VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belagavi - 590018

Mini Project Report

on

"NEWS APPLICATION"

Submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

in

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING ENGINEERING

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MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

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Affiliated to VTU, Belagavi, Approved by AICTE, New Delhi
Badaga Mijar, Moodabidri-574225, Karnataka

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CERTIFICATE

This is to certify that the mini project entitled "**News Application**" is a bonafide work carried out

by **Mr**. **PRUTHVIRAJ(4MT20AI030), Mr** .**PRASHANTH(4MT20AI028) in** partial   fulfillment

for the requirement of 6th semester Mobile Application Development Laboratory with mini project

(18AIL68). It is   certified   that   all   the corrections/suggestions indicated for the Internal

Assessment have been incorporated in the report.   The mini project has been approved as it satisfies

the academic requirement in respect of the 18AIL68 prescribed for the 6th Semester B.E in Artificial

Intelligence And Machine Learning Program by the **Visvesvaraya Technological University,**

Belagavi, for the academic year 2022 – 2023.

………………………….   ……………………….

Signature of the Guide   Signature of the HOD
Mr. Sunil Kumar S   **Mr. Sunil Kumar S**

Name of the Examiners   **Signature with Date**

1. **………………….**   **……………….……**

2. **………………….**   **……………….……**

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ABSTRACT

As the world's technology is rapidly growing we have fast connections and networks to instantly connect to other people. Day to day use in mobile, tablets and laptop is increasing, most of the people already have these facilities. In this fast and information oriented world we need to stay updated with every incident and news too. This News app is an android mobile application where users have access to the latest news from News API. The main focus of this application is to connect news articles from all around the world and deliver it to user as fast as possible in best visualize way

The News Application provides a clean and intuitive user interface, allowing users to easily navigate through different sections, read full articles, and bookmark their favorite articles for future reference. The application also includes a search functionality, enabling users to search for specific news topics or keywords. The development process involves utilizing Android Studio, the official Integrated Development Environment (IDE) for Android app development. The project utilizes modern programming languages such as Java or Kotlin to write the application's code. It also leverages relevant Android libraries and frameworks to handle network requests, display news content, and manage user interactions. The News Application project promotes the consumption of news articles and enhances the overall news reading experience for users. It provides a convenient and accessible platform for users to stay updated with the latest news and events happening around the world.

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Chapter1

INTRODUCTION

1.1 DEFINITION

A News Application is a software program or mobile application developed using platforms like Android Studio that allows users to access and browse the latest news articles from various sources. It leverages internet connectivity and APIs to fetch real-time news data and presents it to users in a user-friendly manner.

1.2 IMPORTANCE

1. Access to Timely and Relevant Information: News applications provide users with instant access to the latest news articles from various sources. They enable users to stay informed about current events, breaking news, and important developments in real-time. This access to timely and relevant information is crucial for individuals to make informed decisions, stay updated with global affairs, and broaden their knowledge.

2. Personalized News Experience: News applications allow users to customize their news feed based on their interests and preferences. Users can choose specific news categories, follow favorite news sources, and receive tailored recommendations. This personalization enhances the user experience by delivering news content that aligns with their individual interests, making it more engaging and relevant.

3. Convenience and Accessibility: With news applications installed on their smartphones or tablets, users can access news articles anytime and anywhere. This convenience eliminates the need to rely on traditional newspapers or specific news broadcasting times. News applications make it easy for users to catch up on the latest headlines during their commute, at work, or while traveling.

4. Search Functionality: News applications typically include a search feature that enables users to search for specific news topics, keywords, or articles. This functionality allows users to find information on particular subjects of interest, facilitating research and in-depth exploration of specific news topics

5. Multimedia Content: News applications often include multimedia elements such as images, videos, and audio clips to enhance the news reading experience. This integration of multimedia content provides a more engaging and immersive experience, enabling users to better understand complex news stories and visualize the events being reported.

6. Diverse News Sources: News applications aggregate news articles from various sources, including international, national, and local publishers. This diversity ensures that users get a well-rounded perspective on different topics and events. They can access news articles from multiple viewpoints, fostering a more comprehensive understanding of global affairs.

Chapter 2

REQUIREMENTS

FUNCTIONAL REQUIREMENTS

1. News Categories and Topics:

   - Display a list of news categories (e.g., politics, sports, technology, entertainment).

   - Allow users to select their preferred news categories.

   - Provide the ability to filter news articles based on selected categories.

2. News Feed:

   - Fetch and display news articles from various sources.

   - Present news articles in a user-friendly and visually appealing manner.

   - Include relevant details such as headline, source, date, and brief description for each article.

3. Article Details:

   - Allow users to view the full content of an article.

   - Display multimedia content (images, videos) associated with the article, if available.

   - Include options to share articles via social media or other communication channels.

4. Search Functionality:

   - Implement a search feature to enable users to search for specific news articles or topics.
   - Provide search filters, such as sorting by relevance or date.
   - Display search results in a clear and organized manner.

