

# **NewsRoomCMS**

*by*

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*Project report submitted in partial fulfillment of the  
requirements for the degree of*

**Bachelor of Science in Computer Science and Engineering**

Under the supervision of

**Dr. Nafees Mansoor, PhD**



**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**UNIVERSITY OF LIBERAL ARTS BANGLADESH**

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# DECLARATION

**Project Title** NewsRoomCMS  
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I declare that this project report entitled *NewsRoomCMS* is the result of my own work except as cited in the references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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**Date:** February 02, 2023



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## CERTIFICATE

This is to certify that the project report entitled **NewsRoomCMS**, submitted by **Muhtasir Shafkat** (Student ID: 172014023) is a undergraduate student of the **Department of Computer Science and Engineering** has been examined. Upon recommendation by the examination committee, we hereby accord our approval of it as the presented work and submitted report fulfill the requirements for its acceptance in partial fulfillment for the degree of *Bachelor of Science in Computer Science and Engineering*.

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*Muhtasir Shafkat*

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Dedicated to  
*my loving Mother*

– *Muhtasir Shafkat*

# ABSTRACT

This is the generation of social media. Every day we see a lot of news hovering over the internet. But we do not know if that viral news is real or fake or misleading. To verify factual information like those, FactWatchBD is working towards it. The problem is there is no Contain management system for all those news. For that, I am creating a Contain Management System. It's a web Based Application.

NewsRoomCMS is a web-based application, that mostly Bangladeshi people will be benefited from. It will be easy to use the application, where you can see If the news is Fake or real, or misleading. Anyone can check if a new viral story is real or fake by posting it on the website. There is a media feed, where after authenticated users can see all the stories that are fact-checked. There are also search options and pagination system and comment Options. Users can search stories via Title and tags. There is going to be Admin Panel. The Admins and Editors will be able to do CRUD operations on those News and users.

**Keywords:** CMS, FactWatchBD, NewsRoomCMS, MERN

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# Chapter 1

## Introduction

### 1.1 Background & Motivation

A program that allows users to create, modify, collaborate on, publish, and save digital material is known as a content management system (CMS). Enterprise content management (ECM) and web content management are two common uses for CMSes (WCM). My Paper is based on client requirements. And it is a web-based content management system. It has a Media feed, a Posing system, a Search system, an authentication system, an admin panel, etc. It is a web application where people can fact-check viral news.

The main motivation for this project is that there is no existing CMS project that fulfills the requirement of the FactWatchBD CMS project. This is why I am making this project.

### 1.2 Objectives

The NewsRoomCMS application is helpful for all Bangladeshi people. They can check the authenticity of viral news. This application will be most helpful to the organization FactWatchBD, so they can manage all the data easily. It will be helpful because people can post here and see facts about that viral news.

## 1.3 Expected Outcomes

NewsRoomCMS is a single page, easy to use, and has a good-looking user interface. Where people can get news authenticity. The website needs a media feed. The media feed will have all the stories, a search bar, and A form where a user can post new stories to check their authenticity. The media feed will also have a pagination system where 12 posts will be there per page. The website will be mobile responsive. There will be a post details page, where all the details about a post will be shown. On the post details page, there will be a comment section where all types of users can comment.

There are going to be 3 types of users:

- User
- Editor
- Admin

The website will have an admin panel, which will only be accessible to the admins. In the admin panel "Admin" will be able to manage all the stories and users. The user type: Editor will be able to edit all the posts.

## 1.4 Scope of the Problem

Because there is no CMS project, FactWatchBD has some problems with managing all the data they get. It is hard to sort things by tag, author, creator, name etc. Because of that, there comes the second problem. If they can't sort things properly and it becomes tedious, Bangladeshi people won't be able to identify all the accuracy and truthfulness of reporting. Which defeats the purpose of FactWatchBD. And makes the people of Bangladesh chaotic, confused, and disordered.

## 1.5 Challenges

The main challenge of this project is familiarizing Bangladeshi people with this Fact Check system. Most People in Bangladesh don't know about the Fact-checking system. They don't even know there you can check if a viral story is fake or not.

There are technical challenges too. Those are some personal challenges I faced when I tried to build this project. The first one learning redux. This is one piece of technology that was hard to grasp. The second was connecting all those API endpoints. The third was transferring data to end to end. As technology is growing fast, the programming language is also growing fast and changing too. There is a lot of documentation that is not valid anymore with the new version of a certain language. Like, say React.js. In React Version 15, there was a method called useHistory. But now in React.js version 18 it is call Navigate. This is a method used for redirecting to a different URL. Like this there are a lot of changes that came to those programming languages. Which is sometimes hard to follow with all the changes.

## 1.6 Project Management and Finance.

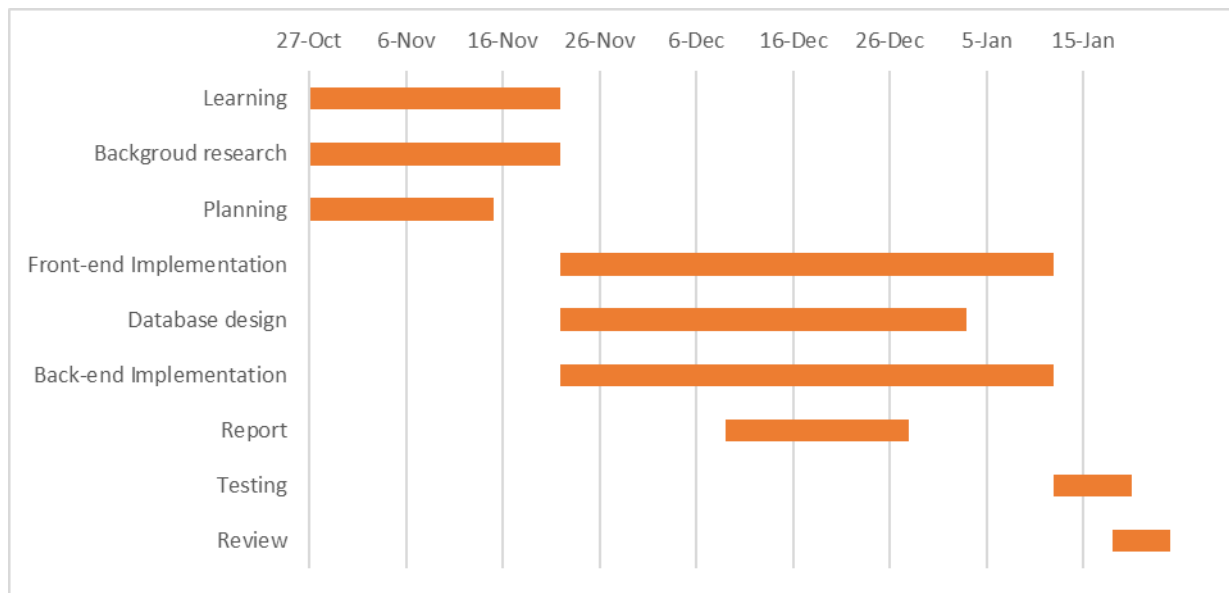


Figure 1.1: Gantt chart

When I was given this project. I started working on the design and started learning React.js [Schwarz Müller \(n.d.\)](#), and Node.js as those two languages will be needed to fulfill project requirements. [Node.js Tutorial for Beginners: Learn Node in 1 Hour — youtube.com \(n.d.\)](#) I also started doing background research, on how

to do this NewRoomCMS project. I already knew about Node.js.[Yu \(n.d.\)](#) So, I started learning React and Redux. Redux[Redux — Redux-toolkit Bangla Tutorials — youtube.com \(n.d.\)](#) is a state management system that is needed to send data to any react components easily and make the website faster. As this is a client-based Project, I started coding it dynamically. It will be not a good idea to create the front end fast or the backend. There will be problems with the API calls.[Academind \(n.d.\)](#) As we can not push data in the front end without a database, that's why I use the backend simultaneously. I have taken 26 days to learn, research, and done some planning.[Simplified \(n.d.-b\)](#) I am taking approximately 55 days to build it. The project is still an ongoing process.[Simplified \(n.d.-a\)](#)

## 1.7 Report Layout

**Chapter-2:** Here I am going to introduce why I am choosing this project and why I want to develop this project and some similar work that the project flow of the project flow theirs represent the mass that is existing already and what will be the impact of our country and also what will be the best for our country.

**Chapter-3:** In this section, I am going to tell about why this system is needed for our country and what people want from this system and what is the requirement of people from this system and also in the project.

**Chapter-4:** Here I am going to show the total design of this system and also showing the design of data flowing of this system.

**Chapter-5:** Here I am going to show the project implementations and describe how it works.

**Chapter-6:** Here I elaborate on this system's ethical demands, environmental impacts, and sustainability.

**Chapter-7:** In this chapter I am going to conclude that my whole system works and I am going to explain some plans for this system.

