CHAPTER 1: INTRODUCTION

INTRODUCTION

1.1 PROJECT DETAILS

We are appointed in a team for same project as a Frontend Development Intern at Kiwispecs SundayPyjamas LLP and I am allotted a project named Dataplatform for SundayPyjamas which is a performance tracking tool used for tracking the performance of the social media accounts.
Using this, you can seamlessly manage and view how your product or account is doing on social media.
We have tried to cover all the major platforms such as Facebook, Instagram etc. and we are also integrating the product with other platforms such as LinkedIn.
For frontend development we have used React and Redux as main parts. Using React and Redux we have developed all frontend pages that are provided in mockups given by company.

1.2 OBJECTIVE

Dataplatform will be used primarily by the head of marketing at SundayPyjamas to track the performance of the posts of the client. It will also be used to schedule posts on various social media platforms.
The purpose of this product is basically enhancing the user experience which is lacked in the systems right now and providing the user with comfort of automation.
The objective of the system is increased simplicity and better performance tracking. It can be used so that the users can have a clear picture of how their brand is performing on social media.

1.3 SCOPE

This system will be able to schedule and track the performance of the posts. It cannot run very strong algorithms. The system can publish on limited platforms. The user need to accept a set of permissions for every platform because the private data of user is to be accessed.

1.4 TOOLS AND TECHNOLOGY USED

The technology stack used will be as follows:

- Infrastructure Provider : Google Cloud Platform
- Operating System : Windows 10, Ubuntu 16.04
- Versioning System : Gitlab
- Backend : Go Lang
- Database : PostgreSQL
- Front-end : React

CHAPTER2: PROJECT MANAGEMENT

PROJECT MANAGEMENT

2.1 PROJECT PLANNING:

- Project planning is part of project management, which relates to the use of schedules such as Gantt charts to plan and subsequently report progress within the project environment.
- Initially, the project scope is defined and the appropriate methods for completing the project are determined. Following this step, the durations for the various tasks necessary to complete the work are listed and grouped into a work breakdown structure.
- Project planning is often used to organize different areas of a project, including project plans, workloads and the management of teams and individuals.

2.1.1 PROJECT DEVELOPMENT APPROACH AND JUSTIFICATION:

- The project will be developed using agile development model. There are many reasons as to why the project is developed using agile

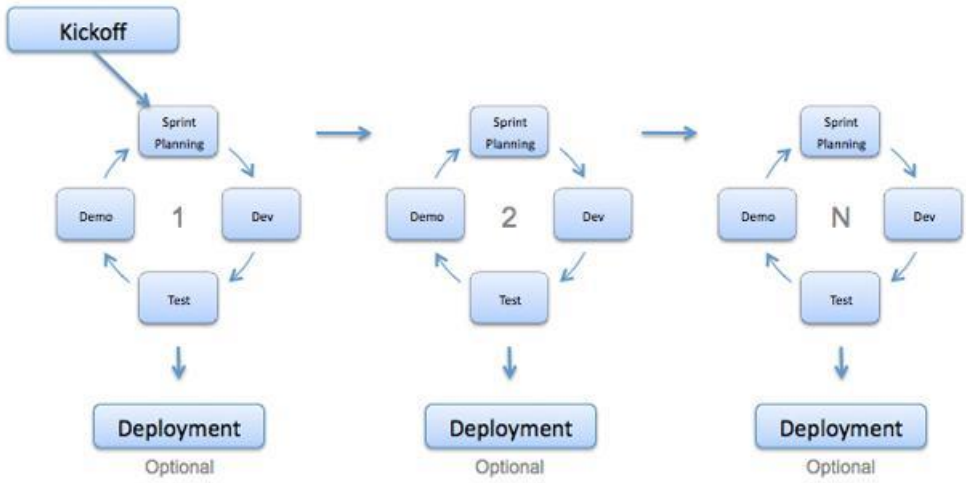


Figure 2.1 Agile Development

- The system comprises of more and deep Technical study and it is more complex on the technical part. The project is expected to be completed in the time span of 6 months. We have already completed the designing part of the project and we have completed 60% of the project. The product Minimum Viable Product (MVP) is expected to be completed in 4 months. The complete version of the product is expected to be completed in 6 months.
  The Front-End part of the project would be completed in the first 60 days of the project. The Back-End part of the project would be completed in further 90 days of the project. The Integration and testing of the project is expected to take 30 days of the project.

- The system is totally web based and the user can access the system with just a browser link provided by the admin. The user can access the system with a moderate internet connection and basic knowledge of clicking buttons. The System will be implemented in both mobile and desktop version so the user can use the system in both ways.

- As all the above feasibility check are satisfied, we can conclude that there is implementation feasibility. The system can be implementation both ways that is within the organization and outside the organization. The User just need to have a basic internet connection and the user will be able to use the whole system on the go.

