

NALAIYA THIRAN - IBM PROJECT REPORT

(19CS406T Professional Readiness for Innovation, Employability and Entrepreneurship)

ON

CLOUD BASED NEWS TRACKER APPLICATION

Submitted by

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in partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING



VELAMMAL ENGINEERING COLLEGE, CHENNAI-66.

(An Autonomous Institution, Affiliated to Anna University, Chennai)

2022-2023

VELAMMAL ENGINEERING COLLEGE

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(An Autonomous Institution, Affiliated to Anna University, Chennai)



BONAFIDE CERTIFICATE

Certified that this NALAIYA THIRAN – IBM PROJECT REPORT “**CLOUD BASED NEWS TRACKER APPLICATION**” is the Bonafidework of “ALBIN A (113219031007), ASHKAR ALI A (113219031018), DHANUSH P (113219031035), and MANIKANDAN N (113219031085)” carried out in “PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP (NALAIYA THIRAN-IBM PROJECT)” during the Academic Year 2022-2023.

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1.INTRODUCTION

1.1 Project Overview

NewsTracker is a fullstack web application which allows users to register along with their favourite topics, upon login the app displays the news based on the user's interest. The news displayed in the app is based on the Newcatcher API and Cricbuzz API from Rapid API site. A news-sharing app wants to help users find relevant and important news easily every day and also provide explicitly news from that user's locality/region which may be of help to the user.

1.2 Purpose

Enabling users to view news from anywhere at anytime. It also helps to reduce the time to get information about a specific topic. Also enables a person to get an updated news which may help Business people to make business related decisions quickly and correctly.

2. LITERATURE SURVEY

2.1 Existing problem

Physical newspapers are old fashioned in this digital era. They cost money to buy, can easily be damaged, limited amount of information, not flexible to modifications, poor quality. Sometimes may show irrelevant and updated news

2.2 References

S. no	Paper title	Author	Published date	Implementation	Resource link
1	Following the Fed with a News Tracker	Michael William McCracken	January, 2012	The paper is not a technical paper but is essentially a statistical paper on how should one conclude whether the data have come in stronger, weaker or as expected. This is based on the CitiGroup U.S Economic Surprise Index.	(PDF) Following the Fed with a News Tracker (researchgate.net)
2	Topic Detection and Tracking in News Articles	Sagar Patel, Sanket Suthar, Sandip Patel, Neha Patel	March, 2015	<ol style="list-style-type: none">1. Pre-processing2. Tokenization3. Stemming/Lemmatization4. Vector Space	(PDF) Topic Detection and Tracking in News Articles (researchgate.net)

				Model 5. Topic tracking	
3	An End-to-end Weakly-supervised News Aggregation Framework	Xijin Tang, Xiaohui Huang	June, 2022	The framework combines Snorkel based weakly Supervised classification, Latent Dirichlet Allocation (LDA) topic modeling, and topic signal detection model to classify and aggregate unlabeled news texts and ultimately generate visualized results containing news categories, news topics, and temporal topic relationships. This paper uses constructed	An End-to-end Weakly-supervised News Aggregation Framework Request PDF (researchgate.net)

				<p>knowledge thesaurus and the Snorkel method to weakly supervise the classification of unlabeled news with no manual tagging. Subsequently, we utilize LDA to generate the topics and</p>	
				<p>obtain the signal value of each topic based on the topic signal detection function. Finally, we establish the temporal topic relationships and get the visualized</p>	

				results of news aggregation.	
4	Exploring mobile news reading interactions for news app personalisation	Marios Constantinides, John Dowell, David Johnson, Sylvain Malacria	August, 2015	<ol style="list-style-type: none"> 1. Identification of newsreader types 2. Interaction logging and classification study 3. Deployment and data collection 4. Predicting News reader types 5. Adaptive UI 	(PDF) Exploring mobile news reading interactions for news app personalisation (researchgate.net)