## Chapter 2

# Literature Review and Analysis

### 2.1 Related Works.

Content management systems are popular things in software engineering. But every CMS(Content management system) is unique to the specific software. Like Facebook, Twitter , LinkedIn, Github etc . Every one of those web application has CMS. Unlike there CMS project, my project can show Media feed. And it's industry standard. Here are some CMS projects example:

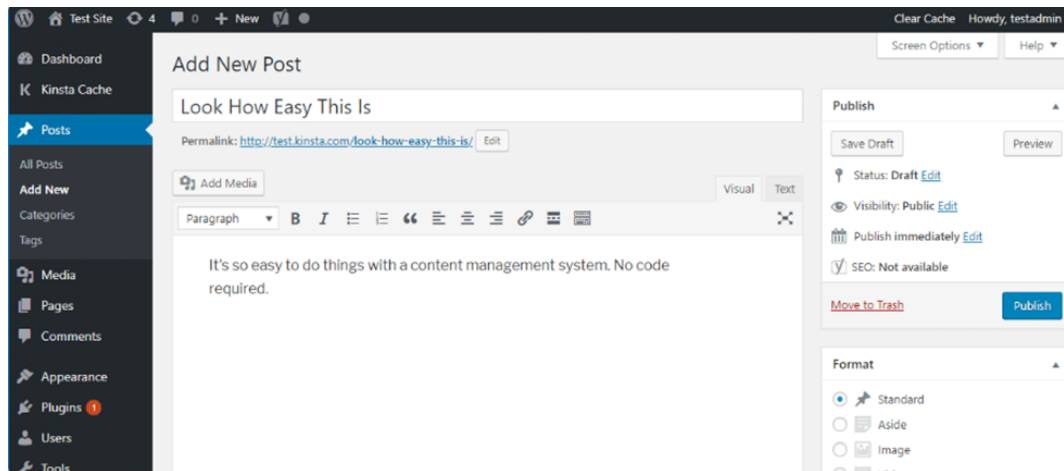


Figure 2.1: Kinsta

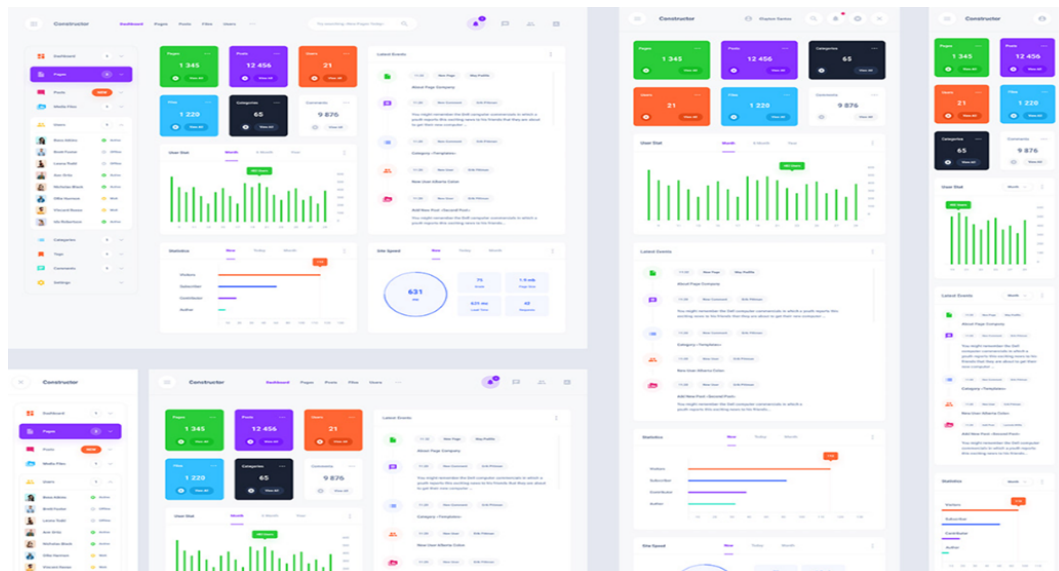


Figure 2.2: Behance



Figure 2.3: Fact Watch

Figure 2.3 This is the company I am making the project for. For a smoother workflow, it needs a content management system. Where all the data can be stored.

## 2.2 Comparative Analysis

A comparative analysis of different CMS (Content Management System) projects involves comparing their features, capabilities, and limitations to determine the best option for a specific use case.

Here is a comparative analysis of different CMS projects with My CMS project "NewsRoomCMS", which has a media feed feature where you can also post:

- **WordPress:** WordPress is known for its vast library of plugins and themes, making it possible to add a media feed feature with the use of a plugin. However, it requires a lot of customization to fit the specific needs of the media feed. It is also slower as it is built on PHP.
- **Wix:** Wix is a website builder that is known for its ease of use and simple templates. It does not have the capability to add a media feed feature.

The difference between my Project "NewsRoomCMS" and other CMS project is "NewsRoomCMS" has a Beautifully designed Media feed. Where people can actually see viral stories and see the authenticity of those stories. My project can provide a more integrated and streamlined experience for users who want to see different stories' authenticity.



Figure 2.4: FactCheck.org

This is a website based on USA. Which shows international fact checks, mostly American facts. Verifying facts is the process of fact-checking, which is done to support the accuracy and truthfulness of reporting. Before or after the content is published or otherwise distributed, fact-checking can be done.

# Chapter 3

## Requirement Specification

### 3.1 Modeling

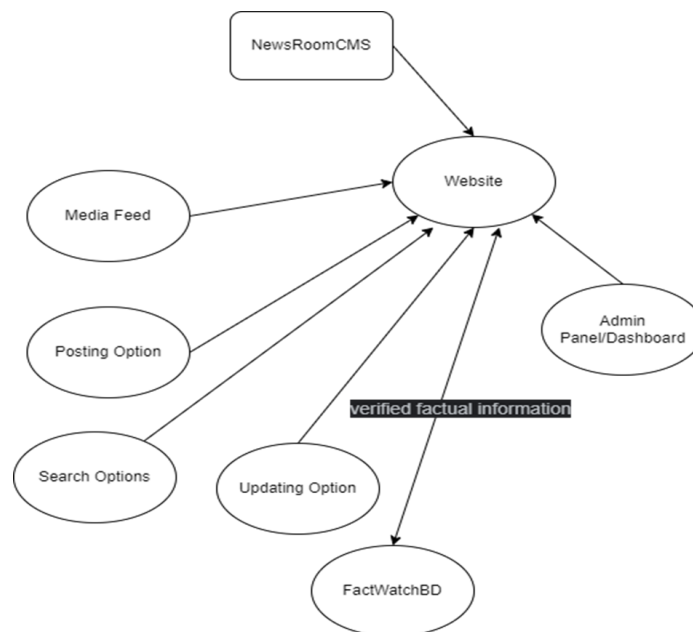


Figure 3.1: Operation Process Modeling

I have already defined NewsRoomCMS, now I have to define FactWatchBD. FactWatchBD is a 3rd party organization that works for Facebook. Which actually helps to check those facts. My project is a sub-application of a bigger application, which is also a sub-application of a bigger application.

## 3.2 Requirement Collection and Analysis

### Web based Platform for News Content Verification, Writing and Archival: News Room CMS

\*\* can be changed after reviewing existing tech

The aim of the project should be to create a web based application that integrates three basic functions:

#### View 1: Media Feed (Content Verification)

A time-based sequential dashboard that can facilitate the following functions:

- Posting stories to be checked (block based posts and comment sections; each block having certain properties) → Wordpress Gutenberg block style; each block with certain properties
- Commenting
- Editor's Approve Button (Approval for Work)
- Must be able to upload any text file format, audio, video), social media link

-----  
Once the story is done the content creator will upload the document in the same thread:

- There will be Editor's Approval for Upload Button
- 

The media will have chat application system so that the members can chat with each other

#### Approx View

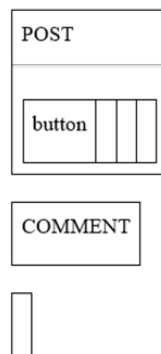


Figure 3.2: Requirement of client

#### View 2: A Collaborative Document Editing and Versioning System (Content Archival)

- Folder System; each story → one folder. The folder view has to be sorted by date, author, name
- Integration of Microsoft Office and Google Docs API within the application.
- For every story that gets approved, the preceding and final document should be put together in a thread and can be searched via a search bar

|                    |
|--------------------|
| Story upload.docx  |
| Edited Story.docx  |
| Edited Story.docx1 |

- The status of this document should indicate the approval signals (Editor's approval for story, upload, Edited) from view 1

#### View 3: A spreadsheet like web based view about the status of stories (Content Archival)

Excel like Document View with the following columns:

1. Serial No.
2. Authors
3. Uploaded by
4. Document Attachment for the upload
5. Edit → options: Approved, Need for revisions
6. Edited Attachment Upload
7. Story Upload Approval
8. Story Uploaded

Filtering options: By author, date, story Pending, upload pending, approval pending, Approved

##### 1. Report Log

1. Data entry for article name, author, article link, date, category
2. Report generation of article count of the authors
3. Generate excel files (monthly)

Figure 3.3: Requirement of client

As this is a client-based project, the requirement was already given. After analyzing all the requirement. I am going with SDLC approach. And as the project is little bit complex doing it dynamically is the best approach. Based on the client requirements of my system is given below:

### **3.2.1 Registration**

using the NewsRoomCMS website users have to register because to fulfill the registration users get a secure user profile and history of their relationship between the website. To ease the registration, I have all added the google auth system in the website, which will make registration easier.

### **3.2.2 Login**

After user's registration, users can get an authenticated user profile. By using this authentication users can enter this website.

### **3.2.3 Media feed**

The media feed plays an important role in this website and this is also the first reequiment of the client. As this is a single page react.js website, Media feed is in the home page. Media feed will show all the stories as a card. Which can be open as individual page where all the details of the articles can be found.

### **3.2.4 Delete**

If the user is the one who made a post, that user and the admin and the editor can delete the post.

### **3.2.5 Edit or update**

If the user is the one who made a post, that user and the admin and the editor can update the post. They can add new information in the Post. Which is one of the main requirements of the client.

### **3.2.6 Search Options**

Authenticated users and admins can search in the media feed to see a stories factual information. They can search via title or tags, which makes it easy to find required stories. They can also edit the story after finding it.

### **3.2.7 Posting Option**

Authenticated users and admins can post a story in the media feed to see a stories factual information. A user can do CRUD operation with his/her post (It is actually beta requirement, which will probably change in the future).