5. Offline Reading:
   - Enable users to access previously viewed articles offline.
   - Implement caching mechanisms to store articles for offline reading.
   - Display a clear indication when the user is offline and cannot fetch new content.
   - Whenever the user has an internet connection, the news application should synchronize and update the cached articles with the latest content from the server.

6. Analytics and Performance:
   - Track user interactions, such as article views, searches, and user preferences.
   - Monitor application performance, including response times and data loading speeds.
   - Collect user feedback and error reports to identify and address issues promptly.

7. Bookmarks and Saved Articles:
   - Allow users to bookmark or save articles for future reference.
   - Provide a "Saved Articles" section for users to access their bookmarked content.
   - Enable users to remove articles from their saved list when no longer needed.

These functional requirements outline the key features and capabilities that a News Application should include to provide a comprehensive and user-friendly news reading experience.

NON FUNCTIONAL REQUIREMENTS

1. Usability:
   - The user interface should be intuitive, aesthetically pleasing, and easy to navigate.
   - Error messages should be clear and provide helpful guidance to users.

2. Performance:
   - The application should respond quickly to user interactions, providing a smooth and responsive experience.
   - The application page should load and display news information efficiently.

3. Security:
   - Ensure that APIs used to fetch news articles or interact with external services are secure and protected against potential vulnerabilities.
   - Implement authentication mechanisms (such as API keys or tokens) to ensure authorized access to the APIs
   - Use secure protocols (e.g:HTTPS) for all network communications to encrypt data transmission between the application and backend servers.

4. Scalability:

- Implement load balancing mechanisms to distribute incoming user requests evenly across multiple servers or instances..

5. Reliability:

- The application should be stable and reliable, minimizing crashes or unexpected errors.

- Proper error handling and exception management should be implemented to handle potential issues gracefully.

6. Compatibility:

- The application should be compatible with a range of Android devices, supporting different screen sizes, resolutions, and Android versions.

7. Accessibility:

- The application should strive to adhere to accessibility guidelines, ensuring that users with disabilities can access and use the application page effectively.

8. Maintainability:

- The codebase should be well-structured, modular, and documented to facilitate future maintenance and updates.

- Code should follow best practices and industry standards to enhance readability and maintainability.

9. Performance Optimization:

- Efforts should be made to optimize the performance of the application, minimizing resource usage, and reducing load times.

10. Testing:

- The application should undergo thorough testing, including unit tests, integration tests, and user acceptance testing, to ensure functionality, reliability, and user satisfaction.