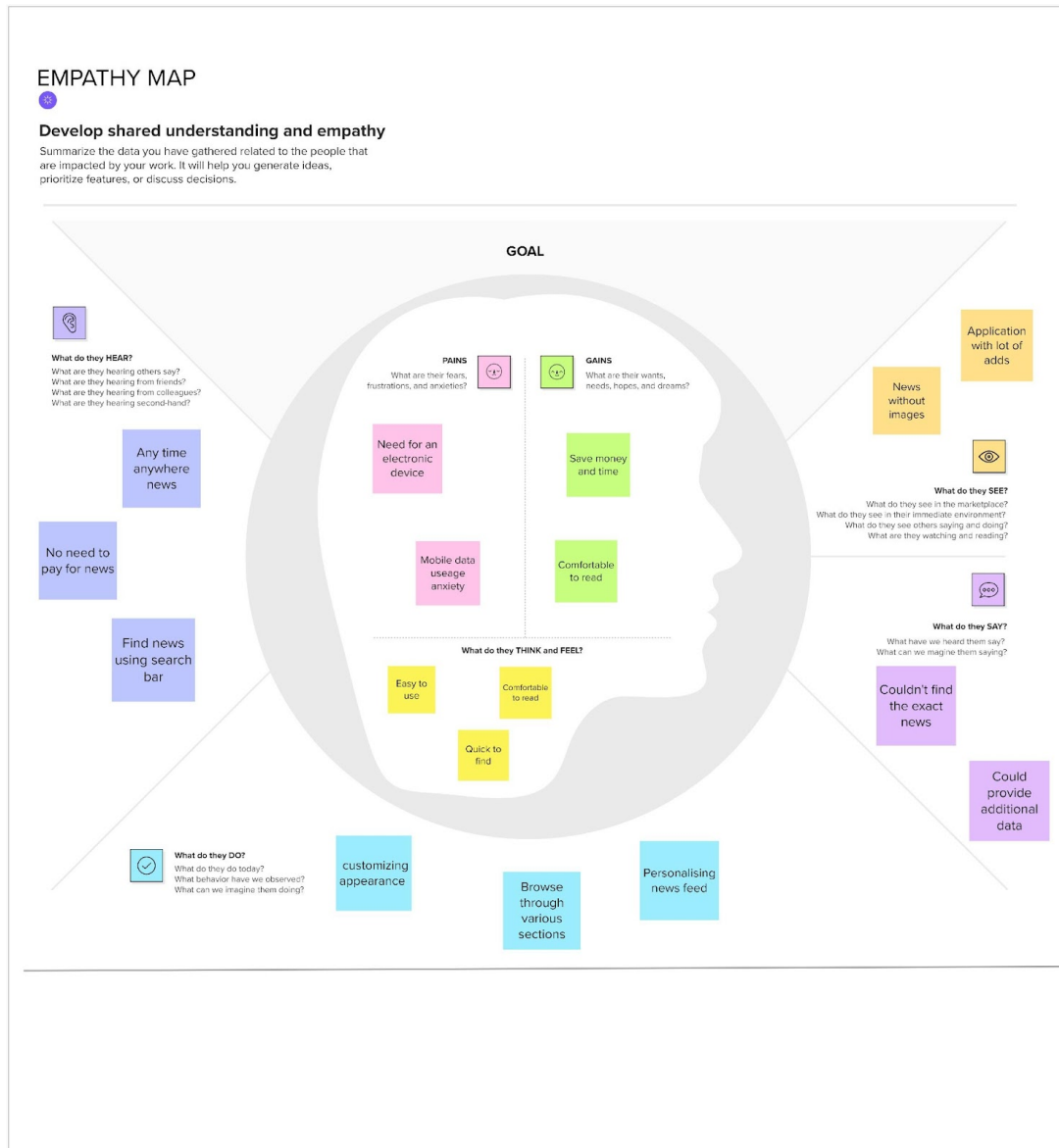
5	Innovative Application For News Tracker	Dr.C.K.Gomathy, Dr.V.Geetha, Peddireddy Abhiram, Marios Constantinides	September , 2020	<p>This paper aimed at developing an online news management system that is of information to either a college. Online news management system provides a simple interface for maintenance of college information. The creation management of accurate,up-to-date information regarding to college.The main objective for developing this project is provide all the functionality related to latest news and it tracks.</p>	(PDF)The Innovative Application for News Management System (researchgate.net)
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2.3 Problem Statement Definition

Newspaper contains limited , non user/reader specific, Location specific news . There are multiple news-sharing apps available which can be used by a single user and are often spammed with notifications. There is also a lot of unwanted news which gets shared. So it may take a lot of time for the user to find the news he/she likes. A news-sharing app wants to help users find relevant and important news easily every day and also provide explicitly news from that users locality/region which may of help to the user.

3. IDEATION & PROPOSED SOLUTION


3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Step-1: Team Gathering, Collaboration and Select the Problem Statement



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 🕒 10 minutes to prepare
- 🕒 1 hour to collaborate
- 👤 2-8 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

A Team gathering
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B Set the goal
Think about the problem you'll be focusing on solving in the brainstorming session.

C Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) →

1 Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

PROBLEM

Newspaper contains limited , non user/reader specific, Location specific news . There are multiple news-sharing apps available which can be used by a single user and are often spammed with notifications. There is also a lot of unwanted news which gets shared. So it may take a lot of time for the user to find the news he/she likes. A news-sharing app wants to help users find relevant and important news easily every day and also provide explicitly news from that users locality/region which may help to the user.