### **3.2.8 Pagination**

The website has pagination system which will show 20 post per page. This will make the UI cleaner and clutter free. I am using MUI pagination system which gives a clean and minimalistic look to it

### **3.2.9 Post Details**

Post Details page is where all the information of a post going to be. It will contain Title, Author, Message Docs data etc. It also has a comment section so user can post valuable comments in every individual post. They can also post link in there too. Which is one of the most important parts of the requirement as I understood.

### **3.2.10 Admin Panel**

For the Admin panel I am using MUI Drawer and data grid as those give good functionality and good look. The reason I use Data grid for this project

- Accessibility
- Data Visualization
- User Interaction

### **3.2.11 Accessibility**

Cell highlighting is one of the accessibility options available in the Data Grid. In other words, the keyboard may be used to reach every cell.

Additionally, it has capabilities like keyboard navigation, which lets users alter the focus of a table's cells, and density characteristics, which let users choose the table's row and column heights.

### **3.2.12 User Interaction**

The Data Grid includes a built-in feature, such as row selection by default, for interaction. This gives the user the option to quickly pick particular rows with a mouse click or keyboard shortcut.

The Material UI's Data Grid has many features, including checkbox selection, single and multiple row selection, the ability to deactivate selection of specific rows or all rows, and more

### **3.2.13 Data Visualization**

Data can be exported to CSV format using the Data Grid's built-in feature. Data can also be manipulated by clicking on a column header. This will activate the sorting and filtering features. Another basic feature that is included by default is scrolling, which is not available in a standard table.

### **3.2.14 Manage Stories**

Manage Stories gives the ability to do CRUD operations from the Admin Panel. Admin can rewrite Title, Message and also do factcheck like if it's the news true ,false ,misleading etc.

### **3.2.15 Manage Users**

In the manage users panel, Admin can make a user, editor or admin. Also, Admin can make a user or editor inactive which will make the user unable to log in to the website.

### 3.3 Use Case Modeling and Description

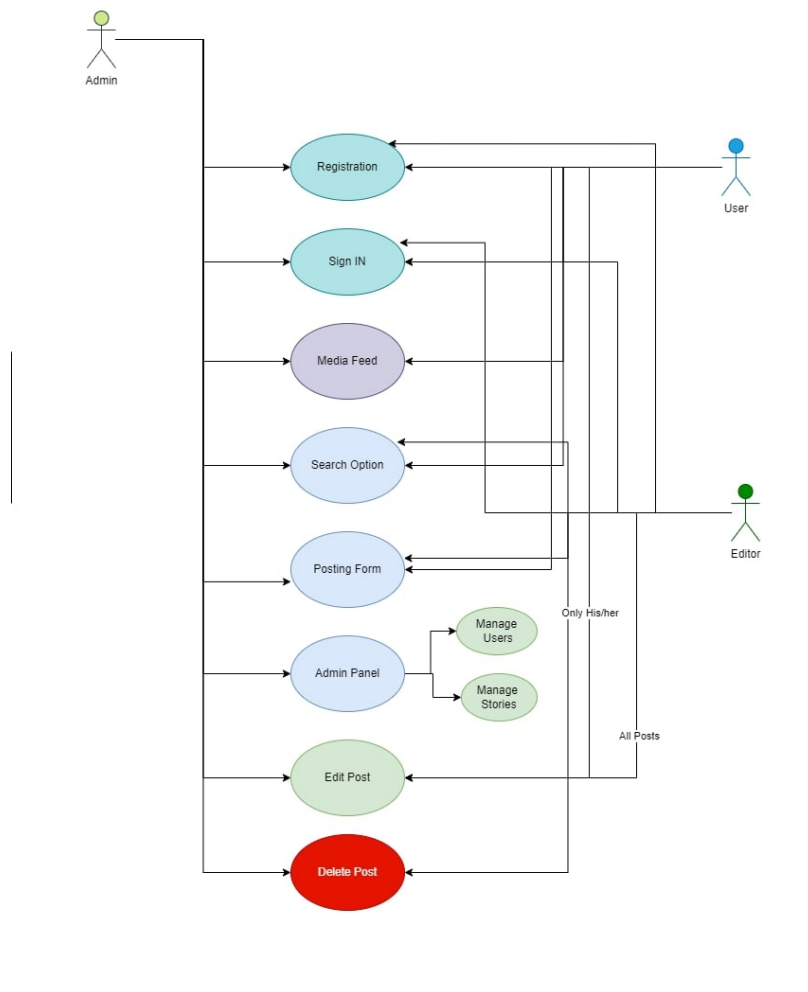


Figure 3.4: Use Case Diagram

A use case diagram sometimes referred to as a Unified Modeling Language (UML), is a graphical representation of system actions and user roles. This is a simple representation of how a system user interacts with the system. Here in the user site, user, admin, editor can log in, register, Post, search stories by name or tags and also delete their own post. Only the Admin has the ability to delete all post. Also admin and the editor has the ability to edit all the data.

### 3.4 Design Requirement

The design requirements of this NewsRoomCMS website are given below:

- Allow User, Editor and Admin to post.
- Allow Editor to Edit all the post
- Allow Admin the to do CRUD operations
- Provide a Media feed.
- Provide a login for both user, editor and admin.
- Provide a form to make a new post or edit an existing post.
- Provide a search option to easily find a specific post.
- Provide a post details page
- Provide a Factcheck Options.
- Provide an Admin Panel

# Chapter 4

## Design and Development

### 4.1 Methodology



Figure 4.1: SDLC

To complete my project I followed the Software Development Life Cycle (SDLC). The SDLC (Software Development Life Cycle) methodology is a structured approach to software development that outlines the steps involved in creating and delivering a software product. The methodology provides a systematic way to manage the

development process, ensuring that all necessary steps are taken to produce a high-quality product.

The SDLC methodology typically consists of the following phases:

**Requirements gathering and analysis:** In this phase, the requirements for the software are gathered, documented, and analyzed to determine the scope of the project.

**Design:** In this phase, the architecture and design of the software are created, including the detailed design of the user interface, system components, and database.

**Implementation:** In this phase, the actual code is written and the software is developed.

**Testing:** In this phase, the software is thoroughly tested to ensure that it meets the requirements and functions as intended.

**Deployment:** In this phase, the software is deployed and made available to the end-users.

By following the SDLC methodology, software development projects can be managed more effectively, reducing the risk of errors, and improving the quality of the end-product. Additionally, by following a structured approach, it is possible to identify and address potential issues early in the development process, reducing the need for costly rework later on.

In conclusion, the SDLC methodology provides a framework for managing the software development process, ensuring that all necessary steps are taken to produce a high-quality product. By following this methodology, software development projects can be managed more effectively, reducing the risk of errors and improving the overall quality of the end-product. Using SDLC in this project, at first A plan was made, then I analyzed all the requirements I needed for the project and then I designed the whole project as required. After that, I went to the implementation part, and then I tested the whole NewsRoomCMS website and took the value.

## 4.2 Front-end Design

Front-end development, in the context of web development, is the process of writing HTML, CSS, and presentational JavaScript code for a website or web app so that a user may view and interact with a product directly. I'm using React.js and MUI for this project. I'm using Redux.js for state management.

### 4.2.1 Flow Chart

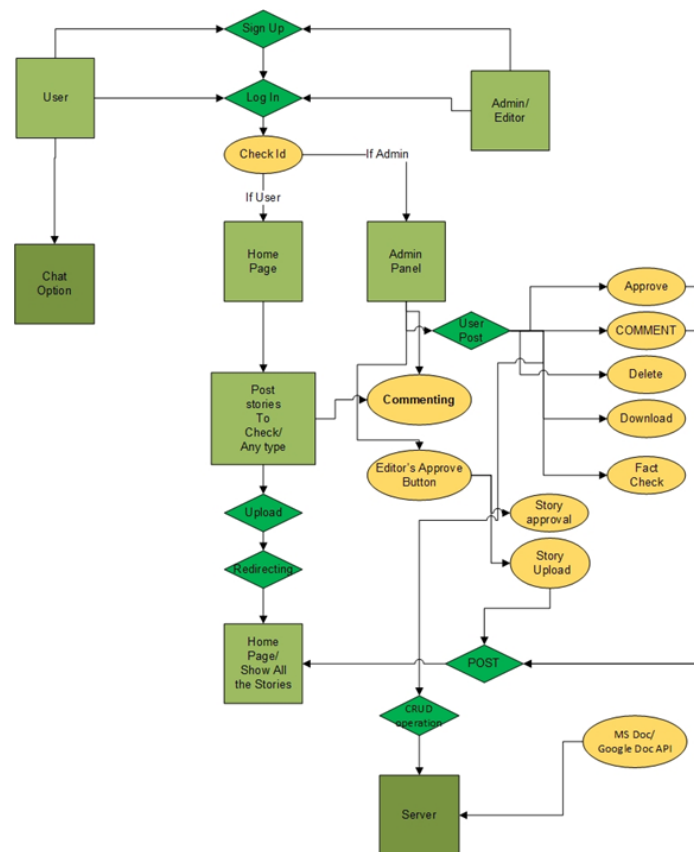


Figure 4.2: Flow Chart

A flow chart is a type of diagram that represents a process or workflow, using symbols and connecting lines to visualize the steps and decisions involved. Flow charts can be used in a variety of contexts, including business processes, software development, and problem-solving.

A typical flow chart consists of several symbols, including:

- Start/End symbols: Used to represent the beginning and end of the process.
- Process symbols: Used to represent a step or action in the process.
- Decision symbols: Used to represent a decision point in the process, where the flow splits based on a condition.
- Connector symbols: Used to connect the different steps and decisions in the process, showing the flow of the process.

