

A Web Application for “Daily Circular”

*Single semester project report to be submitted in partial fulfillment of the
requirements for the degree*

of

Bachelor of Science in Computer Science and Engineering

by

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Under the supervision of

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**COMPUTER SCIENCE AND ENGINEERING
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DECLARATION

Project Title A Web Application for “Daily Circular”
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We declare that this single semester project report entitled *A Web Application for “Daily Circular”* is the result of our own work except as cited in the references. The single semester project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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CERTIFICATE

This is to certify that the single semester project report entitled **A Web Application for “Daily Circular”**, submitted by **Monjurul Hasan** (Student ID: 171014085) and **Second Author Name** (Student ID: 153015000) are undergraduate students 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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Monjurul Hasan

University of Liberal Arts Bangladesh

Date: October 9, 2021

To my mother
Dil Afroze Nahar
and father
Nazim Uddin Bhuiyan

–Monjurul Hasan

ABSTRACT

This Daily Circular is a unified system where people will find all kinds of circulars in one place according to their preferences. So that users of this application can get all important circulars like Job circulars, Education circulars, House rent, General notices, News. Users will be able to share, consume, and manage all these within the system. The motto of this application is “all kinds of circular in one place”. In addition, it saves our valuable time and get rid of the hassle of repeatedly logging and signing into different sites for different circulars. Especially for job circulars, it will be a better version of existing job posting sites in Bangladesh. It will change the way of conventional job posting. This platform will allow a field specified job posting rather than old school pdf of job circulars. So that users will be able to apply for jobs within the system and to avoid unwanted applications by checking the minimal qualifications of the applicant specified in the circular. Users will be able to create their resumes on this platform. These are the key features of this application.

Keywords: Daily Circular, Web Application

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Chapter 1

Introduction

1.1 Motivation

Nowadays we have many job posting sites like Bdjobs, Google kormo jobs, etc [1, 2]. They only post jobs circulars, but they don't post the other circulars that we need in our daily life. However, in our everyday life, we search for many kinds of circulars except for the job. For that, we don't have any particular fixed website to search for other types of circulars. During this COVID-19 situation, it has become even more important. Because every day we search various important news and notices published by the government. But we don't have any unified circular posting site where we get all kinds of circulars like Job circulars, House Rent, Admission, General notices, News, etc. That's why I think If I build this kind of website it would be helpful for our community. This will reduce the suffering of the users and get rid of the hassle of repeatedly logging and signing into different sites for different circulars.

1.2 Objectives

The objective of this project is to develop a complete website that is user-friendly and satisfies the following requirements.

- Users can post any sort of circulars
- Users can view circulars

- Users can post, like, dislike, edit, comment, share, view count, delete, and report a circular
- Users can check whether they satisfy the minimum qualification for a job posting
- Users can create their resume
- Recruiters can hire employee from the platform
- Users can post various types of rent circulars
- A circular can be directly shared to social sites
- Finally there will be circular analytics, admin analytics, notification service, and keyword extraction from circular body analysis

1.3 Expected Outcome

Here is my expected outcome:

- Backend(Rest API)
- Client site application(Web application)
- Admin analytics application(Web application)

1.4 Project Management and Finance

Not Applicable in this development project. I use my own computer, hardware, software and internet connection. There is no funding here.

Chapter 2

Background

2.1 Related Works & Comparative Analysis

There are several job posting sites and sites for house rent in Bangladesh i.e., Bd-jobs, Chakri, bd-carrier, Deshijob, BDTO-LET and BProperty, etc. But these websites are pretty old school compared to sites like LinkedIn. Daily circular users will keep preferences when opening an account. Circular shows in their timeline as per the preferences they have kept. So here is a chance to create something better for our country.

2.2 Scope of the Problem

The daily circular will be accessible to the general public, public servants, and students. People can use daily circular applications to look for jobs, house rent, and to find all kinds of important notices and news here. Students can easily get the admission circular and important notice here. Through these important tasks, daily circulars make people's daily life much easier. The use of daily circulars reduces human suffering. People will get all the circulars in one place.

2.3 Challenges

- Some circulars may have extra action to complete applications like govt job circulars. Then the button will redirect the user to that official application page with the help of a URL link.

- If the circular is fake then the user would like to review the circular and give a rating.
- Scaling this application is expensive because it needs too many resources. To scale up the application requires funding.
- The application has too many features to implement in a short period of time, so I am focused on completing implement the functional requirements of the system
- Learning the related technologies i.e React JS, Node js, JavaScript, mongo db, and docker took a significant amount of time [3, 4, 5, 6].

Chapter 3

Requirement Specification

3.1 Business Process Modeling

It will provide advertisements and there will be an option for boosting circulars so that it will reach the maximum number of people and get maximum coverage. It will go to the maximum number of people when it is boosted. After that people will then be able to know, share and reach more people through it. People can also advertise here.

3.2 Terminologies

The following terms have been used to describe the system.

Registration: For registration, users can give their first name and last name, email address, home address, city, and state for international users. Finally, users also give their password and confirm the password for registration.

Login: For login users can give their email address and correct password. After that, they can successfully login into the site.

Circular: In the circular users can see different types of circular. In the circular, we can see house rent, admission circular, job circular, important notice, and news, etc.

Timeline: In the timeline users will be able to see the circular that we have preferred while opening the account.

My circular: Users can see the circular that they have posted in my circular option.

View: Users will be able to read circulars by clicking on the view button.

Post: Users will be able to post circular.

Delete: Users can delete the circular they have posted.

Update: Users can update the circular they have posted.

Like: Users will be able to like the circular they have posted and others will be able to like the circular that will be posted by another user.

Dislike: If users don't like someone circular they will be able to dislike the circular.

Share: Users will be able to share the circular on social sites or social networks.

Edit: Users will be able to edit the circular they have posted.

Comments: Users will be able to comment on the circular.

View count: Users are able to view the count of the circular they have posted.

Report: Users can report the circular that is not appropriate.

Create Resume: Users are able to create resumes by using this platform.

Analytics: Admin has admin analytics option.

3.3 Requirement Collection and Analysis

There are two types of requirement analysis in software development. Which is a functional requirement and another one is a nonfunctional requirement.