Key rules of brainstorming

To run an smooth and productive session

- Stay in topic.
- Defer judgment.
- Go for volume.
- Encourage wild ideas.
- Listen to others.
- If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping

2 Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

TP
Take 10 minutes to think about the problem statement and write down as many ideas as you can.

Albin

Backend Logic	Automation	Time Calculation
Mind Mapping	Competitive Analysis	Plan of Action

Mani

UI	UI design	User Experience
Project Chunks	Article Filters	Personalization

Ashkar

Easy Accessible	Time Duration	Customer Satisfaction
Language Preference	Good Ideas	Randomness

Dhanush

Attractive UX	Temperature Reading	Bookmark
Minimal Controls	Optimized Request	Responsive Frontend

3 Group ideas

Take time sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than a sticky note, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes

Backend

Handle Multiple Request	Fetch News With Regular Times
Generate interesting topics from news and send it via email	Authenticate and send verification of users

API Call

Fetch News Handling in the Request	Convert date to standard format for frontend use
Process the data from API call	Reduce the number of requests from the frontend

Frontend

Responsive UI with chat UX	Minimalistic Clean UI
Show news based on user's interest	Bookmark the news for users

TP
Add your own ideas to the sticky notes to make it more relevant to your organization and categorize the sticky notes as it comes to your mind.

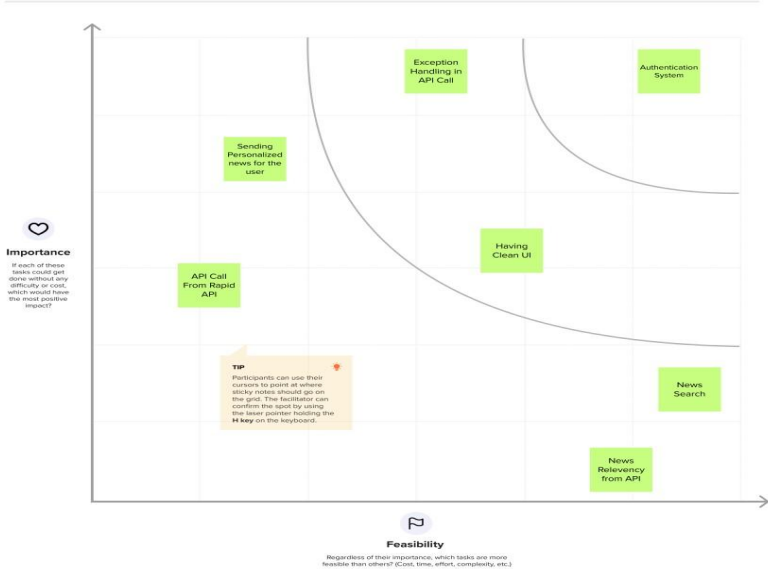
Step-3: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Most people don't like to carry a newspaper with them. Some people want them to be updated only in the area they are interested in
2.	Idea / Solution description	An application needs to be developed in which users can read news whenever they want and they will be able to customize their area of interest. So that they will be notified, if any new news is updated in their interested areas.
3.	Novelty / Uniqueness	A user can read news only from their interested fields rather than reading all the news. This application provides users with a trusted and secured ecosystem. News shared through the application is original and spam free.
4.	Social Impact / Customer Satisfaction	This application encourages its users to provide feedback. Based on that feedback, developments were made eventually.
5.	Business Model (Revenue Model)	Add advertisements to the application, so that we can get revenue from those advertisement-sponsored organizations. More advertisements may irritate the user. Add premium subscription, users who subscribe for premium won't get advertisements.
6.	Scalability of the Solution	As it was an application-based project, correct ideation and execution can develop an application with no bugs and errors, so that the user might like our application and some might suggest and share it to their surroundings, resulting in an increase in our application insights.