Chapter 3

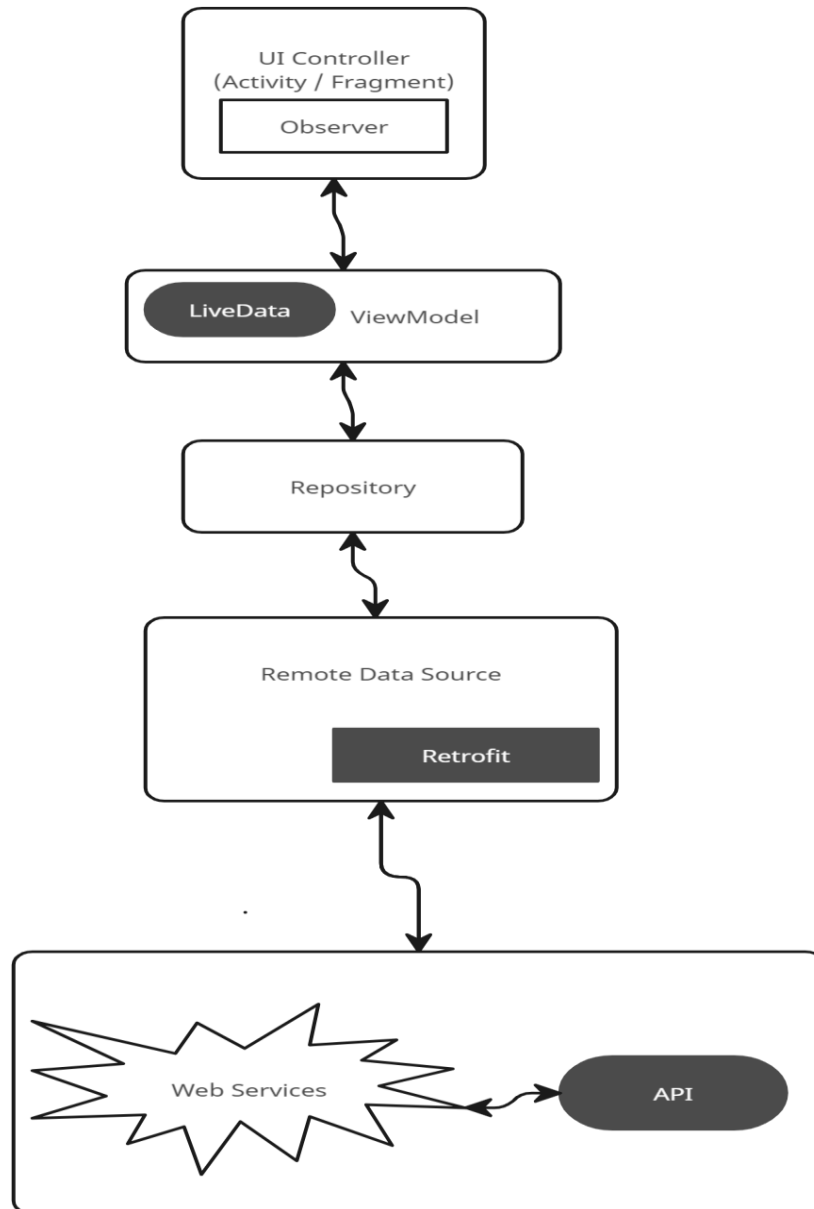## SYSTEM DESIGN

A. ARCHITECTURE DIAGRAM

Fig 3.1 Architecture diagram

The architecture diagram provides a visual representation of how these components interact to deliver the desired functionality of the news app. It helps in understanding the overall structure and flow of data in the application and serves as a reference for development and maintenance.
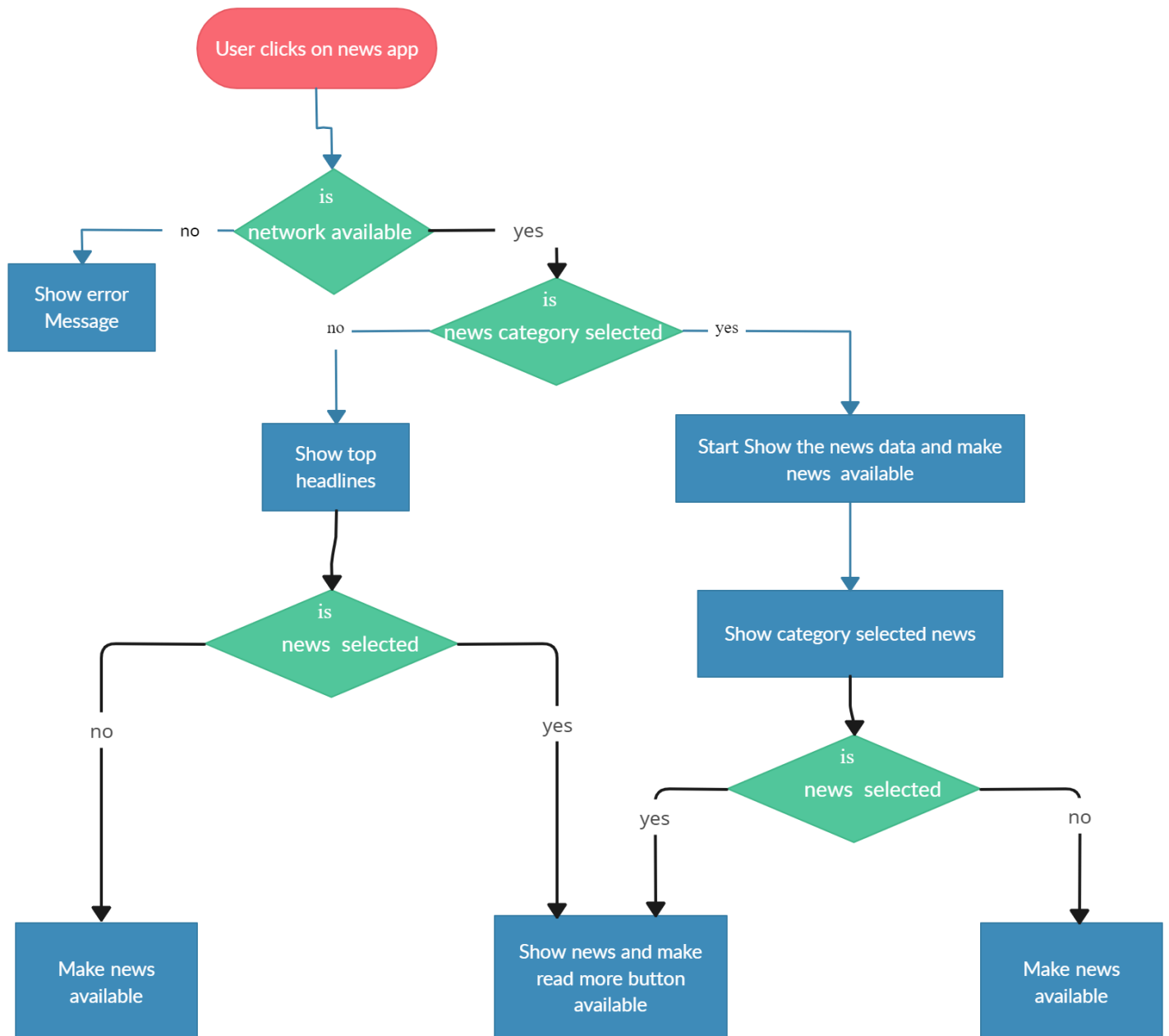
B. FLOW CHART

Fig.3.2 Flow chart

The flowchart illustrates the main flow of actions in the application, starting with the user clicking on the menu, followed by accessing the news page, and reading the article.