3.3.1 Functional Requirements

1. Sign in
2. Sign up
3. Registration
4. Post
5. View
6. Like
7. Dislike
8. Edit

9. Comments
10. Share
11. View count
12. Delete
13. Report

3.3.2 Non Functional Requirements

1. Scalability
2. Maintainability
3. Performance

3.4 Functional Requirement Analysis

Functional requirements are the functions of a system or its component, which is described as a specification of behavior between inputs and outputs. This system is a pretty large system. Since the time is limited, the most important functional requirements have been implemented only. A summary of the analysis of the functional requirements has been provided in Table: 3.1.

Identifier	Priority	Requirement
REQ-1	5	If the users already have an account, they will Sign in to access the site.
REQ-2	5	If the user doesn't have any account in that case, users will Sign up using their social media link or doing registration to access the site.
REQ-3	5	For creating a new account user will do the registration.
REQ-4	5	Users will be able to post circular on the website.
REQ-5	3	Users will be able to view the circular on the website.
REQ-6	2	Users will be able to like the circular on the website.
REQ-7	2	Users will be able to dislike the circular on the website.
REQ-8	3	Users will be able to edit the circular which they post in my circular option on the site.
REQ-9	2	Users will be able to comment on the circular on the website.
REQ-10	2	Users will be able to share the circular on the website.
REQ-11	2	Users will be able to view count the circular which they post in my circular option on the site.
REQ-12	3	Users will be able to delete the circular which they post in my circular option on the site.
REQ-13	1	Users will be able to report the circular publish on the website.

Table 3.1: Functional requirements

3.4.1 Nonfunctional Requirements Analysis

Non-functional requirements are user expectations that are urgently necessary to fulfill. Analysis for the non functional requirements has summarised in Table: 3.2.

Identifier	Priority	Requirement
REQ-1	1	It defines the system ability.
REQ-2	1	Maintainability can be characterized as "the level of office with which a hardware or framework is fit for being held in, or re-established to, functional activity.
REQ-3	1	It's a pointer of how well a product framework or part meets its necessities for idleness.

Table 3.2: Non functional requirements

3.5 User Case Modeling and Description

Table: 3.3 is showing the roles and goals of users. Fig: 3.1 shows the level 0 use case diagram and Fig: 3.2 shows the level 1 use case diagram.

Actor	Role	Goal
Users	Users will be able to register, login, view circular, post circular, edit circular, delete circular, update circular, like, dislike, edit, comment, share, view count, report and create resume using this website.	The goal of the users is to have excellent performance with first and minimal wait times and smooth services.
Admin	Admin have admin analytics.	Admin able to see the overall circular statistics.