2.2 PROJECT WORK SCHEDULING:

- The Total number of members in the team is 4 including the project manager. The Roles and Responsibilities Distribution is like one person in the team is appointed as Front-End developer whose responsibility is to look after the visual presentation of the project. One person is appointed as a Back-End Developer whose responsibilities is to look after the Database and back-End functioning like fetching data from the server and cloud. One person is appointed as a Full Stack Developer whose responsibility include the overall work monitoring of the project including Front-end and Back-end Functionalities execution. The project manager looks after the daily task distribution among the team members and progress monitoring of the project.

Name	Role				
	Analysis	Designing	Coding	Testing	Documentation
Sneh Naik	✓	✓	✓	✓	✓
Prarthan Pandya	✓	✓	✓	✓	✓

Table 1 List of responsibilities

- The group dependency is a set of process in which the group members working on the project cannot move further into their work without approval of reports or without output of another group of members. The project is highly dependent on libraries APIs and SDKs. The project is more backend relied and frontend developers have to wait till backend is developed.

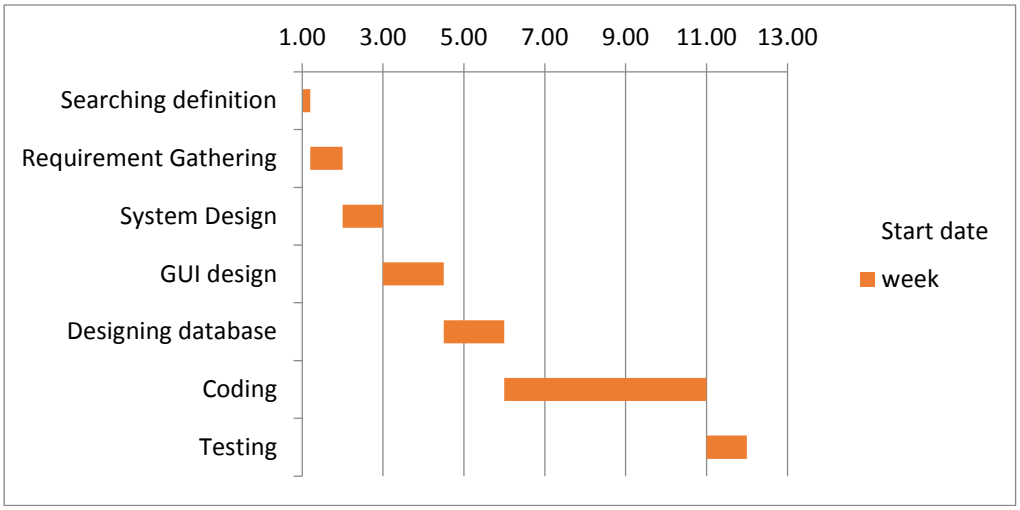


Figure 2.2 Project Scheduling Chart

CHAPTER 3: SYSTEM REQUIREMENT

SYSTEM REQUIREMENT STUDY

The following sections will introduce the numerous requirements of the system from the point of view of different users and will introduce a number of decisions that have been made regarding implementation. These sections also attempt to somewhat describe the role of each user group in the system, discussing their individual roles through the functions they can perform.

3.1 USER CHARACTERISTICS:

- Two users: Admin and User. Admin and user share some of the functionalities. The Admin monitors the clients using the systems and be in constant touch with the client in order to leverage his business and grow the business by an exponential rate.

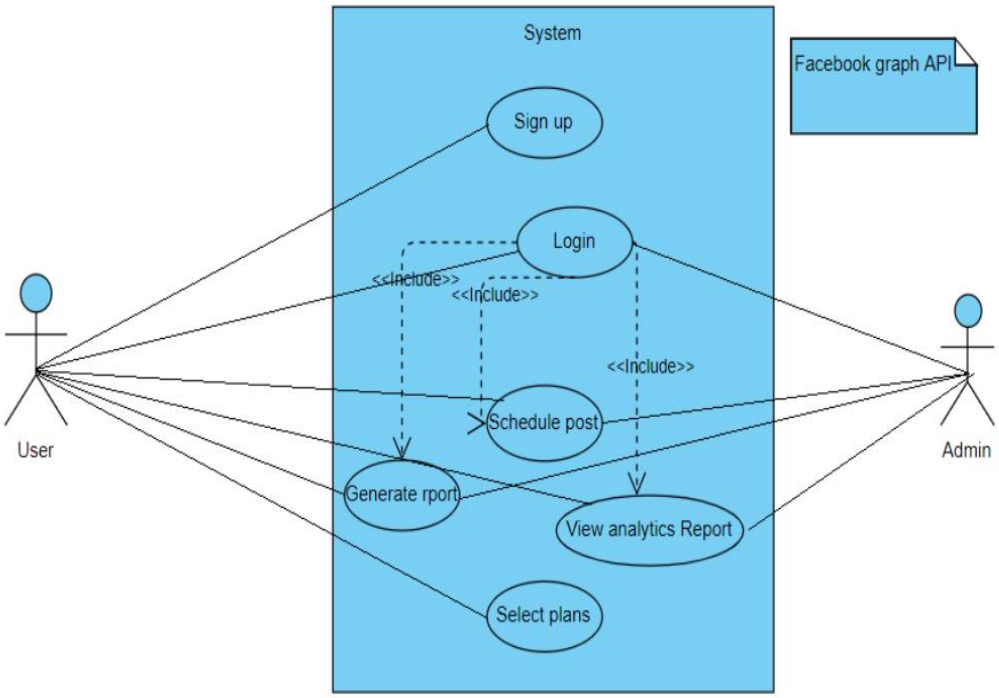


Figure 3.1 Use Case Diagram

3.2 HARDWARE AND SOFTWARE REQUIREMENTS:

Software:

- Infrastructure Provider : Google Cloud Platform
- Operating System : Windows 10, Ubuntu 16.04
- Versioning System : Gitlab
- Technology : GOLANG
- Database : PostgreSQL
- Front-end : React

Hardware:

For development (on personal system)

- RAM: 4GB
- Processor: Intel i5
- Persistence storage: 512 GB HDD

For development (on cloud)

- RAM: 1.7GB
- Processor: G1-Small
- Persistence storage: 10GB HDD

For deployment

- RAM: 3.5 GB
- Virtual Processor: n1-standard-2
- Persistence storage: 25GB SSD

3.3 CONSTRIANTS

3.3.1 Parallel operations

- The system is designed to perform parallel operations like handling multiple referral campaign and monitoring customers buying our product. Multiple users can access our system at the same time seamlessly and flexibly

3.3.2 Higher technical requirements

- The system is designed to serve seamless and flexible service to the customer, for which the system is built using the higher level technical knowledge in web development fields like Angular and Node.js along with open source database like PostgreSQL.

3.3.3 Criticality of the system

- The system is somewhat simple to understand and at the same time complex to implement. The main criticality of the system is the API calls and the usage of SDK. The communication involves in-depth knowledge of Http Request and response.

3.3.4 Assumptions and dependencies

- The software dependencies are SDKs used. Different SDKs for different social media platform will be used. Example Instagram SDK for GoLang, Facebook SDK for GoLang.

3.3.5 Regulatory policies

- As per the Company's policy any developer has to maintain the Coding Standards. Also, each and every user should maintain the subversion and commit the modification with appropriate comment so to have track of work and also of the code modification. From the client’s perspective, Developer should use well known coding standards.

CHAPTER 4: SYSTEM ANALYSIS

SYSTEM ANALYSIS

It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components.

System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

4.1 STUDY OF CURRENT SYSTEM:

- In the current system, we have to take care of all the things manually. A user has to create and account with the system and manually track the performance record. Some systems are available but they are either too complex or too expensive to be used by a layman.

4.2 PROBLEMS AND WEAKNESS OF THE CURRENT SYSTEM:

- Some systems are available but they are either too complex or too expensive to be used by a layman. These systems need an alternative which aren't available. Our system will provide an all-round solution to all the problems

4.3 REQUIREMENT OF THE PROPOSED SYSTEM:

4.3.1 USER REQUIREMENTS:

- User requirements does not include many things, but most importantly user must be aware that system works properly with full availability, reliability, security and safety. The user responsibility are as follows:
  Should know how to use the application and should adhere to the guidelines and prescribed standards.

4.3.2 Functional Requirements:

- Fully customizable website and online store
- Sell on multiple sales channels
- Online payment
- Multiple themes to choose from
- Flexibles products and payment models
- Reports and analytics for admin
- Includes automatic social media presence builder

4.3.3 Non Functional Requirements:

- Scalability
  The system should able to scale up and scale down as per the traffic and need to optimize the operational cost.

- Reliability and fault tolerance
  1. The system should up and running all the time with less to zero downtime.

  2. The data should persist even after a catastrophic failure occurs.

- Security
  User's private data and system's data should not be leaked or accessed by an unauthorized person.

- Usability
  Be easy for users to understand and use the product.

- Performance
  Be able to withstand the changing load and being fast and responsive all the time for users.

4.4SYSTEM WORK FLOW

R1: **User Sign-up**: The user should be able to Sign-up using Google, Facebook or Email ID

Input: Required credentials
Output: The user will be signed up with the system.

R2: **User Login:** The user should be able to login to the system using the credentials provided for sign-up

Input: Valid credentials
Output: User will be logged in

R3: **Scheduling post:** The user/admin should be able to schedule posts on platform
Input: Valid time and date
Output: The post will be scheduled

R4: **View the analytics report:** The user/admin should be able to view the analytics report of the selected client

Input: The client ID
Output: Analytics report will be generated

R5: **Purchase a subscription plan:** The user can select a plan which suits him/her.