C. SEQUENCE DIAGRAM
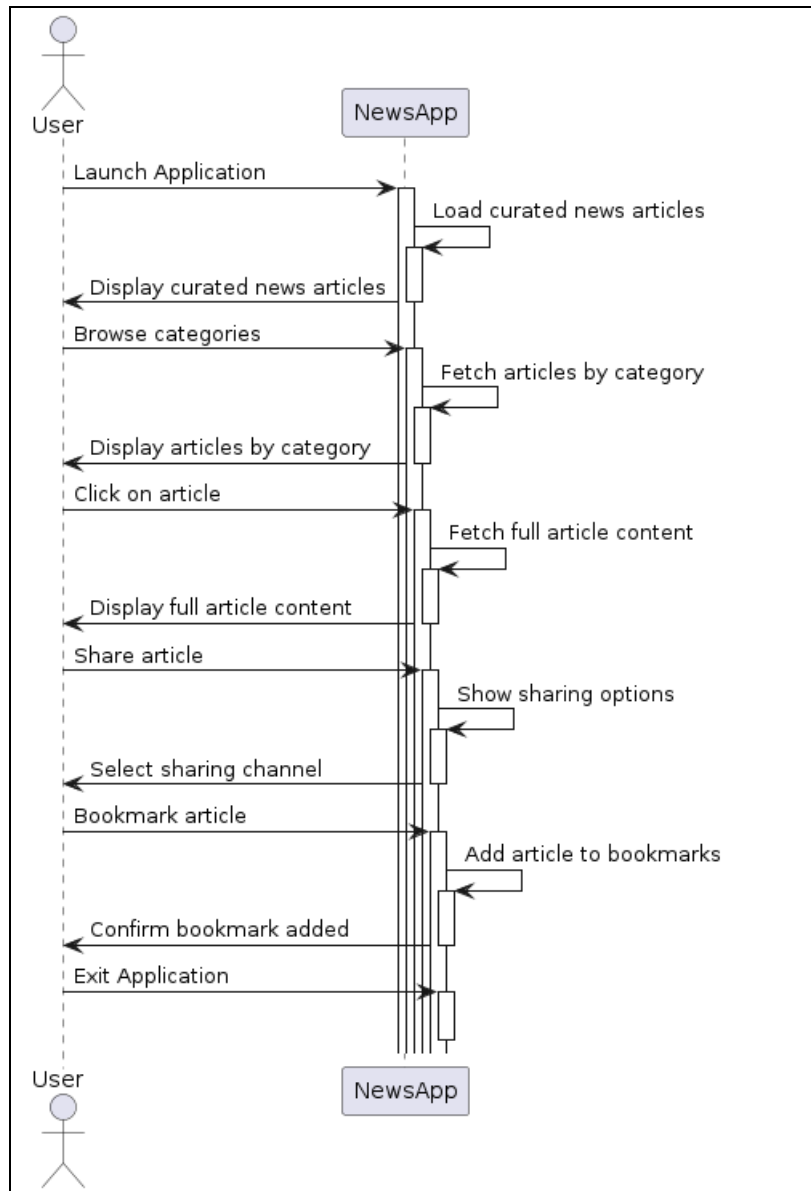
Fig.3.1 Sequence diagram

The sequence diagram represents the steps involved in a user entering news app, news category. It shows how the User interacts with the Application and News App API components when the user enters a search query in the search bar to find specific articles. The article manager retrieves the article content and sends a response message to the UI object.