Table 3.3: Use case modeling

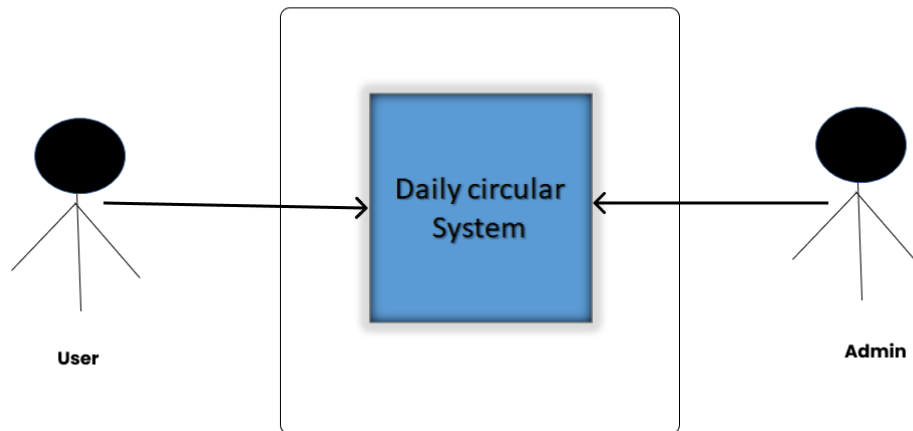


Figure 3.1: Level 0 diagram

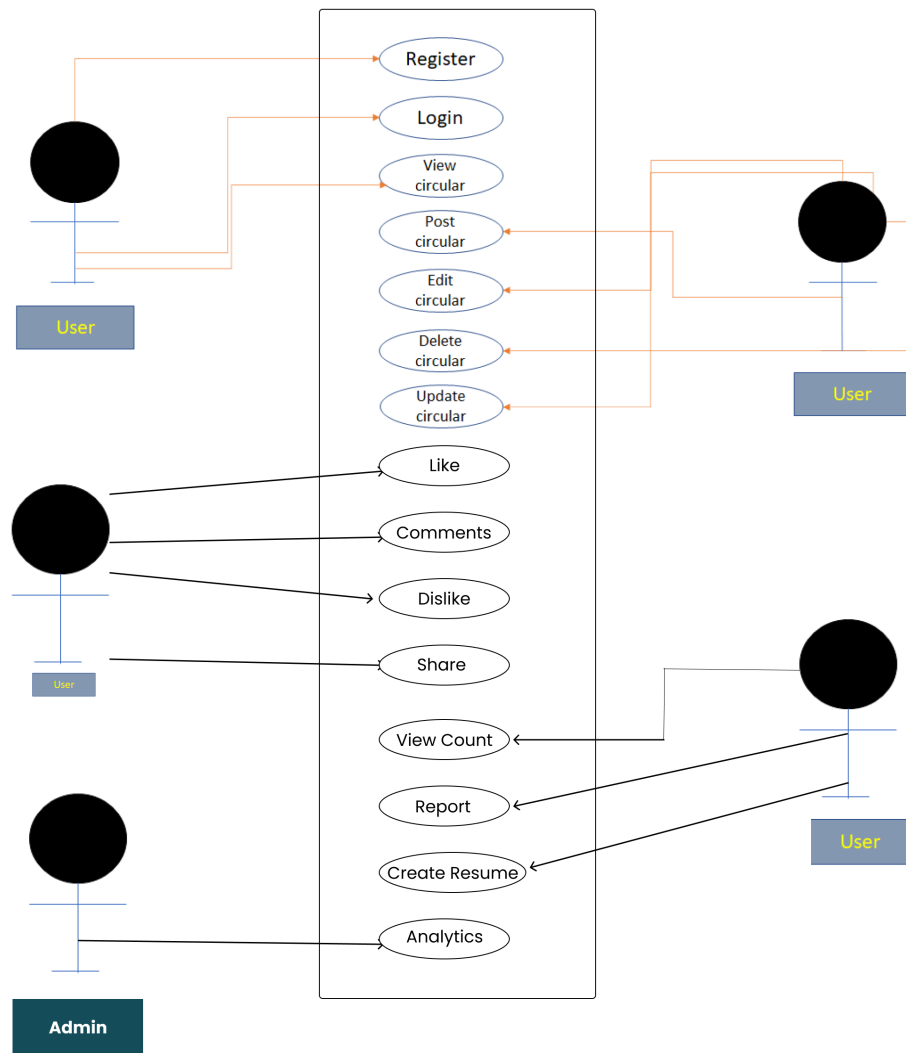


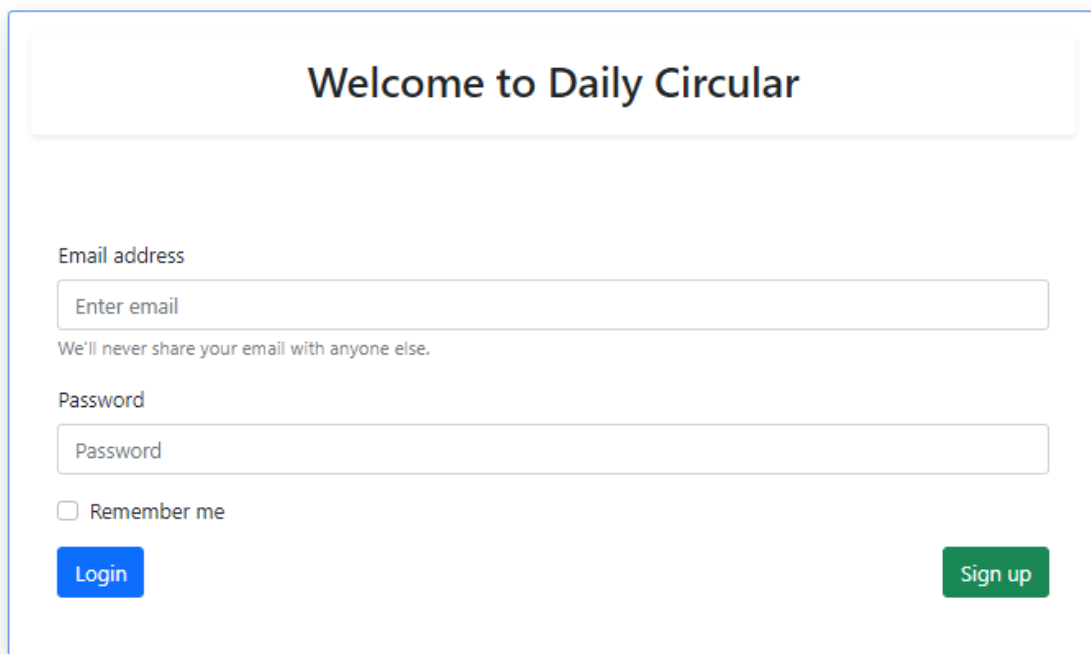
Figure 3.2: Level 1 diagram

Chapter 4

Design Specification

4.1 Front-end Design

Front-end design has conducted with Figma. Figures 4.2, 4.1, 4.3, 4.4, 4.4, 4.5, and 4.6 are the UI design and final look of the website.



The image shows a login page design for 'Daily Circular'. At the top, there is a light gray header box with the text 'Welcome to Daily Circular'. Below this, the form is centered. It starts with the label 'Email address' followed by a text input field containing the placeholder 'Enter email'. Underneath the email field is a small line of text: 'We'll never share your email with anyone else.' Below that is the label 'Password' followed by a password input field with the placeholder 'Password'. Under the password field is a checkbox labeled 'Remember me'. At the bottom left of the form is a blue 'Login' button, and at the bottom right is a green 'Sign up' button.

Figure 4.1: Login Page

Sign up to Daily Circular

Already signed up? [login](#)

First Name

Last Name

Email address

We'll never share your email with anyone else.