**Let's Go through with flow of the flow chart.**

First all the user need to log in, If the user does not exist, then the needs to register. After that, the user will enter into the home page. In the home page. There will be media feed, A search option, A Form to create and edit stories. If the user type is "Admin" then that user will be able to go to the admin panel and manage all the users and stories. All the post comes as a card system in the media feed. If a user clicks a post, then the it will go to the post details page, where all the details about that post will be shown.

## 4.2.2 Activity Diagram

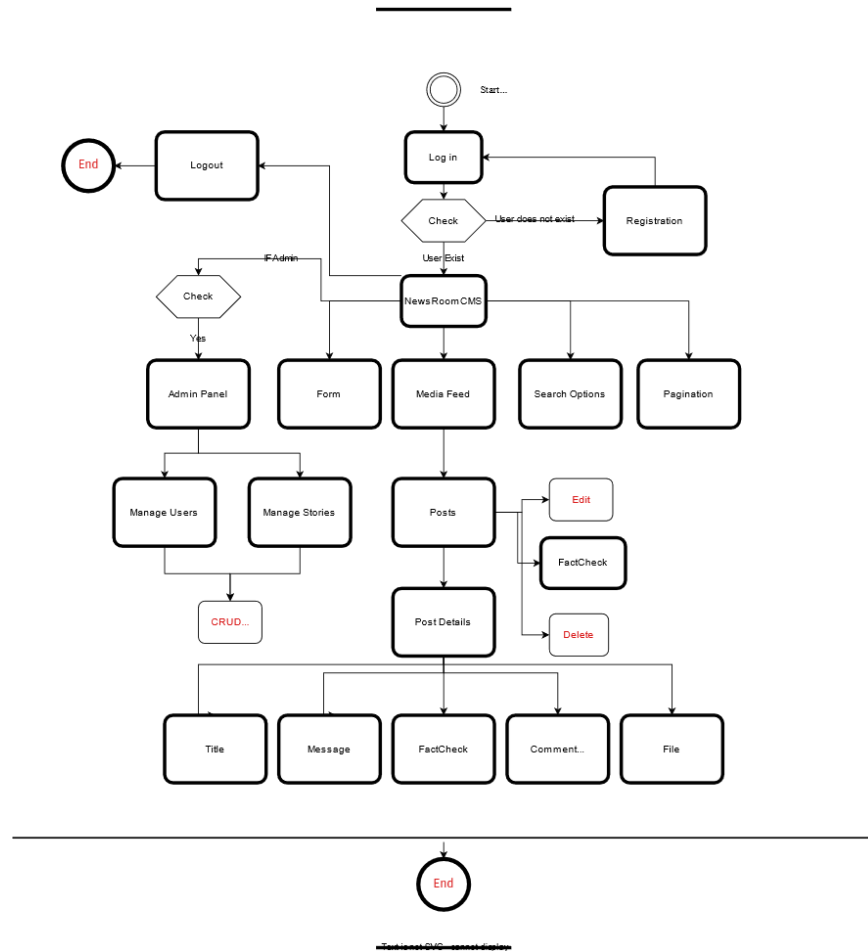


Figure 4.3: Activity Diagram

Activity diagram is basically the flow of one step to another step of the project. Here in this activity diagram represents the users' site data flow of the project. Here in the activity diagram at first, the start users have to log in, if a user is not an authenticated flow member of this system, then the user has to register after that user can log in. After login, user will see the media feed. In the Media feed, there are post, Search bar, Form to post a story to be checked. If a user clicks a post from media feed, post details page will be open with the specific post. If the use type is "Admin", then the user will able to go to the admin panel and do CRUD operation or filter things.

## 4.3 Back-end Design

The server-side architecture of a web application or system is referred to as back-end design. Server administration, database management, API design, and server-side programming are all included. A scalable, secure, and dependable infrastructure that supports the front-end and provides a seamless user experience is the objective of back-end design.

### 4.3.1 Entity Relationship Diagram

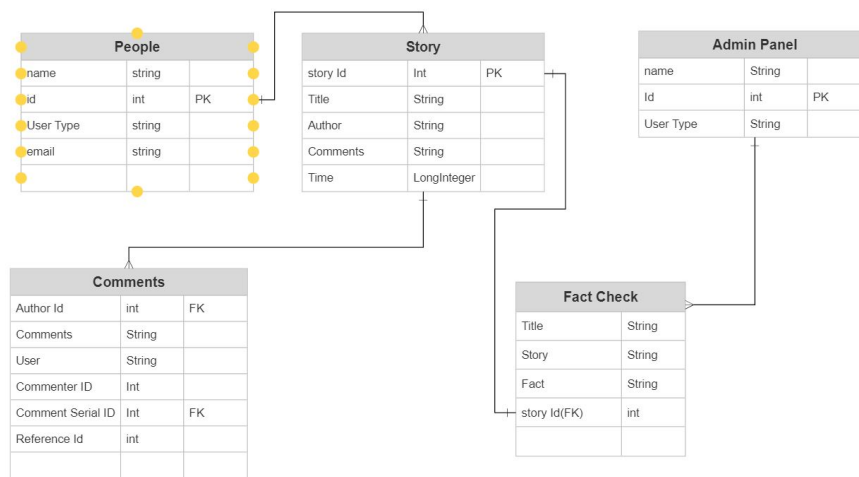


Figure 4.4: Entity Relationship Diagram

An Entity-Relationship (ER) Diagram is one kind of flowchart that shows how "entities" in a system interact one with another. Here this project needed 5 entities which are People, story, admin panel, comments, Fact Check. Here this ER diagram three marks represent many relationships. Example: People has one to many relationships to story, means one person can create many stories.

Like that, The story has one to many relationships with comments. The story has one to one relationship with FactCheck. The Admin Panel has one to many relationship with FactCheck

## 4.4 Interaction Design and User Experience (UX)

When a user interacts with a product, interaction designers are focused on that instant in order to enhance the interactive experience. The user's journey while engaging with a product involves a series of steps, and for UX designers, the interaction itself is simply one of them.

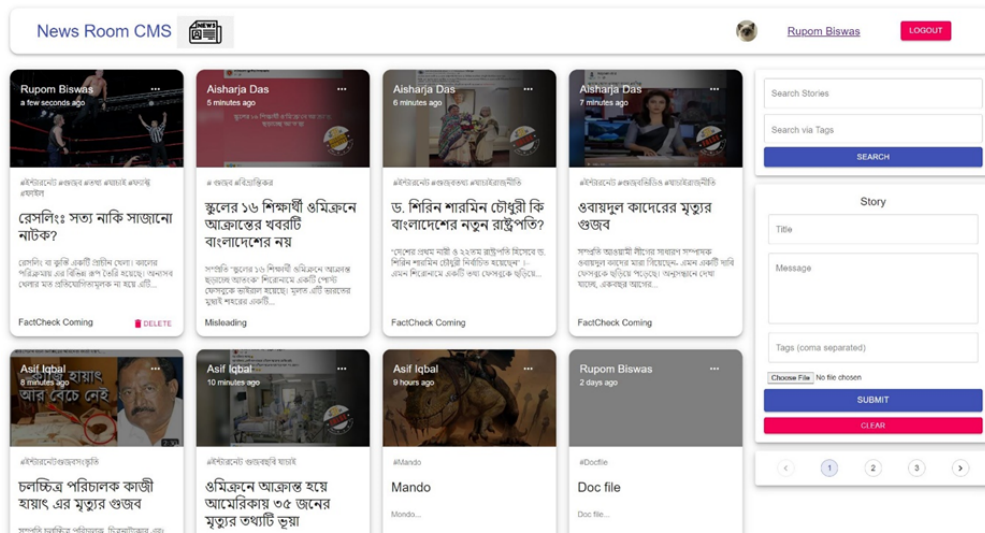


Figure 4.5: Media Feed.



Figure 4.6: Post Details

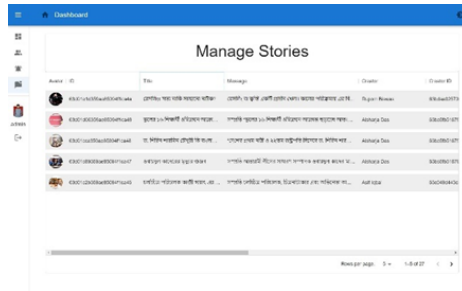


Figure 4.7: Manage Stories

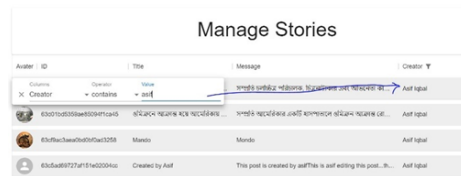


Figure 4.8: Filtering Options.