Input: A valid plan
Output: Purchased plan will be added to the user profile

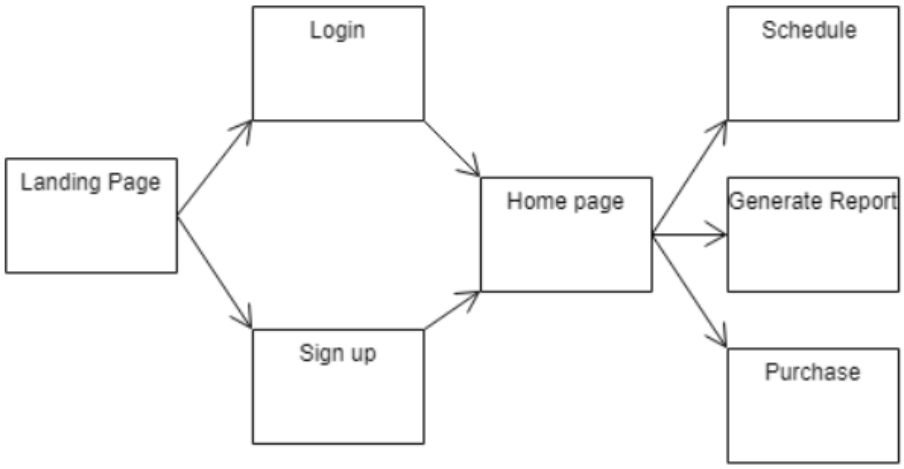


Figure 4.1 Navigation Chart

4.5CLASS DIAGRAM:

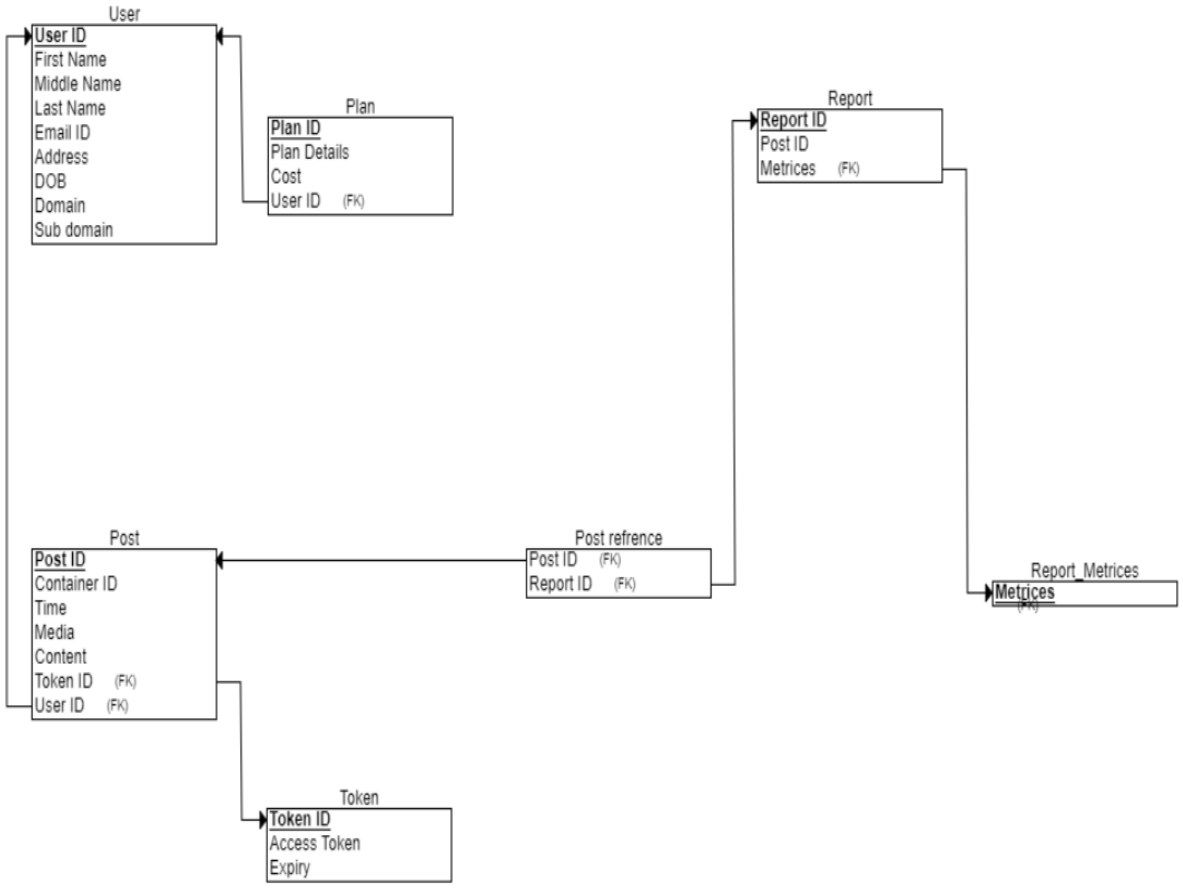


Figure 4.2 Class Diagram

4.6ACITVITY DIAGRAM:

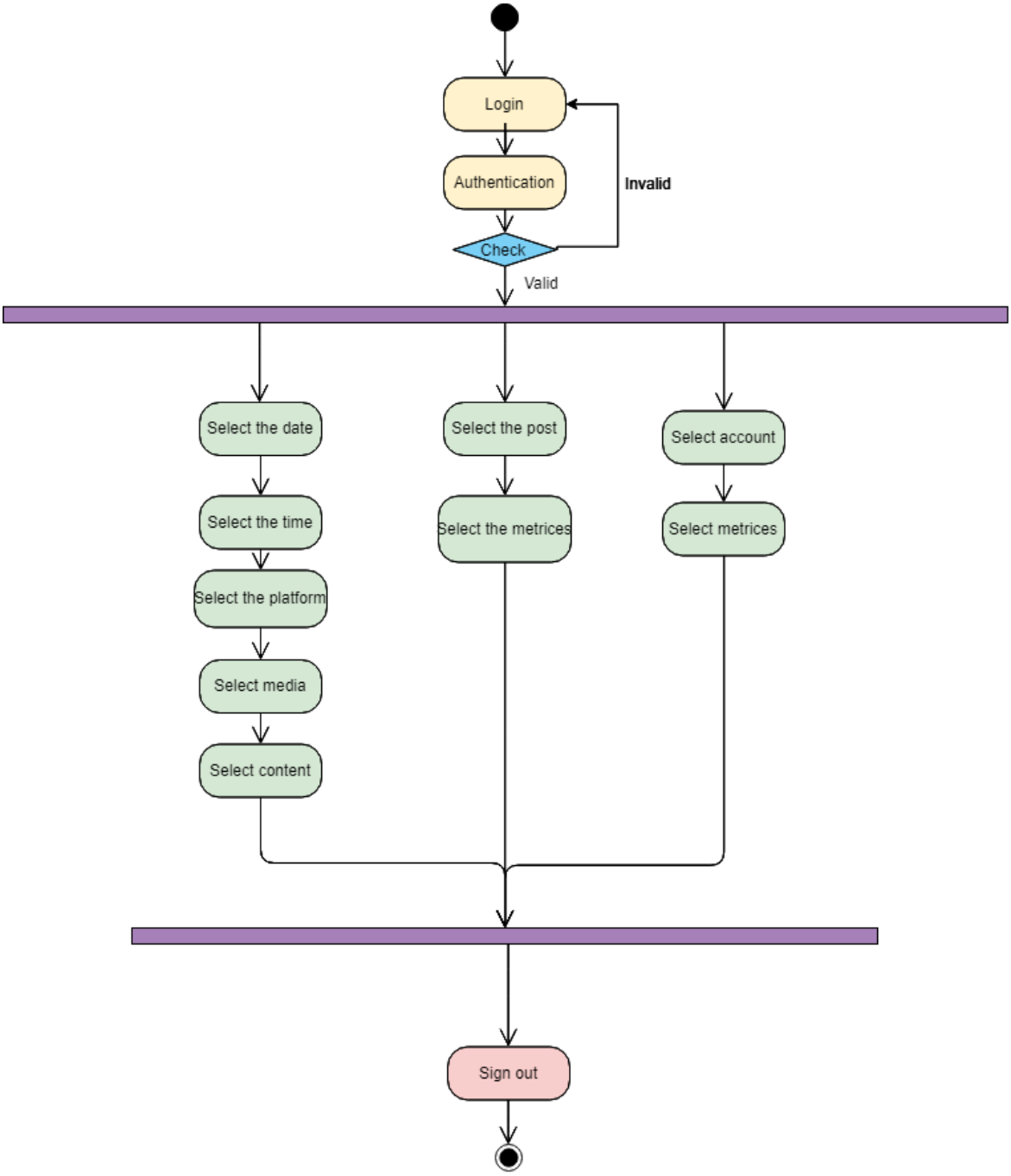
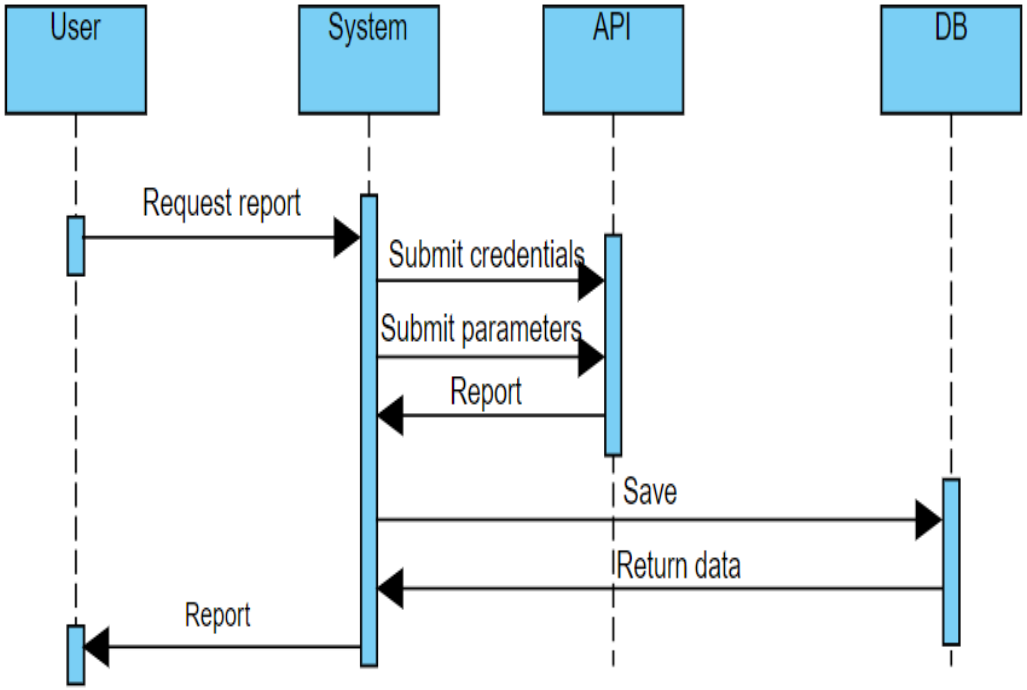