Present Address

Permanent Address

Password

Confirm Password

Sign Up

Reset

Figure 4.2: Sign up page

Daily Circular
Timeline
Create Circular
My Circulars
Dropdown

Notification
Profile

Add Preference
Job
Admission
House rent
Govt Job

Admission Circular
Abdul Karim
Posted on: Thu Oct 07 2021

Ulab Fall
Admission going on

Admission circular
Monjurul Hasan
Posted on: Thu Oct 07 2021

Ulab Fall Semester
Admission going on
Bsc in CSE
Bsc in EEE

Figure 4.3: Timeline

12

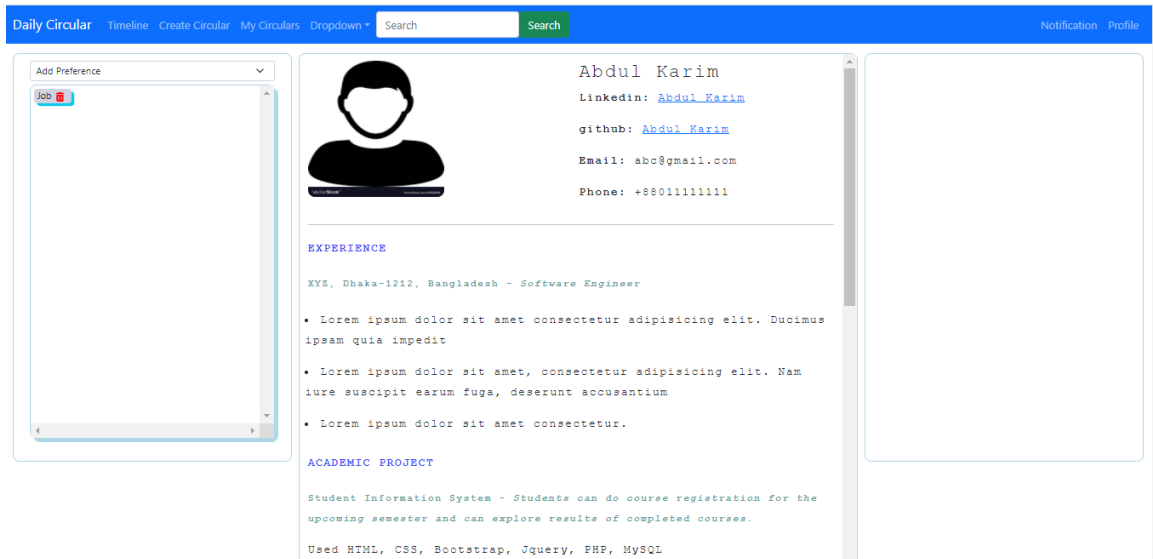


Figure 4.4: Profile

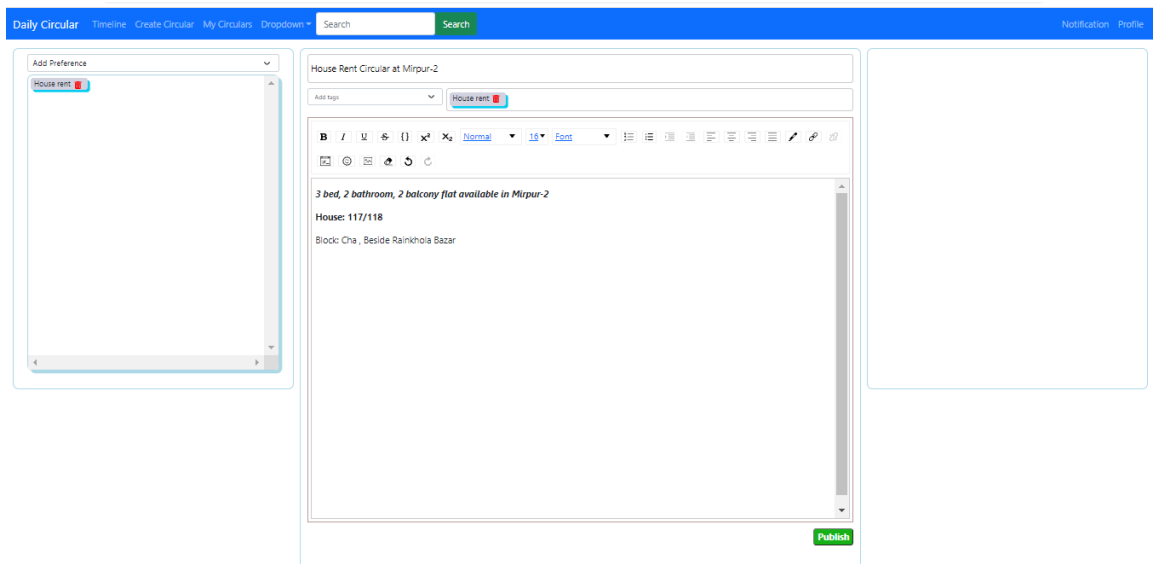


Figure 4.5: Create Circular

4.2 Back-end Design

4.3 Logical Data Model

A logical data model builds up the construction of data components and the connections among them.

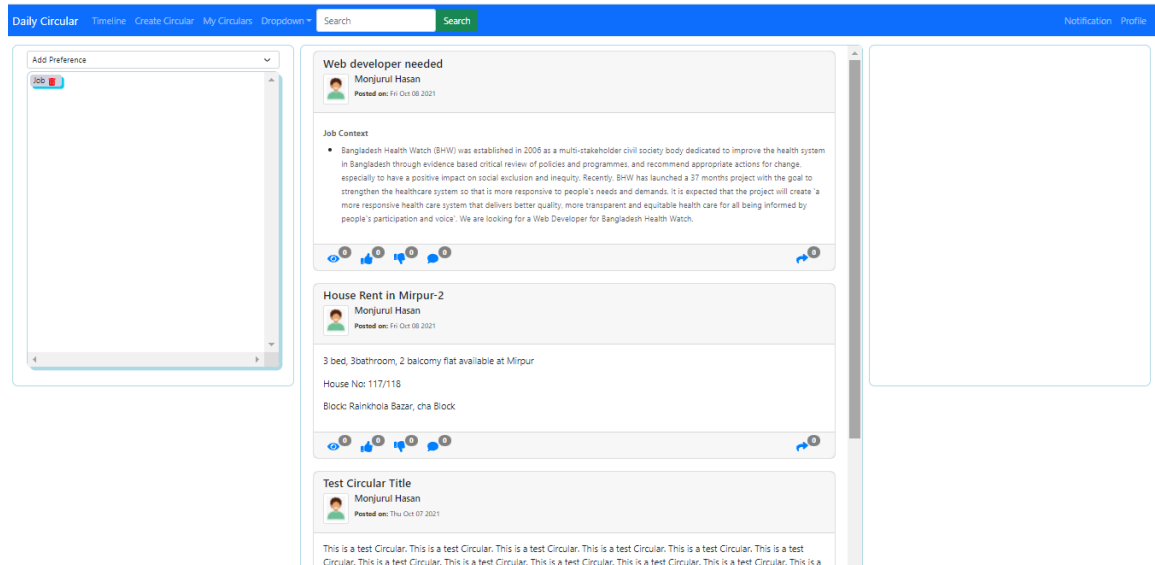


Figure 4.6: My Circular

4.3.1 Data Flow Diagram

Fig: 4.7 shows the data flow diagram. There are users and a total of 13 processes. This process is registration, login, post, view, like dislike, edit post, comments, share count, view count, delete, edit profile and report. Users are connected to all this process and all these processes are connected to the daily circular database.

4.3.2 Sequence Diagram

Fig: 4.8 shows the sequence diagram. In the sequence diagram there is a user and daily circular system. First of all, users can do the registration. After the successful registration user can login and enter the daily circular system. After entering the daily circular system, users easily can access all the features of the daily circular system and they can easily share circular in social sites or social networks.

4.3.3 ER Diagram

Fig: 4.9 shows the ER diagram. Circular and circular images have one to many relations. Because different circular has different images. Circular and circular categories has one to one relation. Circular and circular rating has one to one relation.