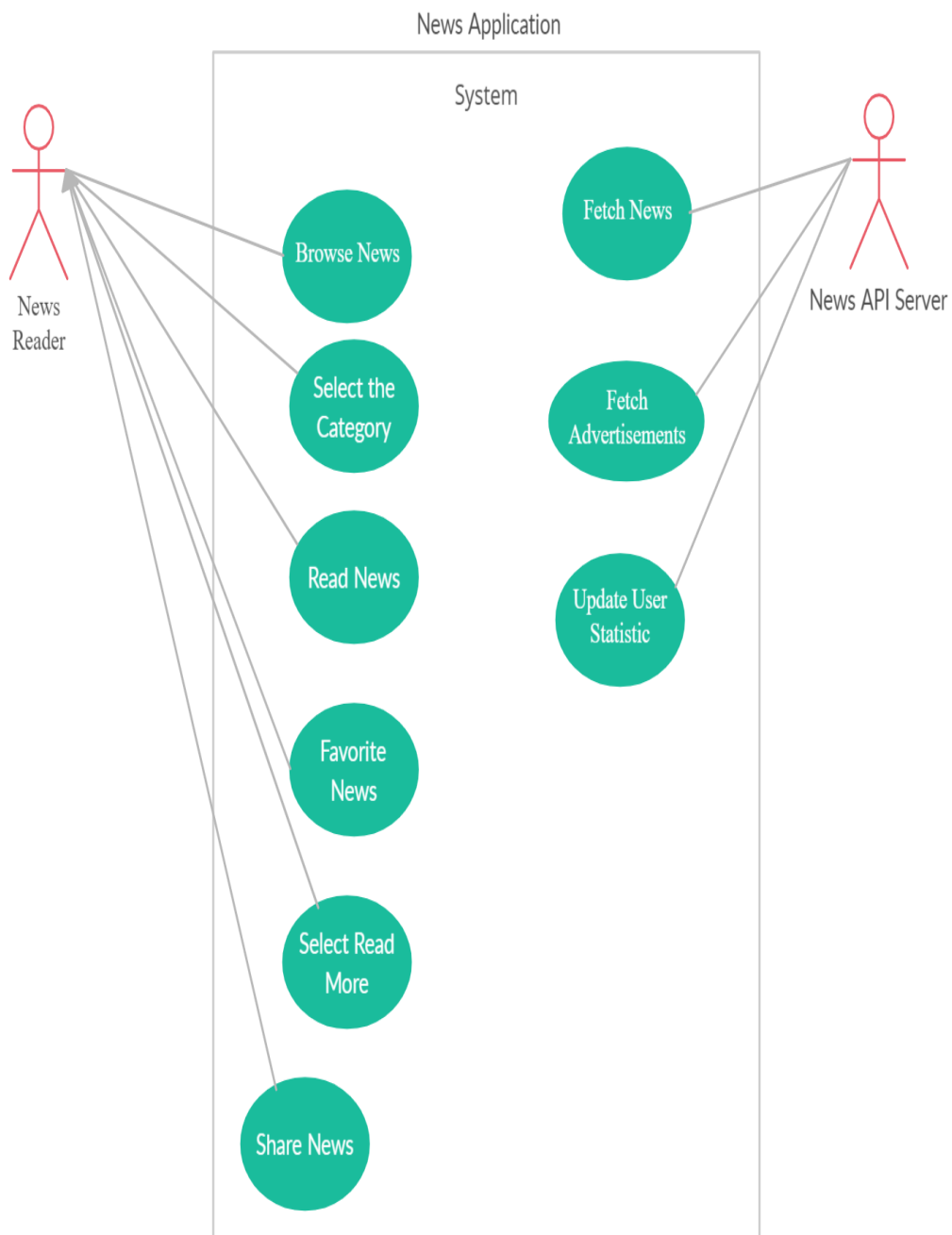
D. USER DIAGRAM

Fig 3.5 User diagram

A user diagram, illustrates the steps a user takes and the interactions they have within an application or system. In the context of a news app, a user diagram describes the sequence of actions a user may perform to navigate the app and access news content.
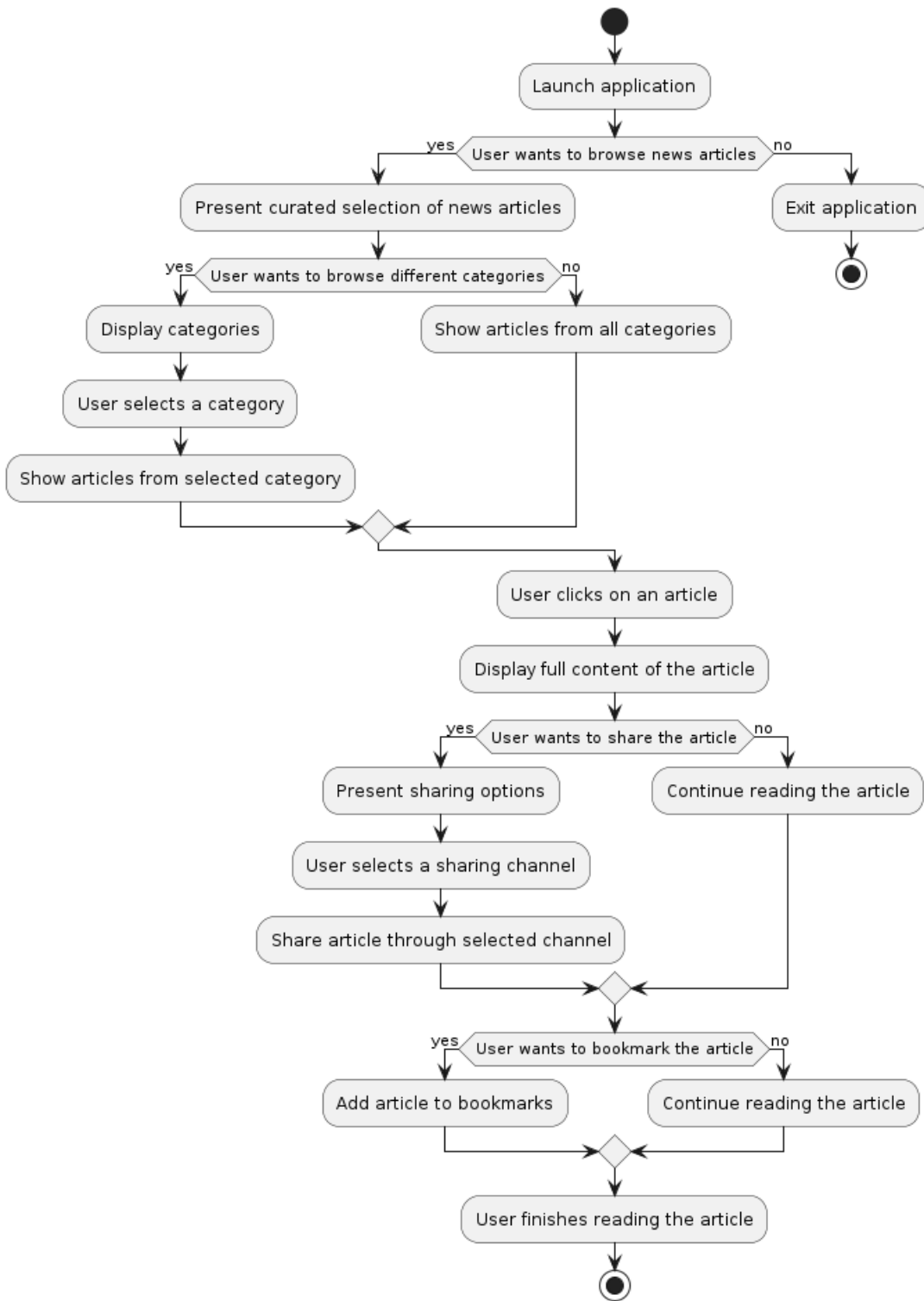
E. ACTIVITY DIAGRAM