3.4 Problem Solution fit

Define CS, fit into CC	<div>1. CUSTOMER SEGMENT(S)<div>CS</div><p>Who is your customer? I.e. working parents of 0-5 y.o. kids</p><p>Common People</p></div>	<div>6. CUSTOMER CONSTRAINTS<div>CC</div><p>What constraints prevent your customers from taking action or limit their choices of solutions? I.e. spending power, budget, no cash, network connection, available devices.</p><p>Network Connectivity</p></div>	<div>5. AVAILABLE SOLUTIONS<div>AS</div><p>Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? I.e. pen and paper is an alternative to digital notetaking.</p><p>News apps with lot of advertisements and many irrelevant news</p></div>	Explore AS, differentiate
	<div>2. JOBS-TO-BE-DONE / PROBLEMS<div>J&P</div><p>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.</p><p>Personalized news for the users, Ad free user interface</p></div>	<div>9. PROBLEM ROOT CAUSE<div>RC</div><p>What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations.</p><p>Even though there are many news apps over there, most of them are full of ads and irrelevant news.</p></div>	<div>7. BEHAVIOUR<div>BE</div><p>What does your customer do to address the problem and get the job done? (1) Directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (I.e. Greenpeace)</p><p>News channels and newspapers</p></div>	
Focus on J&P, fit into BE, understand RC	<div>3. TRIGGERS<div>TR</div><p>What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.</p><p>Traditional newspaper makes them to receive news at a time delay and most of other online news apps are full of ads.</p></div>	<div>10. YOUR SOLUTION<div>SL</div><p>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.</p><ul style="list-style-type: none">Get the user's favourite topicsFetch the news from rapid apiDisplay the news based on user topics</div>	<div>8. CHANNELS OF BEHAVIOUR<div>CH</div><p>8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7</p><p>View news from the apps like google news, inshort</p></div>	Identify strong TR & EM
	<div>4. EMOTIONS: BEFORE / AFTER<div>EM</div><p>How do customers feel when they face a problem or a job and afterwards? I.e. lost, insecure > confident, in control - use it in your communication strategy & design. Irritated, Difficult > Satisfied, Easy</p></div>		<div>8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</div> <p>View news from the newspaper</p>	
Identify strong TR & EM				

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Email
FR-2	User Confirmation	Confirmation via Email using Sendgrid
FR-3	User Preferred Topics	Collecting user's favourite topics
FR-4	Collecting News	Collecting news from rapid API at regular Intervals
FR-5	Bookmark	Bookmarking Favourite news for the user
FR-6	Login	Logging in the user using the registered email and password
FR-7	News Feed	Showing the news fetched from the API to the user

4.2 Non-Functional requirements

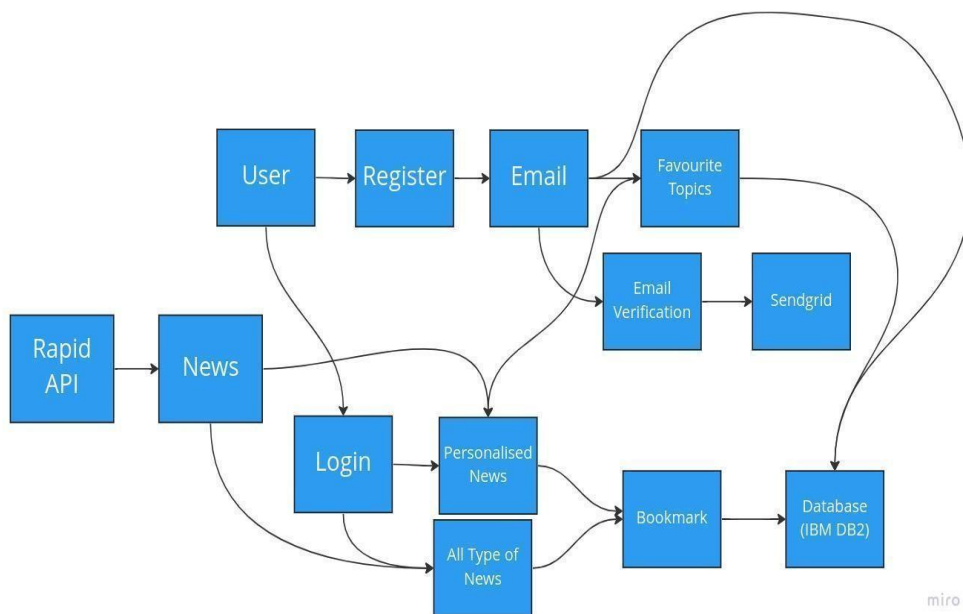
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The app should be able to used by all people
NFR-2	Security	The app should authenticate the legitimate users and should restrict bot attacks
NFR-3	Reliability	The app should show the news which are non fake and spam free

NFR-4	Performance	The app should be accessible in older devices too
NFR-5	Availability	The app should be available to all devices
NFR-6	Scalability	The app should handle multiple users and be designed in such a way for future upgrade