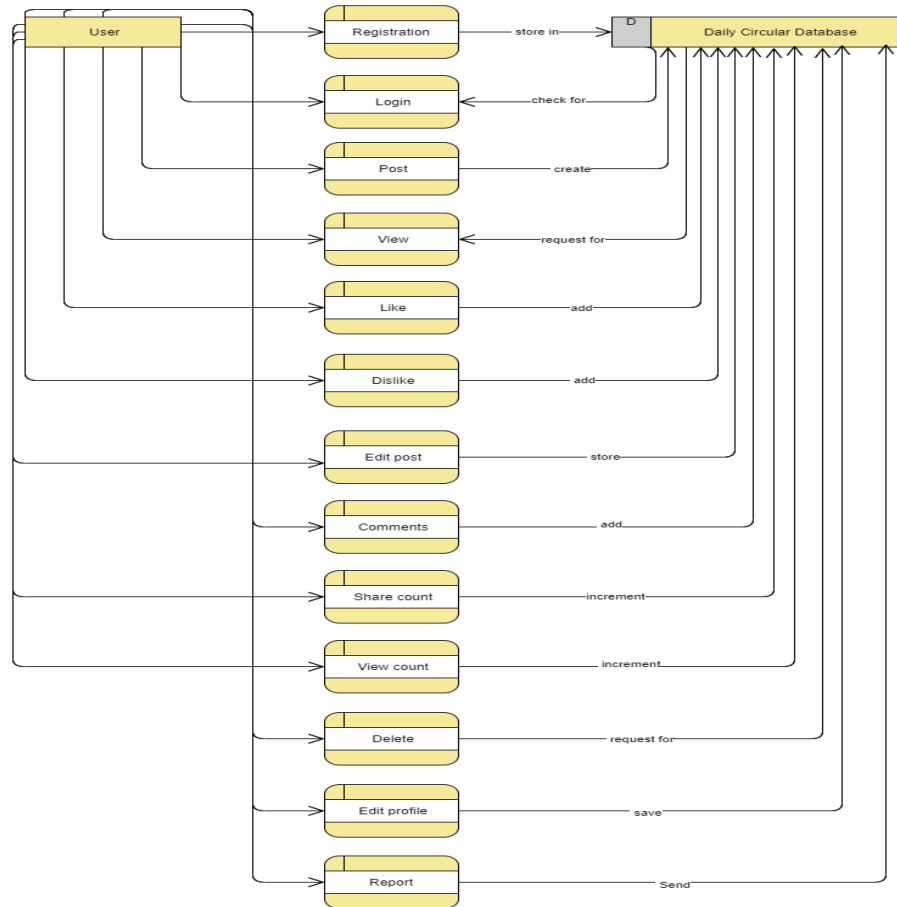


Figure 4.7: Data flow diagram

Circular and company type have one to one relationship. Circular and application user have many to many relationships and in the case of publish application user to circular has one to many relationship. Resume to application user has a one to one relationship. Resume has work experience which has one to many relationships. Moreover, finally resume to education qualification has one to many relationship.

Sequence Diagram for Daily Circular

Monjurul Hasan (171014085) | August 21, 2021

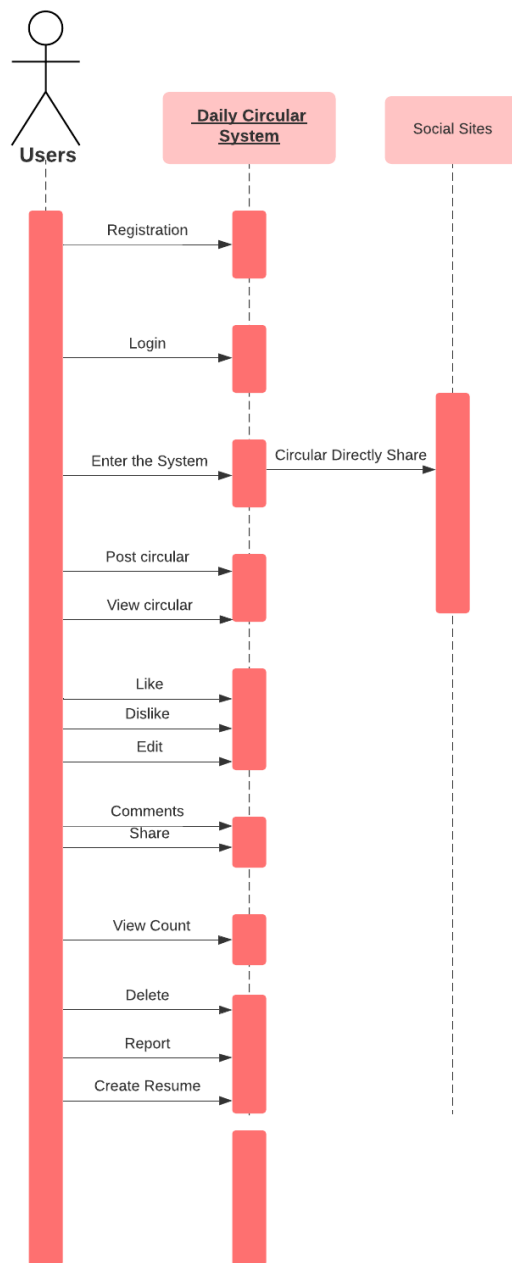


Figure 4.8: Sequence diagram

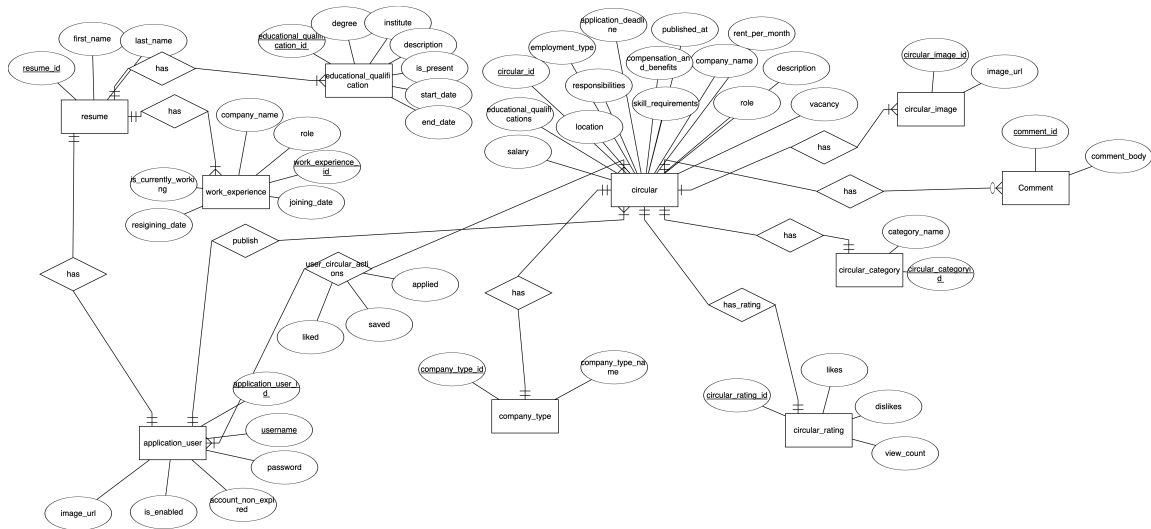


Figure 4.9: ER diagram

4.3.4 Relational Schema

Fig: 4.10 shows the relational schema derived from the ER diagram.