## 4.5 Implementation Requirements

Below are the implementation requirements to develop:

### 4.5.1 Software Requirements

- Operating System: Windows 10
- IDE: VS Code
- Database: MongoDB, MongoDB Atlas.
- Front End: React.js MUI, Redux, axios, MUI Data-grid, react-file-base-64, moment, react-google-login, redux-thunk
- Back End: Node.js, MongoDB, Express.js, bcrypt.js, body-parser, Mongoose, cors, gapi-script
- Web Service: Local-host and mongo dB atlas
- Browser: Chrome or Firefox or Microsoft Edge, Safari ,OperaGX

### 4.5.2 Hardware Requirements

- Processor: Intel core i5 or MacOS M1
- Processor speed: 2.70 GHz
- RAM: 8 GB

# Chapter 5

## Implementation and Testing

### 5.1 Implementation of Database

Schema Table name

- PostMessage
- User

| Column       | Type   | default    |
|--------------|--------|------------|
| title        | String | N/A        |
| message      | String | N/A        |
| name         | String | N/A        |
| Column       | String | N/A        |
| tags         | String | N/A        |
| selectedFile | String | N/A        |
| factCheck    | String | N/A        |
| comments     | String | pending    |
| createdAt    | String | new Date() |

Table 5.1: Post Message

| Column     | Type   | default |
|------------|--------|---------|
| name       | String | N/A     |
| email      | String | N/A     |
| password   | String | N/A     |
| imageUrl   | String | N/A     |
| id         | String | N/A     |
| role       | String | N/A     |
| active     | String | N/A     |
| timestamps | String | pending |

Table 5.2: User

## 5.2 Graphical Database

| _id                   | photoURL                                                                          | role                                                                                     | active                                    | email                                                                                               | password                                                                                              | name                                                                                           | _v                                                                                  | updatedAt                                                                                          | imageUrl                                                                                           | createdAt                                                                                            |
|-----------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| [id]63bc5fb516795b... |  |  admin  | <input checked="" type="checkbox"/> true  |  Aisharja@gmail... |  \$2a\$12\$rlMaU4... |  Aisharja Das |  0 |  2023-01-22T12... |  dataimage/pe... |                                                                                                      |
| [id]63bddaa025707e... |                                                                                   |  editor | <input checked="" type="checkbox"/> true  |  rupom@gmail.c...  |  \$2a\$12\$ep5B/G... |  Rupom Biswas |  0 |  2023-01-24T18... |  dataimage/pe... |                                                                                                      |
| [id]63c049d443d85...  |                                                                                   |  admin  | <input checked="" type="checkbox"/> true  |  asif@gmail.com    |  \$2a\$12\$DxdKk...  |  Asif Iqbal   |  0 |  2023-01-24T18... |  dataimage/pe... |                                                                                                      |
| [id]63c8fb3df2eb4...  |                                                                                   |  editor | <input checked="" type="checkbox"/> false |  rupom1@gmail...   |  \$2a\$12\$2j5/56... |  Rupom Biswas |  0 |  2023-01-20T23... |  null            |  2023-01-19T08... |
| [id]63c96a69d7923e... |                                                                                   |  editor | <input checked="" type="checkbox"/> true  |  rahul@gmail.com   |  \$2a\$12\$1q0rTT... |  Rahul Roy    |  0 |  2023-01-21T23... |  dataimage/pe... |  2023-01-19T16... |

Figure 5.1: Users.

This graphical interface of user database shown from Robo3T Application

| _id                | tags           | factCheck         | comments       | storyStatus       | createdAt        | title               | message               | selectedFile       | name             | creator           | _v |
|--------------------|----------------|-------------------|----------------|-------------------|------------------|---------------------|-----------------------|--------------------|------------------|-------------------|----|
| 63c596b02fcafb...  | [ 3 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-16T18... | Obito               | dsads.This is asi...  | data:image/jpe...  | Rupom Biswas     | 63bdaa025707e...  | 0  |
| 63c5a0f76cd737...  | [ 1 elements ] | Slightly True     | [ 0 elements ] | pending           | 2023-01-16T19... | sdsad               | sadsadsa...this is... | data:image/jpe...  | Rupom Biswas     | 63bdaa025707e...  | 0  |
| 63c5a0ff6cd737...  | [ 4 elements ] | True              | [ 0 elements ] | upload pending    | 2023-01-16T19... | dsadsad             | asfdgdivcvd.this...   | data:image/jpe...  | Rupom Biswas     | null              | 0  |
| 63c5ad69727af1...  | [ 3 elements ] | Misleading        | [ 0 elements ] | pending           | 2023-01-16T20... | Created by Asif     | This post is crea...  | null               | Asif Iqbal       | null              | 0  |
| 63c5c15ede72a3...  | [ 5 elements ] | True              | [ 2 elements ] | approval pendi... | 2023-01-16T21... | This is a bear      | This is a bear .T...  | data:image/jpe...  | Rupom Biswas     | 63bc5fb516795...  | 0  |
| 63c8f4daeda874...  | [ 1 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-19T07... | Bleach              | Bleach is one of...   | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63c8f501eda874...  | [ 1 elements ] | Slightly True     | [ 0 elements ] | pending           | 2023-01-19T07... | test 59             | test4                 | data:image/pn...   | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63c8fb49dff2eb...  | [ 1 elements ] | True              | [ 2 elements ] | pending           | 2023-01-19T08... | Question Everyt...  | Editing from da...    | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63c8fbfdff2eb4...  | [ 1 elements ] | Slightly True     | [ 0 elements ] | pending           | 2023-01-19T08... | Rupom               | orem Ipsum is s...    | data:image/jpe...  | Rupom Biswas     | 63c8fbf3dff2eb... | 0  |
| 63c90d2c52587e...  | [ 1 elements ] | True              | [ 0 elements ] | pending           | 2023-01-19T09... | Something.ssssss    | ssss                  | data:image/jpe...  | Rupom Biswas     | 63c8fbf3dff2eb... | 0  |
| 63c91073011679...  | [ 1 elements ] | True              | [ 0 elements ] | pending           | 2023-01-19T09... | Rahul               | Rahul                 | data:image/jpe...  | Rupom Biswas     | 63bdaa025707e...  | 0  |
| 63c914b4b0b18...   | [ 1 elements ] | FactCheck Comi... | [ 3 elements ] | pending           | 2023-01-19T10... | Food...             | Food...               | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63c92437b1555...   | [ 1 elements ] | FactCheck Comi... | [ 1 elements ] | pending           | 2023-01-19T11... | Sheldon J. Plank... | Sheldon J. Plank...   | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63cafdbbe5a61d6... | [ 1 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-20T20... | Test 10             | Test 10               | data:image/jpe...  | Rupom Biswas     | 63bdaa025707e...  | 0  |
| 63cb356016c853...  | [ 1 elements ] | True              | [ 0 elements ] | pending           | 2023-01-21T00... | Cute Cat            | cute cat...           | data:image/jpe...  | Rahul Roy        | 63c96a69d7923...  | 0  |
| 63cc4c696ac997...  | [ 1 elements ] | False             | [ 0 elements ] | pending           | 2023-01-21T20... | cszxdxoxbvbbv       | cxzxbvvbvbbv          | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63cc70636ac997...  | [ 1 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-21T23... | Cute Cat            | dsadsa                | data:image/pn...   | Rupom Biswas     | 63bdaa025707e...  | 0  |
| 63cc76dc009ee3...  | [ 1 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-21T23... | dssd                | Lorem ipsum d...      | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63cd20acef86fc1... | [ 1 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-22T11... | MoonKnight          | dependencies: "       | data:image/jpe...  | Muhtasir Shafkat | 1150826381509...  | 0  |
| 63cd8b0b92c08...   | [ 1 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-22T19... | Doc file            | Doc file              | data:applicatio... | Rupom Biswas     | 63bdaa025707e...  | 0  |
| 63cf9ac3aea0bd...  | [ 1 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-24T08... | Mando               | Mondo                 | data:image/pn...   | Asif Iqbal       | 63c049d443d85...  | 0  |
| 63d01bd5359ae...   | [ 1 elements ] | False             | [ 0 elements ] | pending           | 2023-01-24T17... | ওমিক্রনে আক্র...    | সম্প্রতি আমেরি...     | data:image/jpe...  | Asif Iqbal       | 63c049d443d85...  | 0  |
| 63d01c2b359ae...   | [ 1 elements ] | False             | [ 0 elements ] | pending           | 2023-01-24T17... | চলচ্চিত্র পরিচাল... | সম্প্রতি চলচ্চিত্র... | data:image/pn...   | Asif Iqbal       | 63c049d443d85...  | 0  |
| 63d01c89359ae8...  | [ 3 elements ] | FactCheck Comi... | [ 1 elements ] | pending           | 2023-01-24T17... | ওয়ায়দুল কাদের...  | সম্প্রতি আওয়াম...    | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63d01cca359ae8...  | [ 3 elements ] | False             | [ 0 elements ] | pending           | 2023-01-24T18... | ড. শিরিন শারমি...   | 'দেশের প্রথম না...    | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63d01d06359ae...   | [ 2 elements ] | Misleading        | [ 0 elements ] | pending           | 2023-01-24T18... | ফুলের ১৬ শিক্ষা...  | সম্প্রতি 'ফুলের ...   | data:image/jpe...  | Aisharja Das     | 63bc5fb516795...  | 0  |
| 63d01e1d359ae...   | [ 6 elements ] | FactCheck Comi... | [ 0 elements ] | pending           | 2023-01-24T18... | রেসনিং সত্য না...   | রেসনিং বা কুস্তি ...  | data:image/jpe...  | Rupom Biswas     | 63bdaa025707e...  | 0  |

Figure 5.2: PostMessage

This graphical interface of Stories database shown from Robo3T Application

## 5.3 Implementation of Front-end Design

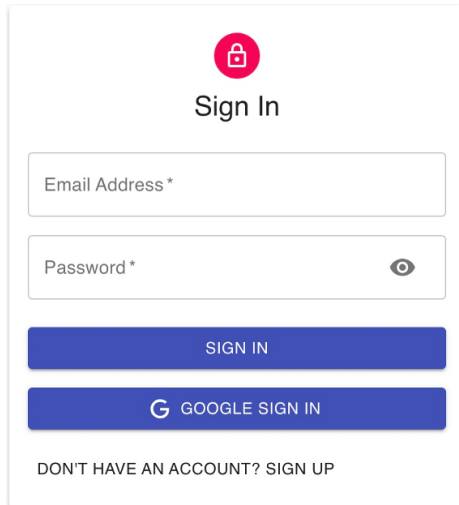
The implementation of this CMS project is a fully responsive website whose name is NewsRoomCMS. For this project I have used React.js because react.js is

- Components-based: React gives developers the ability to create reusable and simple-to-combine UI components that can be used to create complex interfaces.
- Virtual DOM : To optimize updates and boost the application's overall performance, React makes use of a virtual DOM(Document Object Model).
- Simple and intuitive API: React has a simple and intuitive API that allows developers to get started and be productive quickly, even if they have limited experience with JavaScript.