Fig 3.6 Activity diagram

Activity diagrams are used to visually represent the flow of activities or processes within a system or application. They are particularly useful for modeling the workflow and sequence of actions in software systems. This diagram represent work flow of news app.

Chapter 4

IMPLEMENTATION

Pseudo Code For Main Activity

// Declare and initialize variables

articlesArrayList = empty ArrayList of Articles

categoryRVModalArrayList = empty ArrayList of CategoryRVModal

newsRVAdapter = new instance of NewsRVAdapter with articlesArrayList

categoryRVAdapter = new instance of CategoryRVAdapter with categoryRVModalArrayList

// Set up RecyclerViews and Adapters

newsRV = reference to RecyclerView for news

categoryRV = reference to RecyclerView for categories

newsRV.setLayoutManager(new LinearLayoutManager)

newsRV.setAdapter(newsRVAdapter)

categoryRV.setAdapter(categoryRVAdapter)

// Load categories and news articles

getCategories()

getNews("All")

newsRVAdapter.notifyDataSetChanged()

// Function to retrieve categories

function getCategories:

   Add new CategoryRVModal objects to categoryRVModalArrayList for each category with respective image URLs

   Notify categoryRVAdapter of data change

// Function to retrieve news articles

function getNews(category):

   Show loading progress bar

Clear articlesArrayList

```
// Set URL based on selected category or default to all news

if category is "All":

    url =
"https://newsapi.org/v2/top-headlines?country=in&excludeDomains=stackoverflow.com&sortBy=p
ublishedAt&language=en&apiKey=a5fd5a84c81a48b393f0bcb03afb2ec9"

else:

    categoryURL = "https://newsapi.org/v2/top-headlines?country=in&category=" + category +
"&apiKey=a5fd5a84c81a48b393f0bcb03afb2ec9"


// Create Retrofit instance and API interface

retrofit = new
Retrofit.Builder().baseUrl("https://newsapi.org/").addConverterFactory(GsonConverterFactory.creat
e()).build()

retrofitAPI = retrofit.create(RetrofitAPI.class)


// Make API call

call = retrofitAPI.getNewsByCategory(categoryURL)

call.enqueue(new Callback<NewsModel> {

    onResponse:

        Get response body as newsModel

        Hide loading progress bar

        Get articles from newsModel

        Iterate through articles and add them to articlesArrayList

        Notify newsRVAdapter of data change


    onFailure:

        Show error toast message

})


// Event handler for category click

onCategoryClick(position):

    Get category from categoryRVModalArrayList at position

    Call getNews with the selected category
```