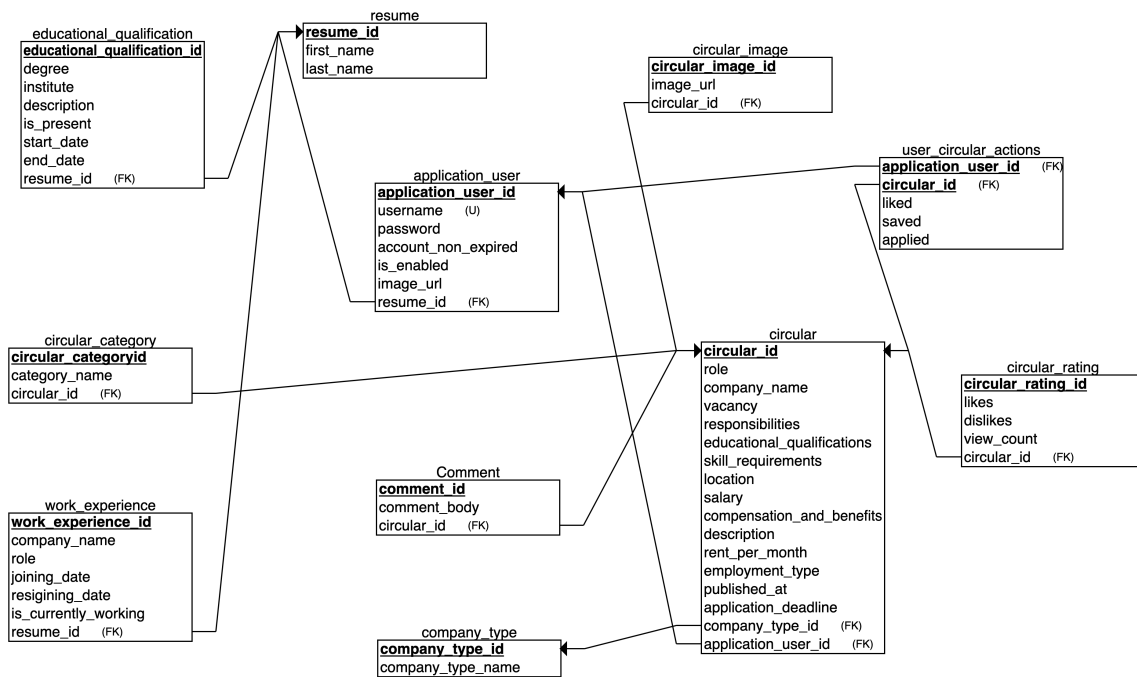


Figure 4.10: Relational schema diagram

4.4 Class Diagram

Fig: 4.11 shows the class diagram.

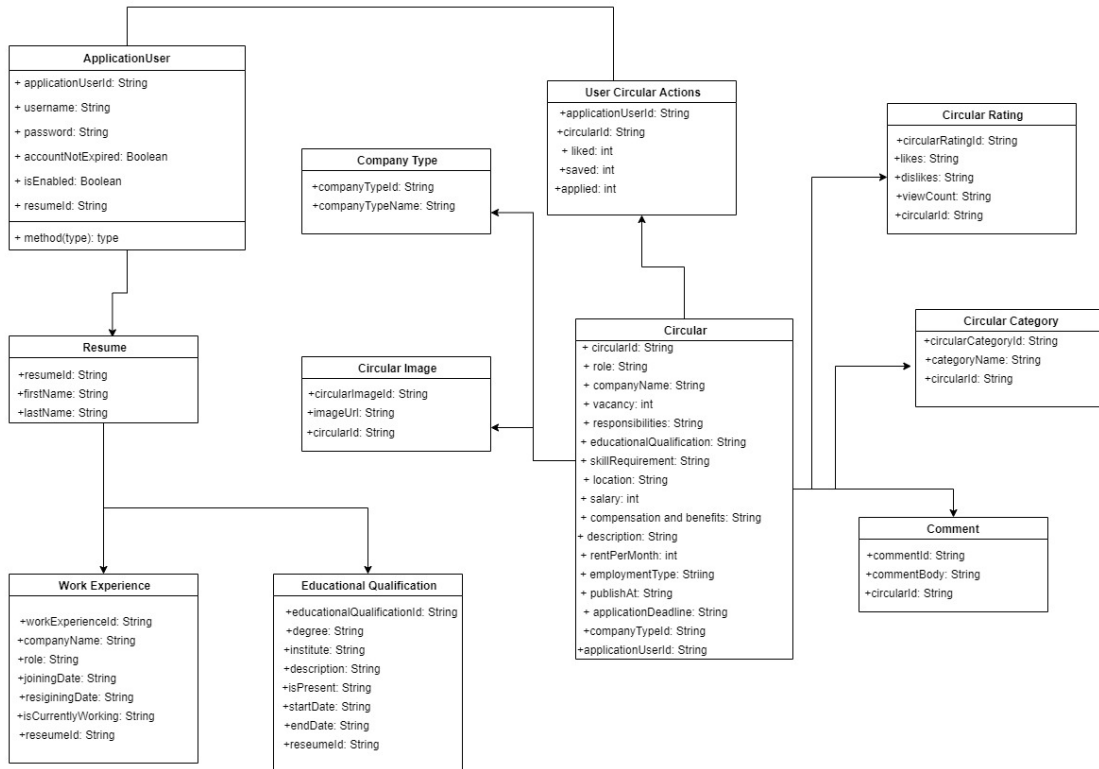


Figure 4.11: Class diagram

Chapter 5

Implementation and Testing

5.1 Implementation Strategy

Fig: 5.1 shows the tech stacks that have been used in the development process and the high-level architecture of the system. Both the development and deployment have been conducted with Docker [6]. Shell scripts have been written to automate the setup of local development [7]. Setting up the initial development environment is a tedious and complicated task. Because of the operating system and hardware configurations, some of the libraries and packages get errors while installing. As a result, blockers appear in the development process. Docker solves these problems since the containers provide a virtual computer-like environment. Many renowned tech companies are using containerized development procedures. Considering these attributes, a containerized development method has been adopted for the development of this system.