Figure 4.3 Activity Diagram

4.7 SEQUENCE DIAGRAM:

Scheduling a post



4.4 Sequence Diagram - Generate Report

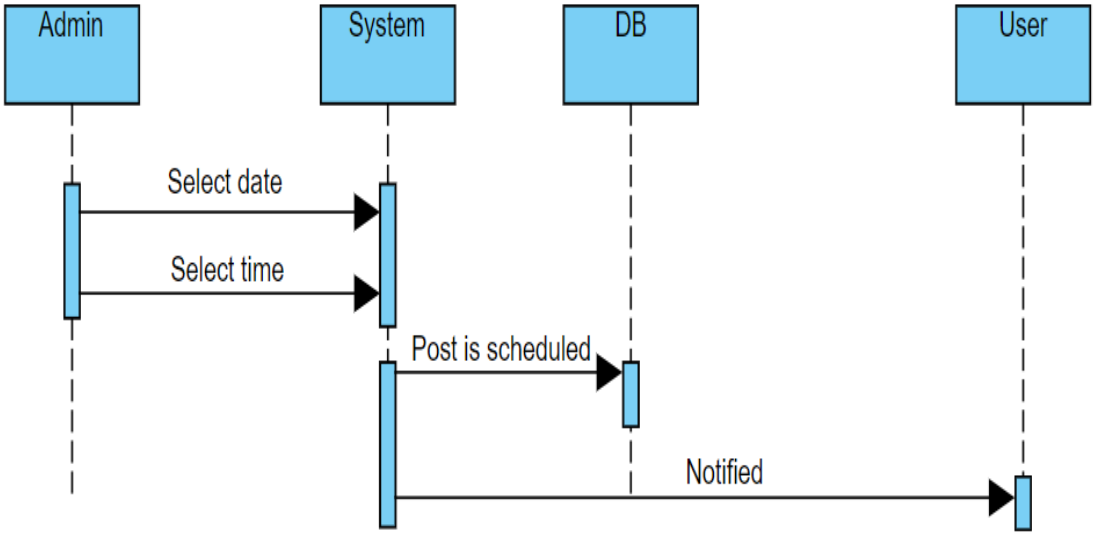


Figure 4.5 Sequence Diagram - Schedule a post

4.8 STATE CHART DIAGRAM:

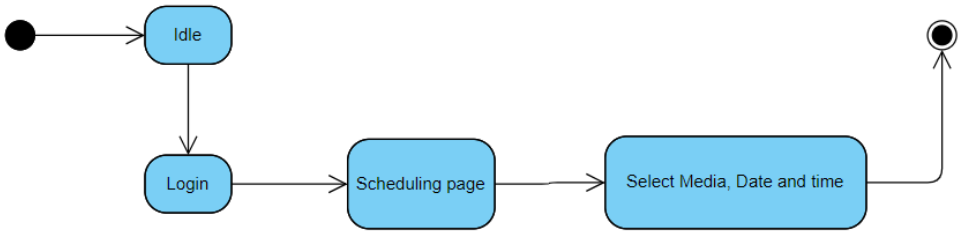


Figure 4.6 State Chart – Scheduling a post

4.9 DEPLOYMENT DIAGRAM:

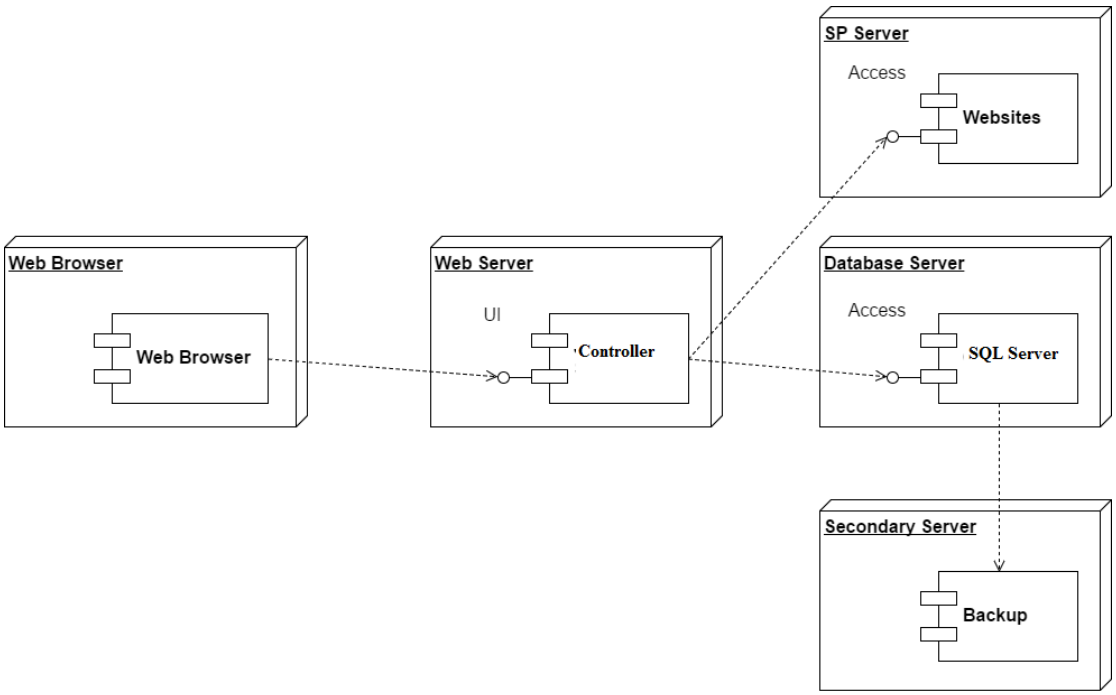


Figure 4.7 Deployment Diagram

4.10 ER DIAGRAM:

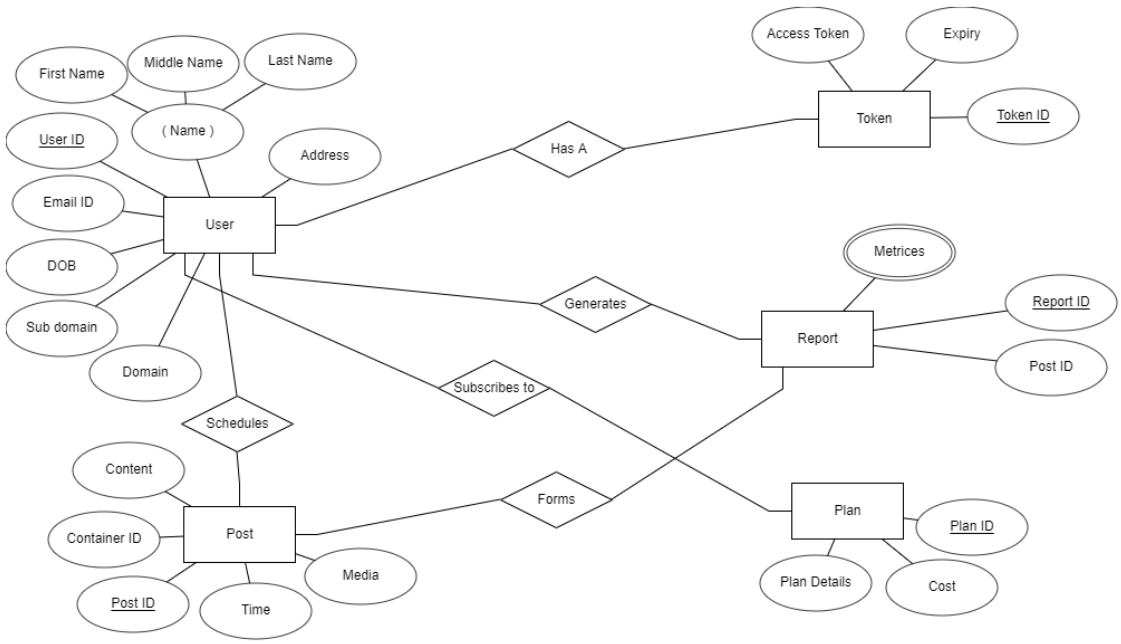


Figure 4.8 ER Diagram

CHAPTER5: SYSTEM DESIGN

SYSTEM DESIGN

5.1 DATA DICTONARY:

- ObjectID: Facebook object id
- UserID: Facebook User id
- Page Access Token: page access secret key.
- Validity: Validity of page access token.
- post_impressions: The number of times your Page's post entered a person's screen. Posts include statuses, photos, links, videos and more.
- post_engaged_users: The number of people who clicked anywhere in your posts.
- post_engaged_fan: People who have liked your Page and engaged with your post.
- post_clicks: The number of times people clicked on anywhere in your posts without generating a story.
- post_reactions_by_type_total: Total post reactions by type.
- post_comment: A comment can be made on various types of content on Facebook. Most Graph API nodes have a /comments edge that lists all the comments on that object. The /{comment-id} node returns a single comment.