To style the website I have used **MUI(Material UI)** because of consistent design throughout the website. MUI also has Datagrid component,which is used for the admin panel. Datagrid gives a easy-to-use filtering options for managing data,which gives really good flexibility.

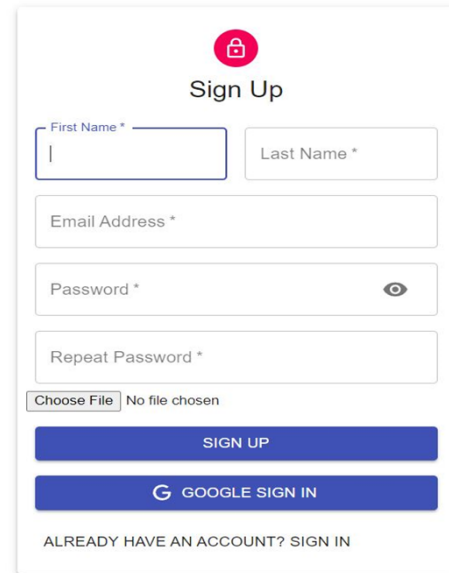
For state management, I have used **Redux**.

Redux makes it simpler to manage the application's state and prevent state inconsistencies by providing a centralized store for it.



The Sign In form features a red lock icon at the top. Below it, the text "Sign In" is centered. The form contains two input fields: "Email Address \*" and "Password \*". The password field has a toggle icon (an eye) to the right. Below the input fields are two blue buttons: "SIGN IN" and "G GOOGLE SIGN IN". At the bottom, there is a link that says "DON'T HAVE AN ACCOUNT? SIGN UP".

Figure 5.3: Sign in



The Sign Up form features a red lock icon at the top. Below it, the text "Sign Up" is centered. The form contains several input fields: "First Name \*" and "Last Name \*" (side-by-side), "Email Address \*", "Password \*" (with a toggle icon), and "Repeat Password \*". Below these fields is a file upload section with a "Choose File" button and the text "No file chosen". There are two blue buttons: "SIGN UP" and "G GOOGLE SIGN IN". At the bottom, there is a link that says "ALREADY HAVE AN ACCOUNT? SIGN IN".

Figure 5.4: Sign Up

### 5.3.1 Sign in / Sign Up

This is the sign in and sign-up page of the website. If users are authenticated user, then users can login into this website from here. If not , the user needs to sign-up first.If the admin makes the user inactive, then the user won't be able to sign in with that particular email. The password is encrypted with bcrypt which has a "Hash and Salt" algorithm,so even if two or more user has same password the encryption value will be different.

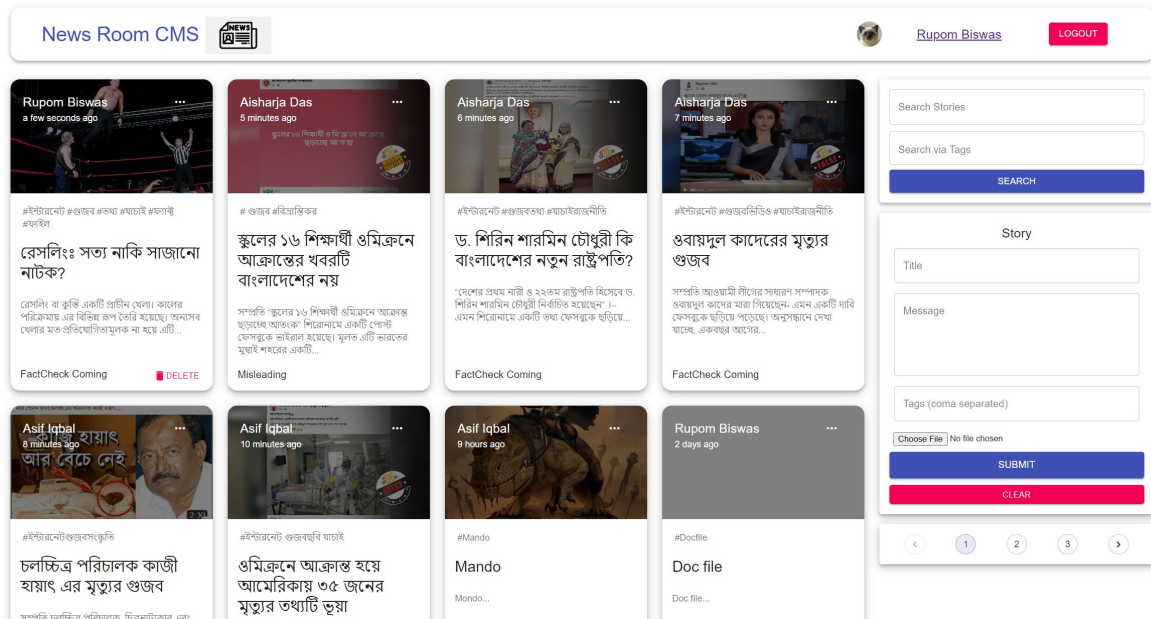


Figure 5.5: Media Feed

### 5.3.2 Media Feed

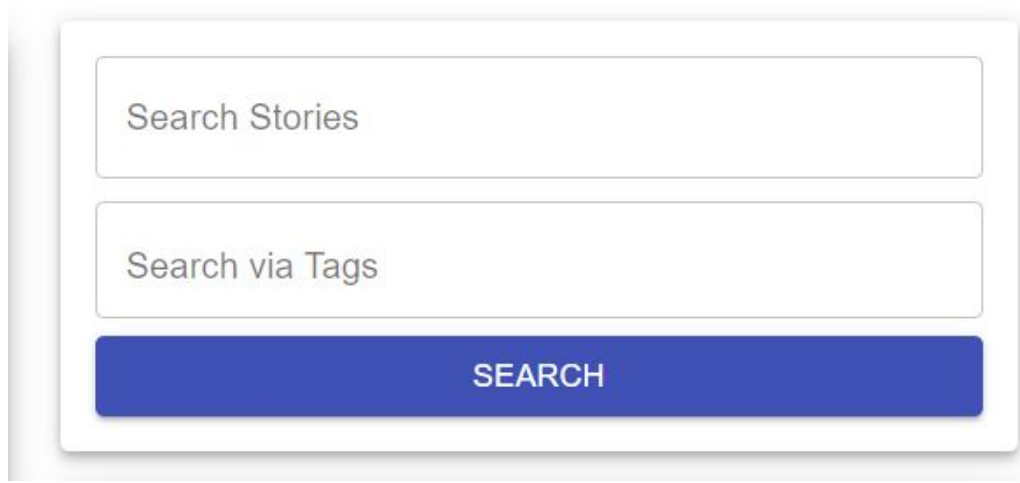
This is the Main Media feed. Here User Can interact and browse all the post, search post, also can make a new post.



Figure 5.6: Individual Post

### 5.3.3 Individual Post

Here in a post there is a edit button and a delete button. Also, on the left side the Fact Check data will be show. In this example it is false news. The user type : "Editor" will be able to edit and update all the post of this website. The user type: "Admin" will be able to delete all the post if necessary.

A user interface for searching stories. It consists of a white rounded rectangle containing two input fields and a button. The first input field is labeled "Search Stories" and the second is labeled "Search via Tags". Below these fields is a solid blue button with the word "SEARCH" in white capital letters.

Search Stories

Search via Tags

SEARCH

Figure 5.7: Search Option

#### 5.3.4 Search Option

Users Can search stories via title, and Tags.

The image shows a web form titled "Story". It contains three text input fields: "Title", "Message", and "Tags (coma separated)". Below these is a file upload section with a "Choose File" button and the text "No file chosen". At the bottom are two large buttons: a blue "SUBMIT" button and a red "CLEAR" button.

Figure 5.8: Form

### 5.3.5 Form

With this form user can create a new story. The story needs a title, message, tags and a file. If a user clicks a post edit button given the edit button available for that particular user. All the data (Title, Message, Tags, File) will come to this form, so the user can edit that post.

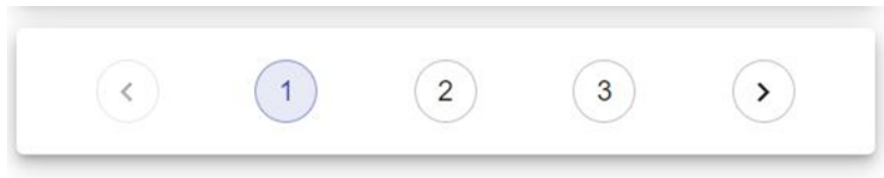


Figure 5.9: Pagination

### 5.3.6 Pagination

This website has pagination options, where each page will show 12 posts.

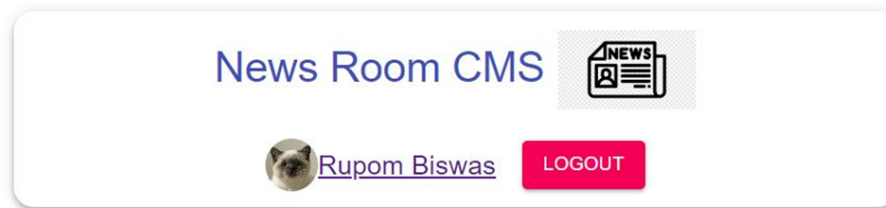


Figure 5.10: Navbar

### 5.3.7 Navbar

If you click the name that is underline, that will show the user profile, who is currently using the web application.