Chapter 5

TESTING

Test Case	Test Description	Input	Expected Output	Actual Output	Status
1	Verify News article retrieval	Category:"Technology"	Articles related to the "Technology" category displayed	Articles related to the "Technology" category displayed	Pass
2	Verify functionality	Click :"COVID-19 news"	Articles related to "COVID-19" displayed	Articles related to "COVID-19" displayed	Pass
3	Verify offline reading	Enable airplane mode and access saved articles	Previously saved articles displayed without internet connection	Previously saved articles displayed without internet connection	Pass
4	Verify performance under high load	Simulate high user traffic and monitor application response time	Application maintains acceptable response time under high load	Application maintains acceptable response time under high load	Pass
5	Verify News article retrieval	Category:"Sports"	Articles related to the "Sports" category displayed	Articles related to the "Sports" category displayed	Pass
6	Verify News article retrieval	Category:"Science"	Articles related to the "Science" category displayed	Articles related to the "Science" category displayed	Pass
7	Verify News article retrieval	Category:"General"	Articles related to the "General" category displayed	Articles related to the "General" category displayed	Pass
8	Verify News article retrieval	Category:"Business"	Articles related to the "Business" category displayed	Articles related to the "Business" category displayed	Pass
9	Verify News article retrieval	Category:"Health"	Articles related to the "Health" category displayed	Articles related to the "Health" category displayed	Pass

| 10	Verify News article retrieval	Category:"Entertainment"	Articles related to the "Entertainment" category displayed	Articles related to the "Entertainment" category displayed	Pass
11	Verify accessibility features	Test application with screen readers and accessibility tools	Application is accessible and supports screen reader compatibility	Application is accessible and supports screen reader compatibility	Pass
12	Verify error handling	Simulate API failure and observe error handling	Proper error message displayed when API fails	Proper error message displayed when API fails	Pass
13	Verify bookmarking an article	Click on the bookmark icon for an article	Article added to bookmarks	Article added to bookmarks	Pass
14	Verify News article retrieval	Category:"All"	Articles related to the "All" category displayed	Articles related to the "All" category displayed	Pass
15	Verify click functionality on article	Click on an article	Article detail screen opened with correct data	Article detail screen opened with correct data	Pass
16	Verify external URL redirection	Click on "Read full news" button	Device browser opened with the article URL	Device browser opened with the article URL	Pass
17	Verify image loading	Article with image URL	Image displayed in the ImageView	Image displayed in the ImageView	Pass
18	Verify scrolling functionality	On the main screen, scroll through the list of news articles	The articles smoothly scroll up or down without any issues	The articles smoothly scroll up or down without any issues	Pass

Chapter 6

RESULT AND DISCUSSION:
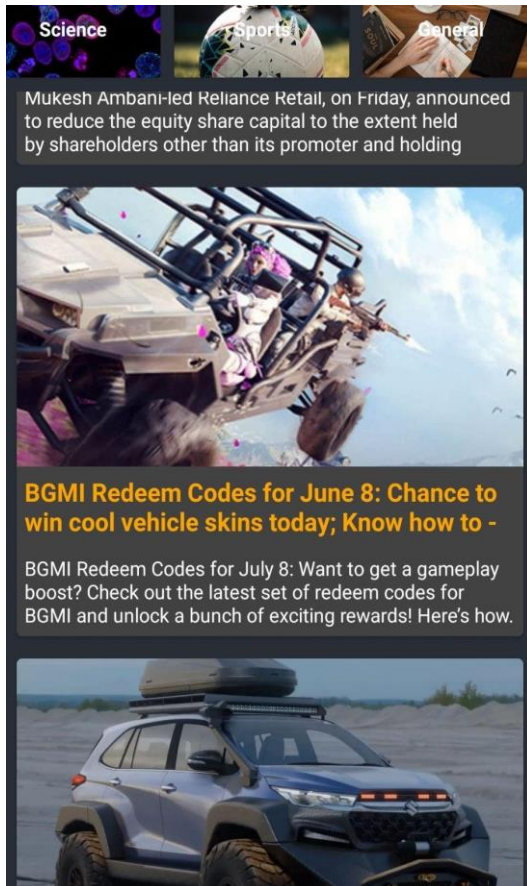
Fig a: Home Page

The home page of a news app serves as the initial screen that users encounter upon opening the app. It typically provides an overview of the latest news articles or categories to pique the user's interest and facilitate easy navigation to relevant content.

Fig b: Sports Category Page

The Sports Category Page provide a dedicated space for user to explore news and article related to sports.