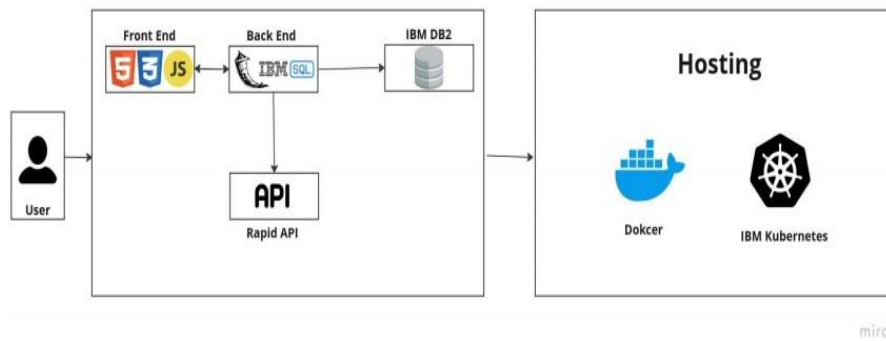
5. PROJECT DESIGN

5.1 Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



5.2 Solution & Technical Architecture



5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Normal User	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	can access my account / dashboard	High	Sprint-1

	Email Verification	USN-2	As a user, I will receive confirmation email once I have registered for the application	can receive confirmation email & click confirm	High	Sprint-1
	Favourite topics	USN-3	As a user, m I can y choose favourite topics	can see all my preferred news under for you category	Medium	Sprint-2
	Login	USN-4	As at user, I he can logint with he email and password into app	can access to all the news	High	Sprint-1
	Dashboard	USN-5	As a user, t I can see he all news under specific tab	can view all the news	Medium	Sprint-3

	Bookmark	USN-6	As a user, my I can bookmark favourite news topics	can later view my bookmark ed news	Low	Sprint-2
	Access	USN-7	As a user, I can access the site anywhere and everywhere	can view the site by typing the URL of the site	High	Sprint-4

6. PROJECT PLANNING & SCHEDULING

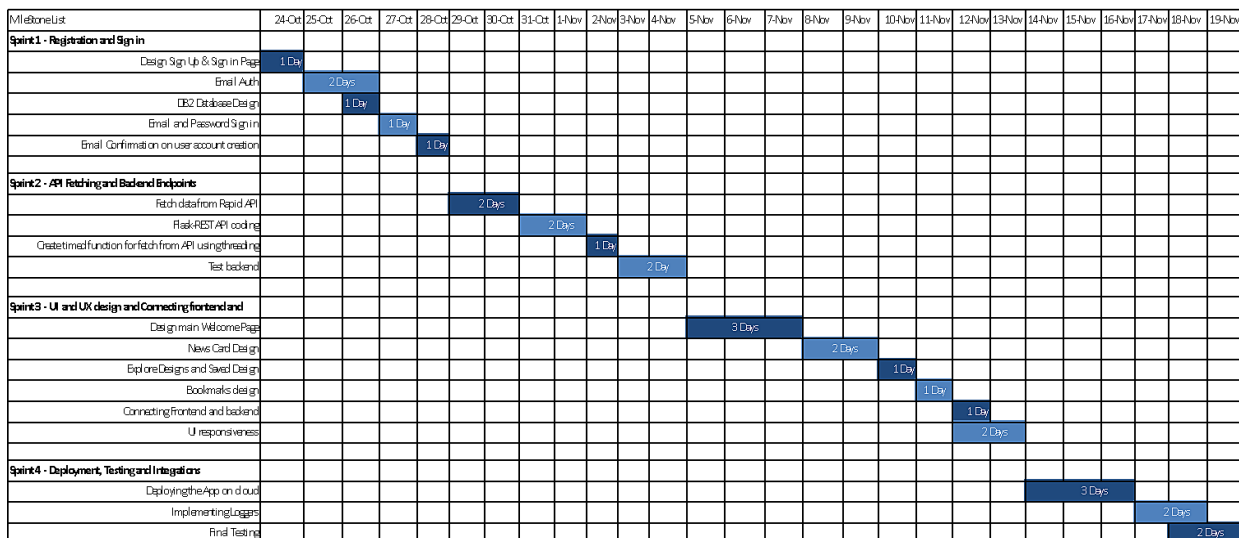
6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	10	High	Albin, Mani

Sprint-1	Login	USN-2	As a user, I will receive confirmation email once I have registered for the application	5	High	Albin, Mani
Sprint-1	Email Verification	USN-3	As a user I can verify my email using the link sent to my mailid	5	High	Albin, Mani
Sprint-2	API Fetch	USN-4	Fetch News from Rapid API at regular interval	10	High	Dhanush, Ashkar
Sprint-2	REST Endpoints for backend	USN-5	Creating endpoints at the backend inorder to interact with frontend	10	Medium	Dhanush, Ashkar
Sprint-3	Designing Frontend	USN-6	Create a minimalisting design in figma to create frontend	2	Medium	Albin