5.2 Front-end Implementation

The client app or the front-end has been implemented with React Js [3]. React Js is a worldwide popular JavaScript library for front-end development initially developed by Facebook. All of the components of the client application are Functional components and Hooks [8]. Draft Js has been used for the circular editor [9]. Axios has been used for communicating with the rest API [10]. React Bootstrap was used for styling the components [11].

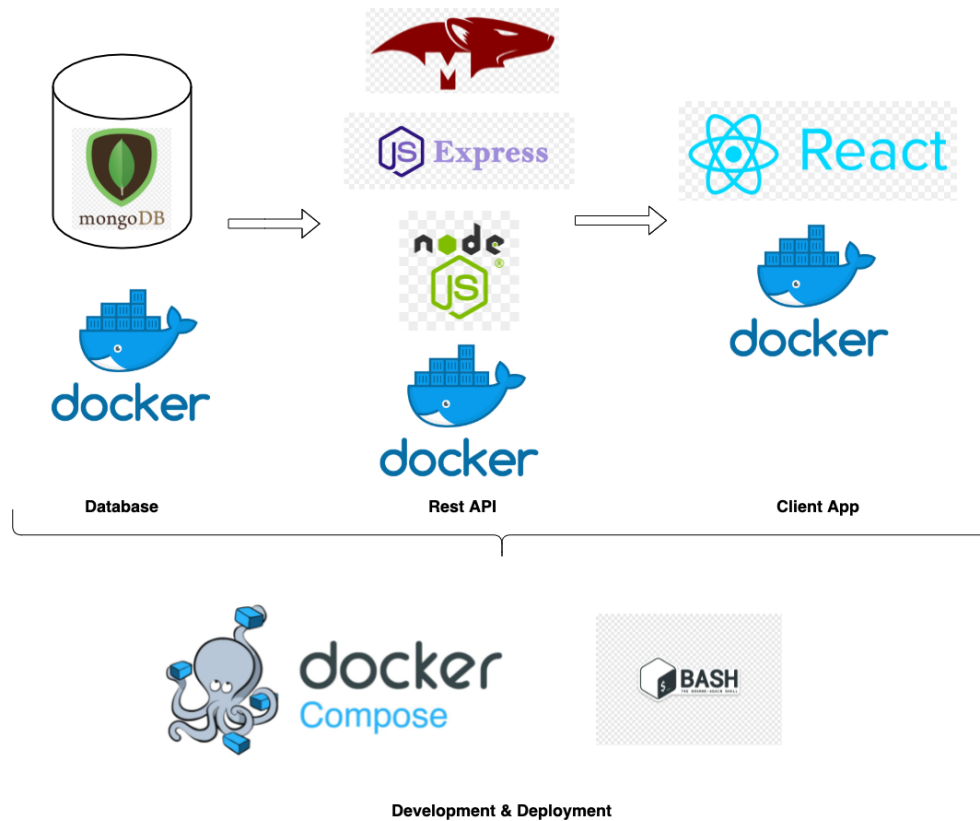


Figure 5.1: Technology Use in Implementation

5.3 Back-end Implementation

The rest api or back-end has been implemented with Node Js and Express Js [4, 12]. To communicate with the Mongo DB database Mongoose Js library has been used [5, 13].

5.4 Database Implementation

Since the system is a Business-to-Consumer(B2C) application, if it gets popular, it will have a lot of users. The number of circulars in the system will also be massive. Scaling such a system requires distributed architecture. Mongo DB has distributed sharding [14], it will convenient to scale up the system in the future.

5.5 Testing

The QA part of for client app has been conducted on the Chrome, Mozilla Firefox, and Microsoft Edge browsers. Back-end end-to-end testing or the testing of the endpoints has been done with Postman [15]. Fig: ?? shows an example of testing endpoint response with Postman.

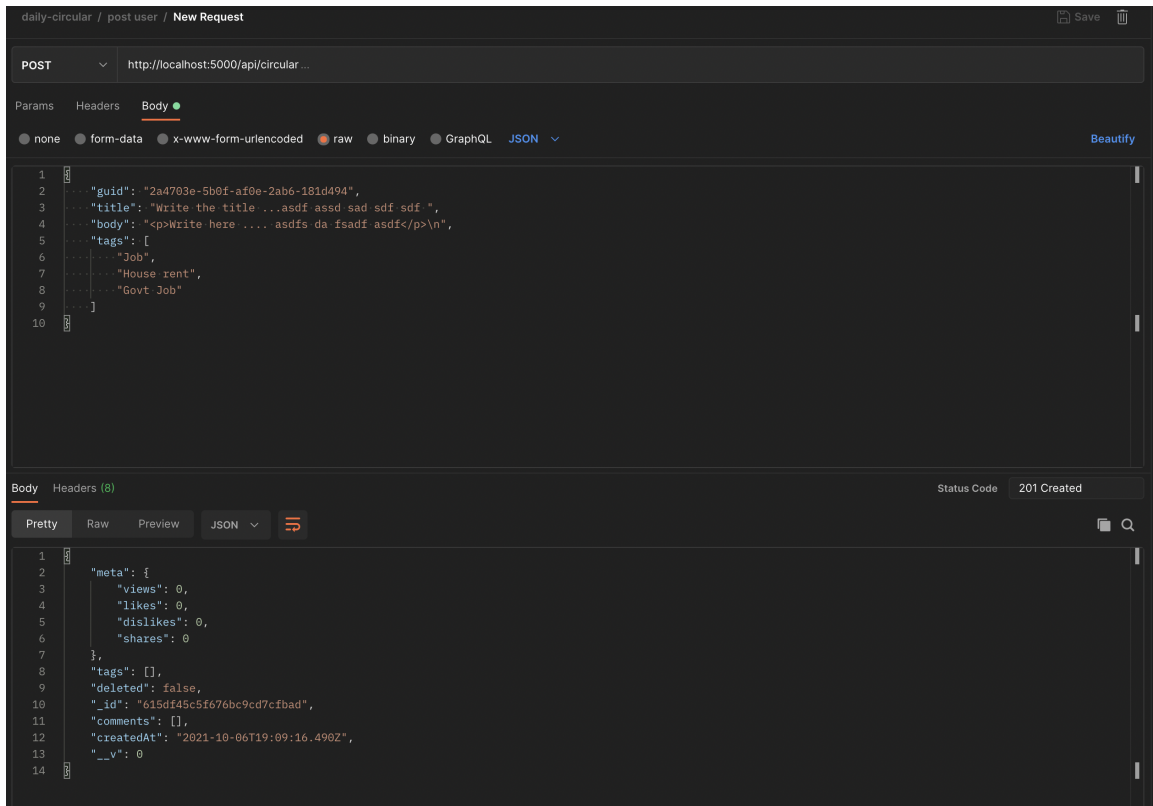


Figure 5.2: Back-end endpoint response testing with postman

Chapter 6

Impact on Society, Environment and Sustainability

6.1 Impact on Society

This Daily Circular application creates a huge impact in society. It fulfills societal needs by creating employment and reducing human suffering. One of the important societal impacts is job creation for the community. People will get this facility easily from daily circulars. People will get all kinds of important notice, news if they register and then search here. It will make the daily life of the people of the society easier. People find all kinds of circular here and they can easily apply from here using this application.