Fig c: Entertainment Category Page

The Entertainment Category Page provide a dedicated space to the user to explore news and related articles to entertainment category.
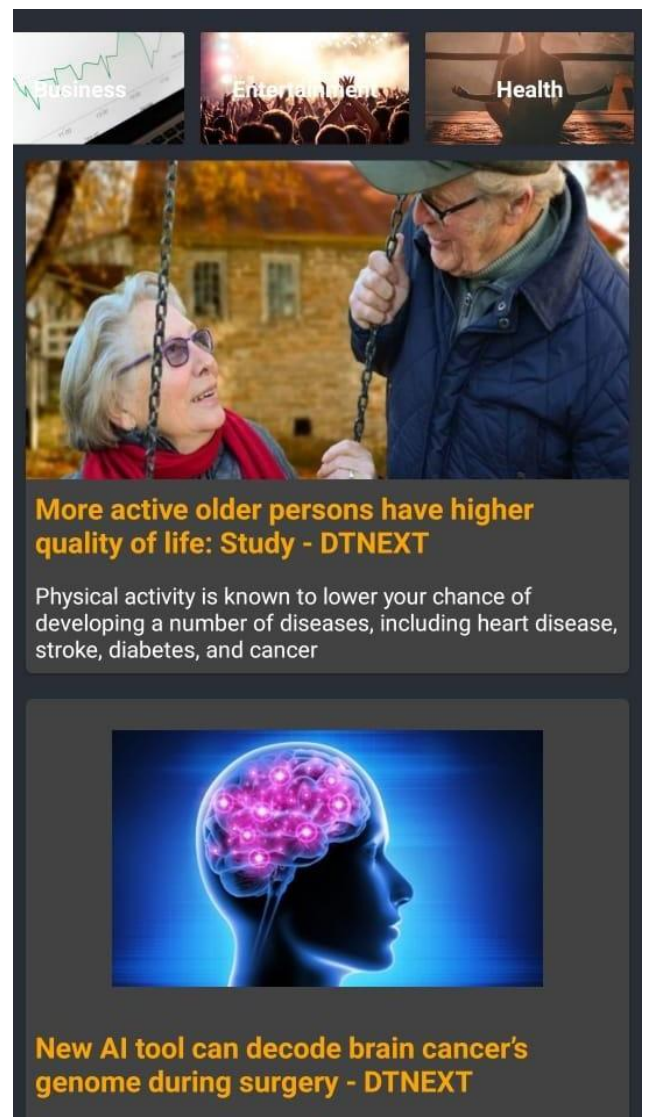
Fig d:Health Category Page

The Health Category Page display breaking news related to the health category.

Fig e: Science Category Page

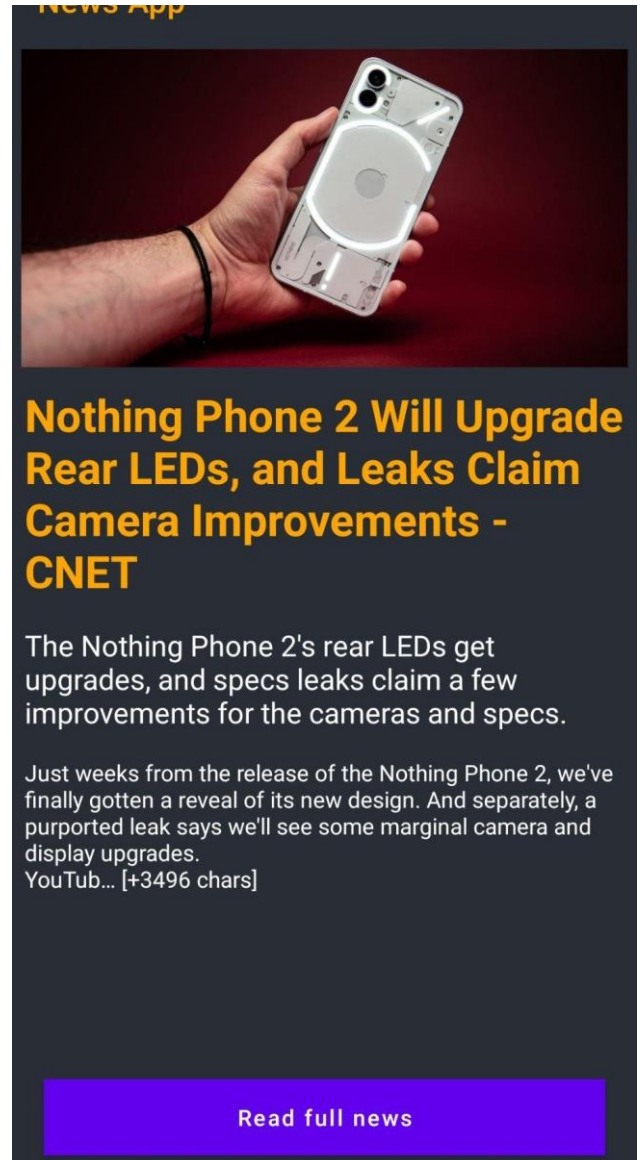The Science Category Page provide dedicated space the user to explore news related the Science.

Fig d : After Clicking the news

This page display the news information that we want read more about the news and provide Read full news button.

Fig f: News open in Browser Page

The news is opened in browser after clicking Read Full news button and it display full news.

Fig g: Read full News Page

This page provide a user to explore more about news that opened in browser.

Chapter 7

CONCLUSION AND FUTURE ENHANCEMENTS

In conclusion, the development of the News app using Android Studio has been successfully accomplished. The app provides a user-friendly interface for users to browse and read news articles from various categories. It utilizes the News API to fetch the latest news data and displays them in a RecyclerView with appropriate adapters. The app also includes features such as bookmarking articles and opening the full article in a browser. Overall, the News app offers a convenient and engaging platform for users to stay informed about current events.While the current version of the News app is functional and meets the basic requirements, there are several potential enhancements that can be considered for future iterations: user profiles,Push notification,article comments and interaction. Incorporate analytics tools to gather data on user behavior, preferences, and usage patterns. Utilize these insights to improve the app's features, content recommendations, and user engagement.

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