Sprint-3	Creating Frontend	USN-7	Create the frontend webpage using the design	10	Low	Albin, Mani
Sprint-3	Connect frontend and backend	USN-8	Connect the frontend and backend and complete the application	8	High	Albin, Mani, Dhanush, Ashkar
Sprint-4	Testing	USN-9	Testing the application before final release	10	High	Albin, Mani, Dhanush, Ashkar
Sprint-4	Deployment	USN-10	Deployment of the application	10	High	Albin, Mani, Dhanush, Ashkar

6.2 Sprint Delivery Schedule



7.CODING & SOLUTIONING

7.1 Feature 1

Python

- Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation.
- Python is dynamically-typed and garbage-collected.
- It supports multiple programming paradigms, including structured (particularly procedural), object-oriented and functional programming.
- It is often described as a "batteries included" language due to its comprehensive standard library.
- Guido van Rossum began working on Python in the late 1980s as a successor to the ABC

programming language and first released it in 1991 as Python 0.9.0.

- Python 2.0 was released in 2000 and introduced new features such as list comprehensions, cycle-detecting garbage collection, reference counting, and Unicode support.
- Python 3.0, released in 2008, was a major revision that is not completely backward-compatible with earlier versions.
- Python consistently ranks as one of the most popular programming languages

7.2 Feature 2 :

Flask

- Flask is a micro web framework written in Python.
- It is classified as a microframework because it does not require particular tools or libraries.
- It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions.
- However, Flask supports extensions that can add application features as if they were implemented in Flask itself.
- Extensions exist for object-relational mappers, form validation, upload handling, various open authentication technologies and several common framework related tools.
- Applications that use the Flask framework include Pinterest and LinkedIn.
- Flask has become popular among Python enthusiasts. As of October 2020, it has second most stars on GitHub among Python web-development frameworks, only slightly behind Django,[14] and was voted the most popular web framework in the Python Developers Survey 2018, 2019, 2020 and 2021.

7.3 Database scheme :

IBM DB2

- Db2 is a family of data management products, including database servers, developed by IBM.
- It initially supported the relational model, but was extended to support object-relational features and non-relational structures like JSON and XML.

- The brand name was originally styled as DB/2, then DB2 until 2017 and finally changed to its present form.
- Unlike other database vendors, IBM previously produced a platform-specific Db2 product for each of its major operating systems.
- However, in the 1990s IBM changed track and produced a Db2 common product, designed with a mostly common code base for L-U-W (Linux-Unix-Windows); DB2 for System z and DB2 for IBM i are different. As a result, they use different drivers.

Kubernetes

- Kubernetes is an open-source container orchestration system for automating software deployment, scaling, and management.
- Google originally designed Kubernetes, but the Cloud Native Computing Foundation now maintains the project.
- Kubernetes works with Docker, Containerd, and CRI-O.
- Originally, it interfaced exclusively with the Docker runtime through a "Dockershim"; however, from November 2020 up to April 2022, Kubernetes has deprecated the shim in favor of directly interfacing with the container through Containerd, or replacing Docker with a runtime that is compliant with the Container Runtime Interface (CRI).
- With the release of v1.24 in May 2022, "Dockershim" has been removed entirely.

8. ADVANTAGES & DISADVANTAGES

- This app can be accessed anywhere and anytime, So that the user can view the news
- Its ad free
- The news is only based on the API

It may contain some unwanted content but we don't have control over it ● The user can bookmark their favourite news.

9. TESTING

TEST CASE

Test case ID	Feature Type	Component	Test Scenario	Pre-Requirements	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
loginPage_TC_01	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on My account button		1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/signup popup displayed or not	http://kioskdemo.com/	Login/Signup popup should display	Working as expected	Pass				Karuppiak
loginPage_TC_02	UI	Home Page	Verify the UI elements in Login/Signup popup		1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/signup popup with below UI elements: a.email text box b.password text box c.Login button d.New customer? Create account link e.Last password? Recovery password link	http://kioskdemo.com/	Application should show below UI elements: a.email text box b.password text box c.Login button with image, label d.New customer? Create account link e.Last password? Recovery password link	Working as expected	Fail	Steps are not clear to follow		BUG-1804	Karuppiak
loginPage_TC_03	Functional	Home page	Verify user is able to login to application with valid credentials		1.Enter URL(http://kioskdemo.com/) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: cksalon@gmail.com password: Testing123	User should navigate to user account home page						Naveen Raj
loginPage_TC_04	Functional	Login page	Verify user is able to login to application with valid credentials		1.Enter URL(http://kioskdemo.com/) and click go 2.Click on My Account dropdown button 3.Enter Invalid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: cksalon@gmail.com password: Testing123	Application should show the correct email or password validation message.						Naveen Raj
loginPage_TC_05	Functional	Login page	Verify user is able to login to application with valid credentials		1.Enter URL(http://kioskdemo.com/) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter Invalid password in password text box 5.Click on login button	Username: cksalon@gmail.com password: Testing123678905789078907890	Application should show the correct email or password validation message.						Naveen Raj
loginPage_TC_06	Functional	Login page	Verify user is able to login to application with valid credentials		1.Enter URL(http://kioskdemo.com/) and click go 2.Click on My Account dropdown button 3.Enter Invalid username/email in Email text box 4.Enter Invalid password in password text box	Username: cksalon@gmail.com password: Testing123678905789078907890	Application should show the correct email or password validation message.						Naveen Raj