There will be another icon if the user is admin. The admin can click the button go to the admin panel. As the user is not a Admin the button is not showing.

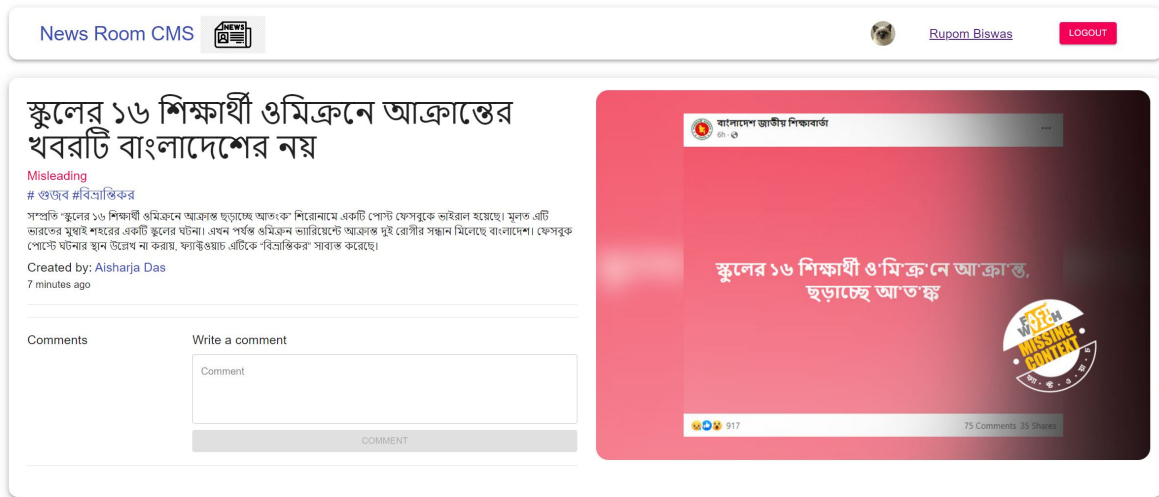


Figure 5.11: Post Details

### 5.3.8 Post Details

This is the post details page, where all the details of a post will be shown. Users can also comment on the post. As you can see it is a misleading data. It is checked by Fact Checker. There are also some tags. If those tags are clicked, the website will show all the stories that have the same tag name.

If you click the person name, here example "Aisharja Das", the website will show all the post that created by Aisharja Das.

News Room CMS



 [Muhtasir Shafkat](#)

[LOGOUT](#)

User Profile

Name: Muhtasir Shafkat

ID: 63dce5dcfd1ff5d80f9e969

Email: shafkat@gmail.com

Role: user

Active: True.

Change Profile Picture!!!

Choose File

No file chosen

[SUBMIT](#)



Figure 5.12: Post Details

### 5.3.9 User Profile

This is the profile page where user can see their details. Also they can change their Profile picture.

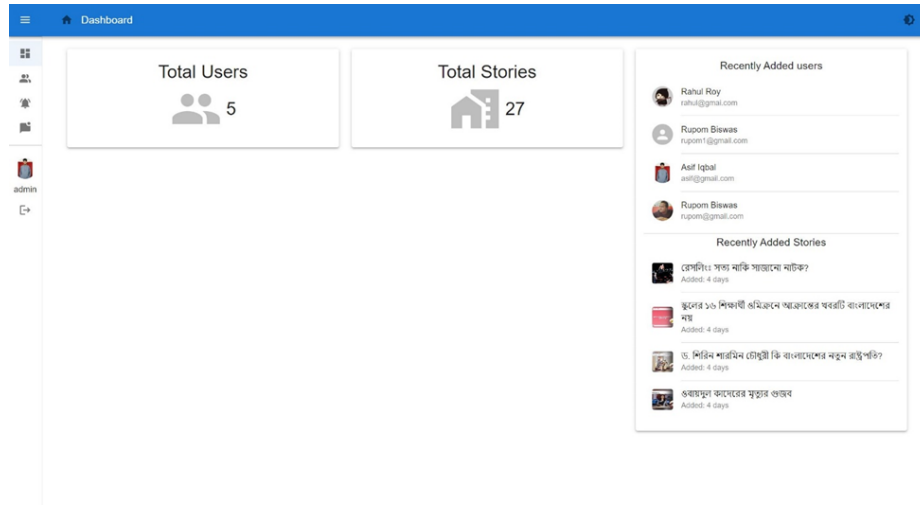


Figure 5.13: Admin Dashboard

### 5.3.10 Admin Dashboard

This is the admin panel. Where if the user type is “admin”, then they can enter in this page. This page will show how many total users and stories are there. Also, will show Recently added users and stories. The limit is 4.

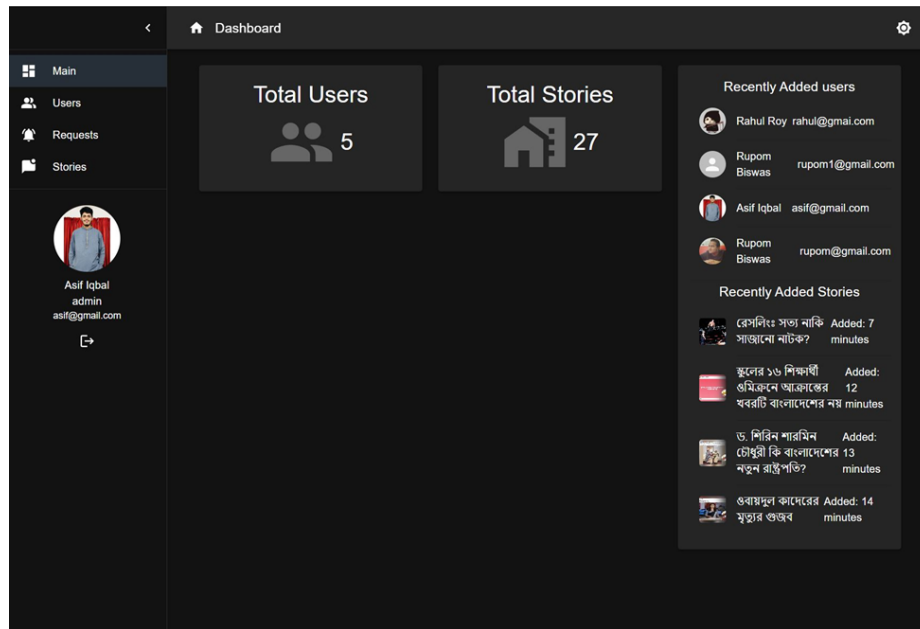


Figure 5.14: Dark Mode

### 5.3.11 Dark Mode

The admin panel also has a dark mood. Which gives the UI a Better Look.

| Avatar | ID                       | Title                                 | Message                                                       | Creator      | Creator ID   |
|--------|--------------------------|---------------------------------------|---------------------------------------------------------------|--------------|--------------|
|        | 63d01e1d359ae85094f1ca4a | রেসলিং সত্য নাকি সাজানো নাটক?         | রেসলিং বা কুস্তি একটি প্রাচীন খেলা। কালের পরিক্রমায় এর বি... | Rupom Biswas | 63bdaa02570  |
|        | 63d01d06359ae85094f1ca49 | ভুলের ১৬ শিক্ষাধী ওমিহনে আত্র...      | সম্প্রতি 'ভুলের ১৬ শিক্ষাধী ওমিহনে আত্রোস্ত ছুড়ছে আতং...     | Aisharja Das | 63bc5fb5167f |
|        | 63d01cca359ae85094f1ca48 | ড. শিরিন শারমিন চৌধুরী কি বাংলা...    | 'দেশের প্রথম নারী ও ২২তম রাষ্ট্রপতি হিসেবে ড. শিরিন শার...    | Aisharja Das | 63bc5fb5167f |
|        | 63d01c89359ae85094f1ca47 | ওয়ায়দুল কাদেরের মৃত্যুর গুজব        | সম্প্রতি আওয়ামী লীগের সাধারণ সম্পাদক ওয়ায়দুল কাদের মা...   | Aisharja Das | 63bc5fb5167f |
|        | 63d01c2b359ae85094f1ca46 | চলচ্চিত্র পরিচালক কাউন্সি য়াং এর ... | সম্প্রতি চলচ্চিত্র পরিচালক, চিত্রনাট্যকার এবং অভিনেতা কা...   | Asif Iqbal   | 63c049d443d  |

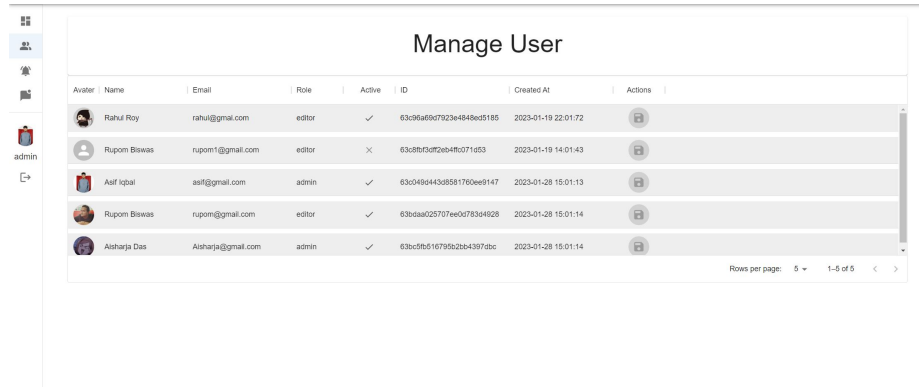
Figure 5.15: Manage Stories

### 5.3.12 Manage Stories

This is The Manage Stories Page, where admin can see all the stories and easily filter out stories and edits those stories. Here the admin can do crud operations. This is made by MUI DataGrid.

