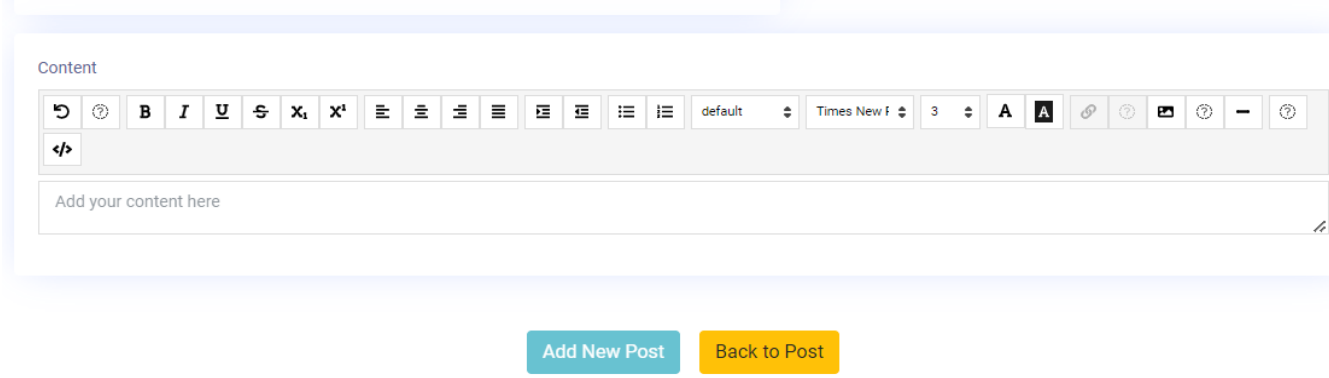
Screenshot of Category Page :-



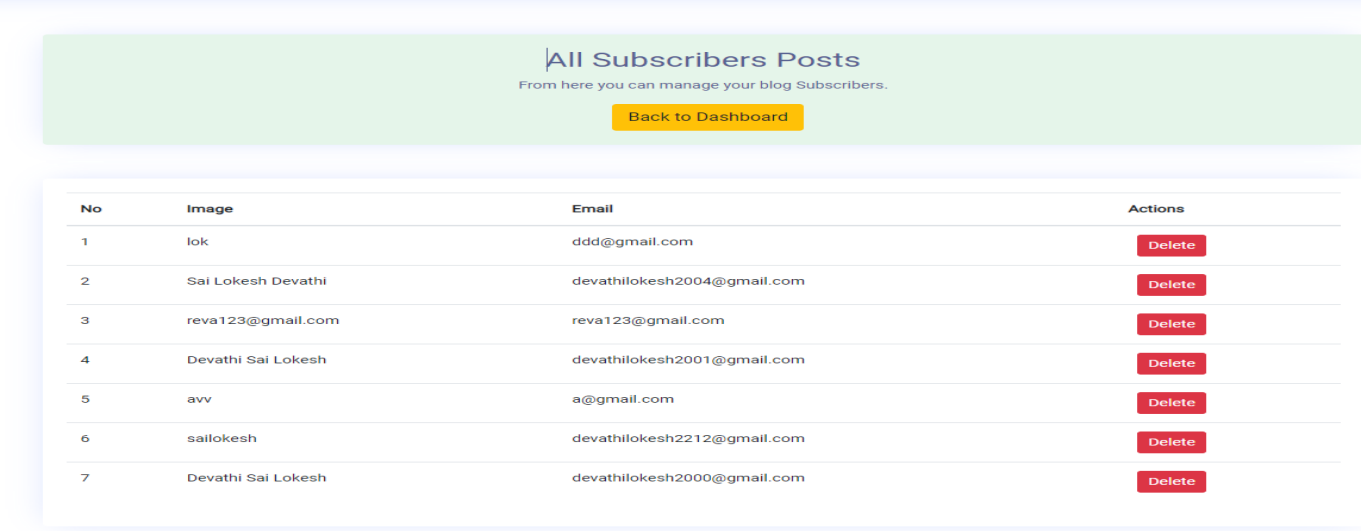
Screenshots of Posts Page :-







Screenshot of Subscriber page :-



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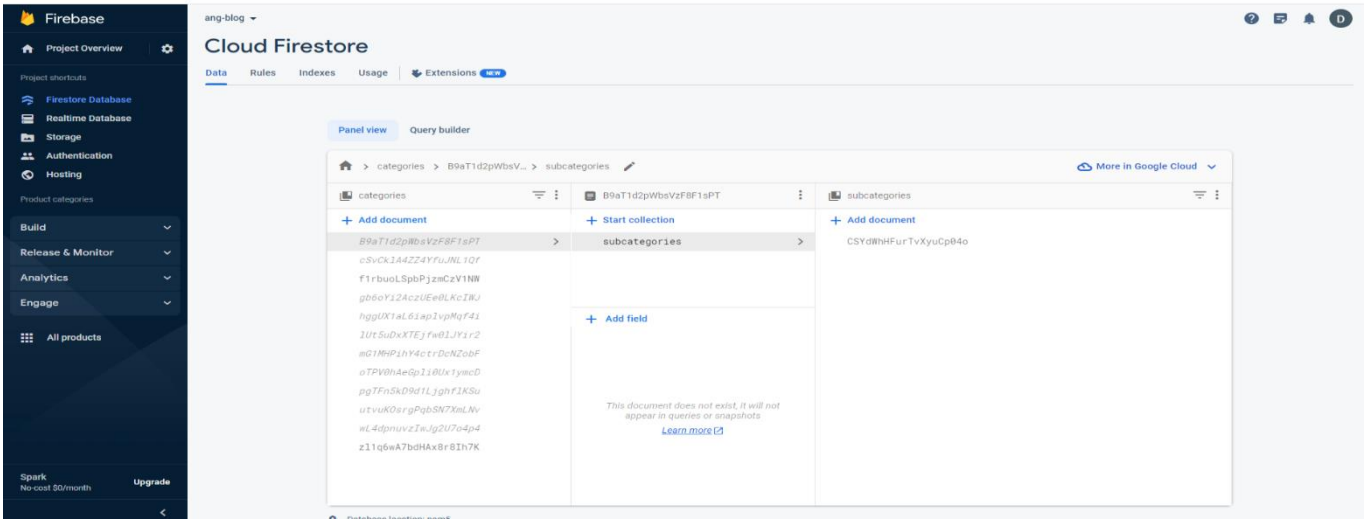
3	reva123@gmail.com	reva123@gmail.com	Delete
4	Devathi Sai Lokesh	devathilokesh2001@gmail.com	Delete
5	avv	a@gmail.com	Delete
6	sailokesh	devathilokesh2212@gmail.com	Delete
7	Devathi Sai Lokesh	devathilokesh2000@gmail.com	Delete

Some ScreenShots of Google Cloud Firebase



Screenshot of Azure :-