USER ACCEPTANCE TESTING:

1. Defect Analysis

This report shows the number of resolved or closed bugs each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	0	0	0	0	0
Duplicate	0	0	2	0	2
External	0	0	0	0	0
Fixed	0	0	0	3	0
Not Reproduced	0	0	0	1	1
Skipped	0	0	0	0	0
Won't Fix	0	0	1	0	1
Totals	0	0	3	4	4

2. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Login	4	0	0	4
Home	5	0	0	5
Bookmark	2	0	0	2
News	3	0	0	3
Logout	1	0	0	1

- **PERFORMANCE TESTING:**

[illegible]

10 Results :

10.1 Performance Metrics :

- Project metrics are used to track the progress and performance of a project.
- Monitoring parts of a project like productivity, scheduling, and scopemake it easier for team leaders to see what's on track.
- As a project evolves, managers need access to changing deadlines or budgets to meet their client's expectations


Output Snapshots :

BraveFile Edit View History Bookmarks People Tab Window Help

mycluster-free-nt - IBM CloudNews Tracker ApplicationIBM-Project-25366-1659960687/IBM Demo Video News Tracker.movPROJECT_FINAL_REPORT-noohu.d


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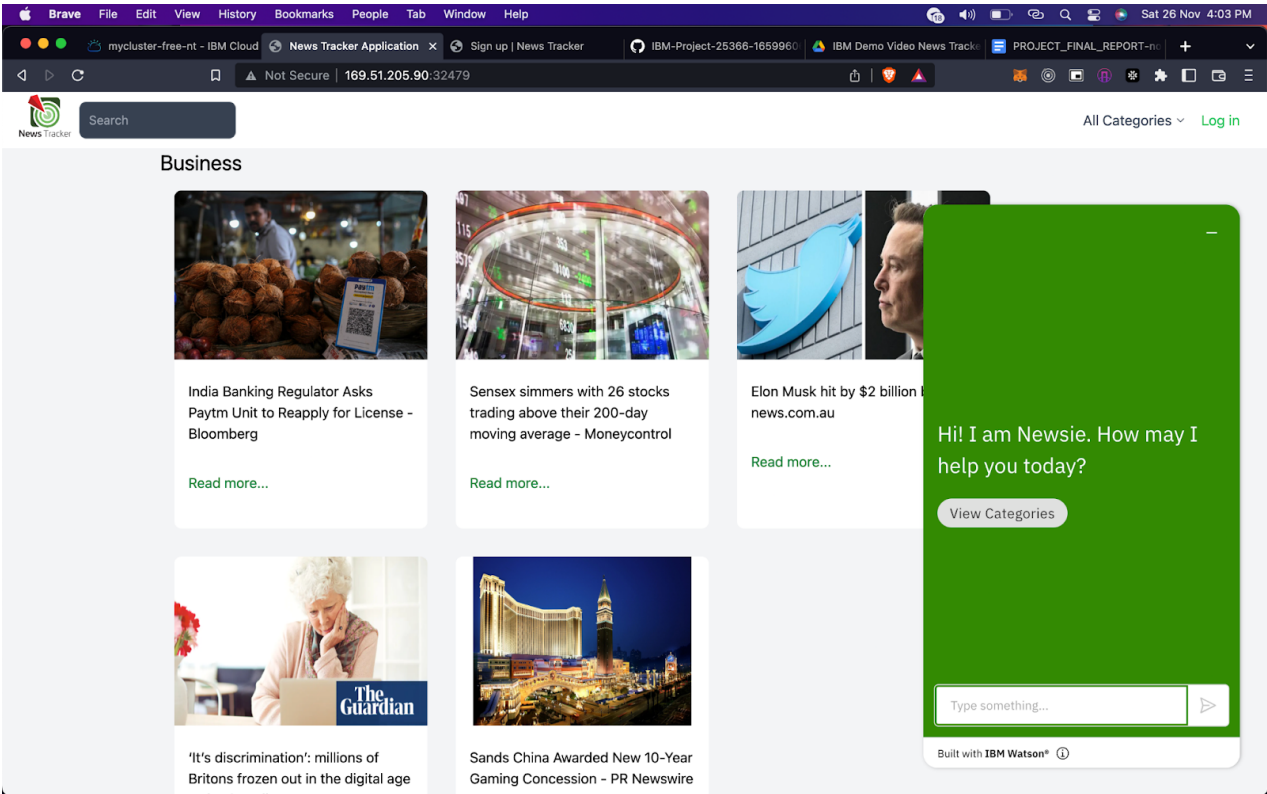
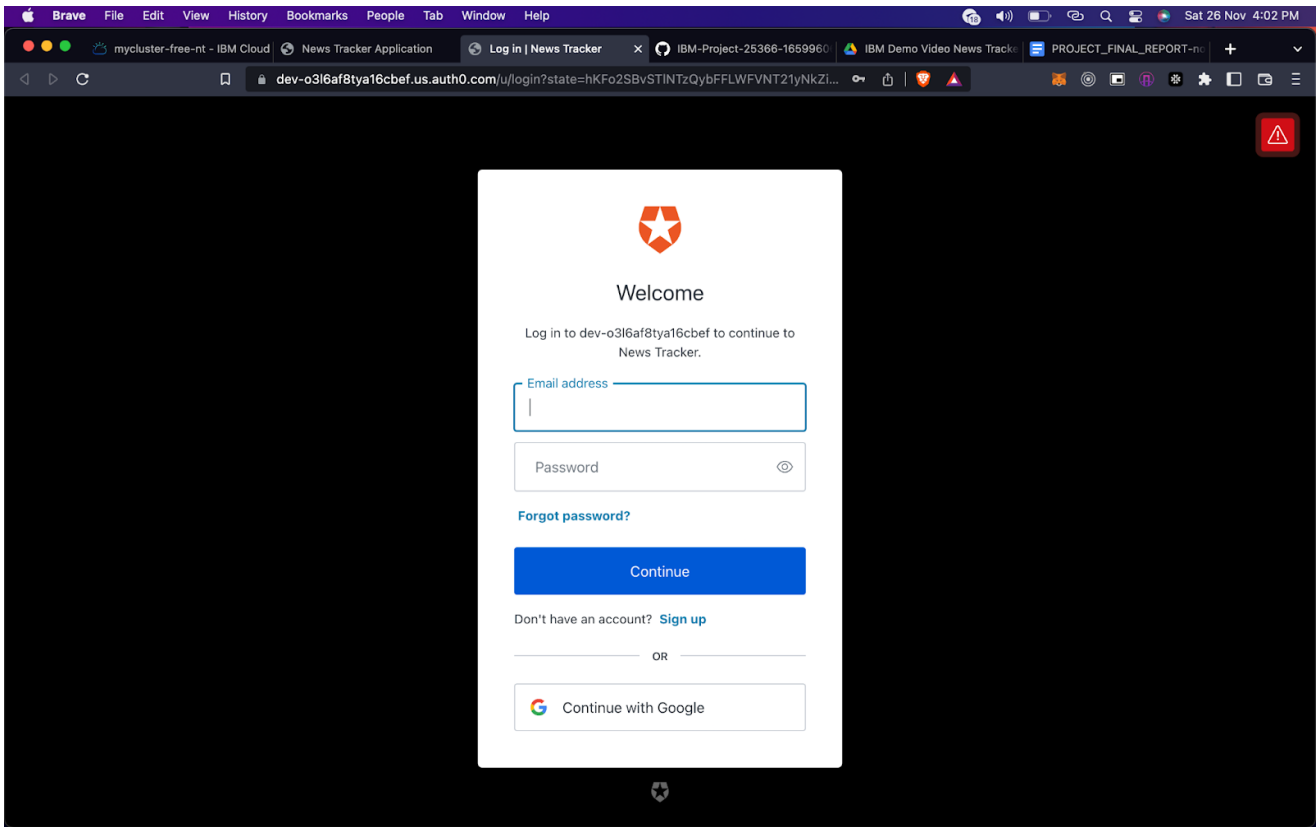
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11.CONCLUSION

Thus we have developed a full stack application based on the plans and within the given time. We have tested the application in both desktop and mobile and it worked well, Overall it was a great experience.

12. FUTURE SCOPE

In future we may integrate our own news API instead of third party APIs and may develop a mobile native application so that it can be used in both android and ios.

13. APPENDIX

Source Code

Github

<https://github.com/IBM-EPBL/IBM-Project-25366-1659960687>

Demo video

https://drive.google.com/file/d/11W27uPUHuCTogSf9-vFWf_xo6uzo3mBw/view