The reason I have used Data grid for managing stories:

- **Customizable appearance:** Developers can style the data grid to match the design of their application thanks to MUI DataGrid's extensive customization options.
- **Data pagination:** Data pagination is a feature of MUI DataGrid that enables users to view and manage large datasets by breaking them up into smaller pages. For this web-app I have used [5,10,20] stories per page.
- **Filtering and sorting:** Users of MUI DataGrid can sort and filter data based on one or more columns, making it simpler to locate particular data. In this web-app "Admin" can filter those data by ( ID,Title, Message, Creator, Creator ID,Tags, etc).



| Avatar                                                                            | Name         | Email              | Role   | Active | ID                        | Created At          | Actions                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|--------------|--------------------|--------|--------|---------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Rahul Roy    | rahul@gmail.com    | editor | ✓      | 63cd96a6967923e4848cd5185 | 2023-01-19 22:01:72 |   |
|  | Rupom Biswas | rupom1@gmail.com   | editor | X      | 63cd8f73d72eb4ff071d53    | 2023-01-19 14:01:43 |   |
|  | Asif Iqbal   | asif@gmail.com     | admin  | ✓      | 63cd48d443d8581760ee9147  | 2023-01-28 15:01:13 |   |
|  | Rupom Biswas | rupom@gmail.com    | editor | ✓      | 63cd8aa025707ee0d783d4628 | 2023-01-28 15:01:14 |   |
|  | Aisharja Das | Aisharja@gmail.com | admin  | ✓      | 63cdcfb516795b2b4397dbc   | 2023-01-28 15:01:14 |   |

Rows per page: 5 1-5 of 5

Figure 5.16: Manage User

### 5.3.13 Manage User

This is the manage user page. User data will show as Avatar, Name, Email, Role, Active, ID, Created At. Where admin can change the role of the user and if necessary, can make the user id deactivate.

## 5.4 Testing Implementation

Software testing is the process of determining whether or not a software product meets the requirements and is free of defects. In contrast to real requirements, the aim of software testing is to discover mistakes, gaps, and missing requirements. Testing is an important stage of development in which programmers execute a program locally to identify problems that prevent the application from operating as planned. Regardless of the development method, the ultimate purpose of testing is to ensure that everything has been produced as planned. Likewise, testing is essential for assuring the quality and long-term profitability of any endeavor. My approach to development is primarily reliant on testing. Furthermore, I emphasized the need of developing test scenarios that have the highest possibility of identifying faults or problems.

## 5.5 Test Results and Reports

Several levels of testing are as follows:

### 5.5.1 Test Cases

A test case refers to the bunch of instructions and conditions to confirm whether a system is working according to the requirements or not. I have planned and implemented a few test cases to ensure that my website is meeting functional requirements

| TEST MODULE | TEST CASE                                                                         | EXPECTED RESULT                                                                 | TEST RESULT |
|-------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------|
| USERS       | Provide details for signup                                                        | Users successfully registered                                                   | PASS        |
| USERS       | Providing an invalid email or password is not matching with a ,confirmed password | Displays error message like invalid email or password does not match            | PASS        |
| USERS       | Providing an invalid email or password is not matching with a ,confirmed password | Displays an error message like invalid email or password does not match         | PASS        |
| USERS       | Upon successful login upload profile photo                                        | Users uploads profile photo and save                                            | PASS        |
| USERS       | Users forget password and update the new password                                 | Users updates password by email authentication and log in with the new password | Ongoing     |
| USERS       | User Create a new Post to check stories authenticity                              | User can create a new post                                                      | PASS        |
| USERS       | User Can edit his/her own post                                                    | User will be able to edit his/her post if necessary                             | PASS        |
| USERS       | User Can Comment                                                                  | All the users have the ability to comment on a post                             | PASS        |
| USERS       | User Can Comment and Reply                                                        | All the users have the ability to comment and reply on that comment             | FAIL        |

Table 5.3: Test Case: User

**Table 3** is the chart of tests cases, expected outcomes, and achieved results regarding all users related functions.

| TEST MODULE | TEST CASE                                                                        | EXPECTED RESULT                                                                                 | TEST RESULT |
|-------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------|
| ADMINS      | Admin can sign up                                                                | Admins can registration own.                                                                    | FAIL        |
| ADMINS      | Providing an invalid email or password is not matching with a confirmed password | Displays error message like invalid email or password does not match                            | PASS        |
| ADMINS      | Upon successful login upload profile photo                                       | Admin uploads profile photo and save                                                            | PASS        |
| ADMINS      | Edit personal info's and change password                                         | Admins can edit and save their info's properly and after changing the password users can log in | FAIL        |
| ADMINS      | Admin forget password and update the new password                                | Admin updates password by email authentication and log in with a new password                   | FAIL        |
| ADMINS      | Admin can make user id active and deactivate.                                    | Admin can make user Profile Active and inactive .                                               | PASS        |
| ADMINS      | Admin can change the user role                                                   | Admin can change a user role or make a new Admin                                                | PASS        |
| ADMINS      | Admin Can edit Stories                                                           | Admin has the ability to edit Stories.                                                          | PASS        |

Table 5.4: Test Case: Admin

**Table 4** is the chart of tests cases, expected outcomes, and achieved results regarding all admin-related functions.

| TEST MODULE | TEST CASE                                                                        | EXPECTED RESULT                                                                                 | TEST RESULT |
|-------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------|
| EDITORS     | Editor can sign up                                                               | Editor can register own.                                                                        | FAIL        |
| EDITORS     | Providing an invalid email or password is not matching with a confirmed password | Displays error message like invalid email or password does not match                            | PASS        |
| EDITORS     | Upon successful login upload profile photo                                       | Editor uploads profile photo and save                                                           | PASS        |
| EDITORS     | Edit personal info's and change password                                         | Editor can edit and save their info's properly and after changing the password users can log in | FAIL        |
| EDITORS     | Editor forget password and update the new password                               | Editor updates password by email authentication and log in with a new password                  | FAIL        |
| EDITORS     | Editor has the ability to edit all the post                                      | Editor can edit every post in the application                                                   | PASS        |

Table 5.5: Test Case: Editor

**Table 5** is the chart of tests cases, expected outcomes, and achieved results regarding all editor-related functions.

## **Chapter 6**

# **Impact on Society, Environment and Sustainability**

### **6.1 Impact on Society**

As this app is built on goal of social welfare, so this app has a great impact on society. This app will not initiate any type of malpractice. Since humans are social animals, they need cooperation from someone in the society; this app helps to open the door to that cooperation. Since the people from FactWatchBD are helping people to not get misled. And giving the people of Bangladesh the right information. So they are doing good jobs.

### **6.2 Impact on Environment**

This application has no impact on the environment.

#### **6.2.1 Ethical Aspect**

Since this application was made for raising awareness among the people of our country about viral news. So doing any kind of business through this application is strictly prohibited. Also, every user of this application has to be ethical from their side to not use information in doing any kind of such work that can be unethical; like, using the personal information of the rescuers in other applications or anywhere outside the application. Sharing any kind of wrong information can deal huge damage to other people so the users should pay extra attention while sharing anything in the application about the FactWatchBD.

## **6.3 Sustainability Plan**

Sustainability means consistency in a long run. It is often seen that an app suddenly becomes obsolete; no one is using that app anymore. These are called unsustainability. Again, there are many apps that are still providing the same service as in the beginning. These are called sustainable apps. Since the NewsRoomCMS web application is an app created for FactWatchBD this web application will have to provide the same quality of service that this app is able to provide for a long time. Because this web application.

## **6.4 Scope for Further Developments**

Website has some challenges in its implementation period. After building a website and publishing it, way more challenges may come our way. I already built the website where I implemented almost everything the client required. Chat is excluded. In the future I will try to implement more editing option, and more filtering options. I Will try to fix some problem displaying different data other than Image. Even though we can upload any type of file, showing it to post details page was a fail right now. and In the future We will try to build a reply system in the comment. We will also try to make the website faster.

# Chapter 7

## Conclusion and Future Scope

### 7.1 End Words

The NewsRoomCMS(Content Management System) project aimed at developing a web-based platform for managing and publishing digital content. Throughout the project, several features were implemented to achieve the project's goals, including user management, content creation and editing, and publishing. The system was designed to be user-friendly and intuitive, making it accessible for non-technical users.

Several challenges were encountered during the development of the NewsRoomCMS project, including difficulties in integrating third-party components and ensuring the system's security. However, these challenges were overcome through careful planning and regular testing, resulting in a stable and robust platform.

In conclusion, the NewsRoomCMS project was successful in achieving its goals of providing a platform for managing and publishing digital content. The system's user-friendly interface and powerful features make it an excellent tool for organizations and individuals looking to manage their online presence. Despite the challenges encountered during the development process, the end result was a high-quality product that meets the needs of its users.

Overall, the NewsRoomCMS project demonstrated the importance of careful planning and testing in software development. It also showcased the benefits of using a content management system for managing digital content and highlights the potential of this technology for future developments.

## 7.2 Scope for Further Developments

Website has some challenges in its implementation period. After building a website and publishing it, way more challenges may come our way. I already built the website where I implemented almost everything the client required. Chat is excluded. In the future I will try to implement more editing option, and more filtering options. I Will try to fix some problem displaying different data other than Image. Even though we can upload any type of file, showing it to post details page was a fail right now. and In the future We will try to build a reply system in the comment. We will also try to make the website faster.

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