6.2 Impact on Environment

Daily circulars will not have such bad effects on the environment. The Smart 2020 report found that the full life cycle carbon impression of the ICT business addresses around 2% of overall outflows, and is projected to develop at a 6% yearly accumulated development rate. The Toolkit on Environmental Sustainability for the ICT sector is an ITU-T initiative which gives plenty of detailed support on how ICT organizations can incorporate sustainability into the operations and management of their organizations, through the practical application of international standards and rules. For maintaining environmental sustainability I follow the sustainable ICT in corporate organization. This archive centers around the principle sustainability that organizations face in utilizing ICT items and administrations in their

own associations across four primary ICT regions which are data centers, desktop infrastructure, broadcasting service and telecommunication networks. To maintain these four things properly we can achieve environmental sustainability.

6.3 Ethical Aspects

This daily circular always follows the ethical aspects. Always follow the copyright rules and maintain the users privacy properly. Without the proper permission the daily circular authority can't copy paste anything and always maintain the copyright issues. I always follow the honest report data and maintain integrity. I always keep my guarantees and agreements, and act with integrity. I always follow carefulness and critically examine my own work. Moreover, I always follow confidentiality in confidential work. Secure confidential correspondences, for example, papers or awards submitted for distribution, staff records.

6.4 Sustainability Plan

There are 17 goals in Sustainable development. Before that many events happened. In sustainability there are three dimensions. Sustainable development tries to make sense of the interactions of three complex systems. Such as the world economy, the global society and the earth's physical environment. But it is not just for one country, it is for all countries or globally.

According to WCED the definition of sustainable development is meeting the needs of the present without compromising the ability of future generations to meet their own needs. WCED they framed sustainability in a triangle. They called it the sustainable development triangle. The elements of this triangle are environment, economy and society.

In the environment perspective we see some indicators. The indicators are biodiversity, materials, energy and biophysical interactions. We have to ensure biodiversity. But it is not just for one country, it is for all countries or globally. In the perspective of material we have to reduce the use of fuel, minerals and gas. In the perspective of energy we have to think about renewable energy like air, solar, wind etc. Moreover, in biophysical interactions we have to see the ecosystem. In

the ecosystem a lot of things are interconnected. Therefore, this biophysical interaction is very important.

In the economic perspective we also see some indicators. Such as money and capital, employment, technological growth, investment and market sources. We have to think about money and capital. If we have no capital we couldn't develop a country. We have to create employment. We have to do technological growth. Because technology is a very important thing for economic development. For example, Japan is very rich because of their technology. Moreover, we have lots of people. But if we compete with them we will never be able to. Because they are technologically so far richer compared to ours. Then we have to create an investment environment. Because we have lots of uncertainty. If we have uncertainty foreigners will not invest here. We have to give them security. Finally, market sources mean we have to run the market. We don't have to sit with the market open. Therefore, we have to make alternative market forces.

Now sustainability in the context of societal perspective we have to consider such as human diversity, equity, equity of life, institutional structures and organization and political structures. In the context of human diversity if there is no human diversity it's a threat for society. We have to ensure multicultural diversity, linguistic diversity. We can't think about one particular group or one particular culture or one particular religion. We have to ensure human diversity. Now in equity we have to ensure equal rights for everyone. If we never ensure equal rights to everyone's a society will never be sustainable. Then we have to improve quality of life for proper sustainable developments. Moreover, in institutional structures and organization means if the government institutions can't run properly or if they don't have control or if there is corruption we can't ever achieve sustainability. Finally in political structures it is very important. For sustainability we have to ensure a good political structure.

Initially WCED they talked about these three things. But after a few years they realize that to achieve that economic, social and environmental objective of sustainable development there is a need for Good Governance. That is the fourth objective. If we have good governance then we can ensure environmental protection, an economic stable market, equality in society. If the governance is not good or corrupted we never achieve these three things. Good governance is important

because the government will ensure social services, they will develop the infrastructure such as roads, bridges. They will control crime and violence. They invest in basic science and technology. They will do regulation to protect the environment.

Chapter 7

Conclusion and Future Scope

7.1 Discussion and Conclusion

We create anything for the development of the human race, daily circular is not beyond. The daily circular will play a helpful and vital role in people's daily lives. It reduces the suffering of people searching circulars in different sites. People will get all kinds of circular in one place. People get admission circular, house rent, important notices, important news and job circular there. That's why people don't repeatedly logging and signing into different sites for different circulars.

When people enter the daily circular they will be able to put different types of circular in their preferences. Circular that people will keep preferences can be seen on their timeline after entering the daily circular. From there users will be able to apply and download, like, share, and comment on the circular. Users will be able to post circular in the daily circular website. Users will post the circular and they can edit, delete, share and view count of those circulars. Users also report any kind of circular. Finally, I am also hoping to publish a journal on this work. Also after completing the application I will exhibit it to different competitions as well as I will try to upload this on Google Play Store.

7.2 Scope for further Development

The application has a very wide distant future scope. Currently there are a lot of features of this application and in future I will also try to add more features in this application. For the job circular it will be a better version in Bangladesh. It changed the way of traditional job posting. It follows the field specified job

posting like google form that will be easy for users. Currently users create their resume in this platform and in future scope it will provide various skill enrichment courses. This will greatly benefit the users and increase their efficiency. For house rent, admission circulars, important notice and news it will be a better version for existing circular. For house rent people don't have to go from house to house looking for a home, they can find the house of their choice from this daily circular. For admission circular students easily find all these things in this daily circular and in future they also find the public examination result there.

In future I will develop a better model of this application whose accuracy will be better than the current model. Currently this is a web application. I will develop an android app for this application too and publish on google play store. Moreover, I also try to publish this project in a journal.

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