5.2 SCREEN LAYOUTS:

5.2.1 SIGN UP:

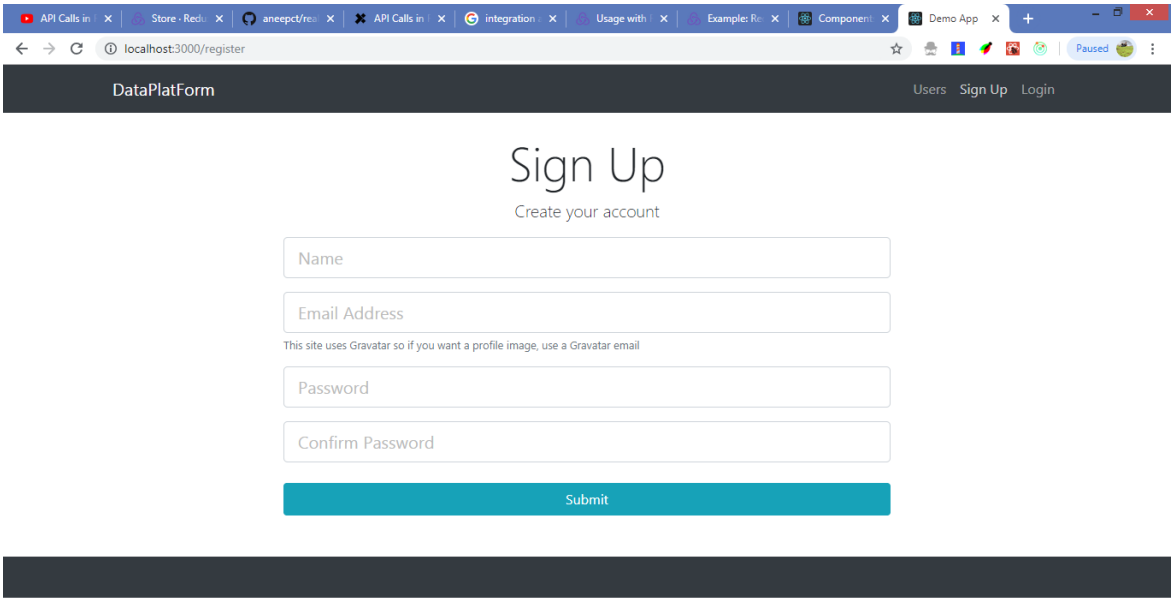


Figure 5.1 sign up

5.2.2 LOGIN:

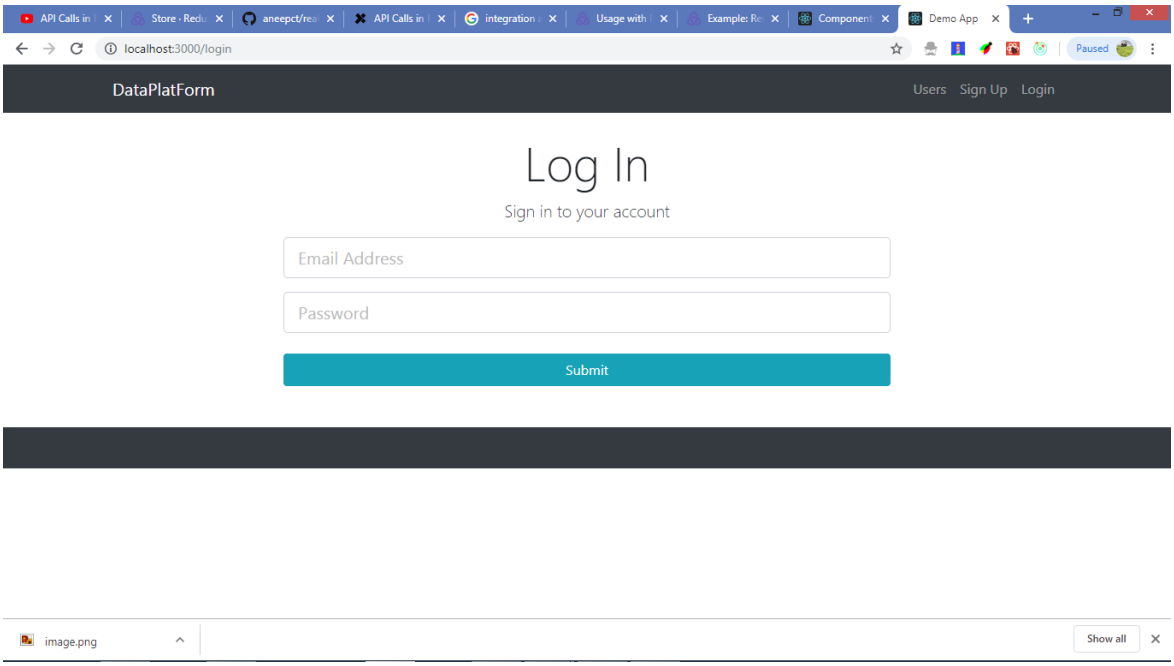


Figure 5.2 login

5.2.3 DASHBOARD:

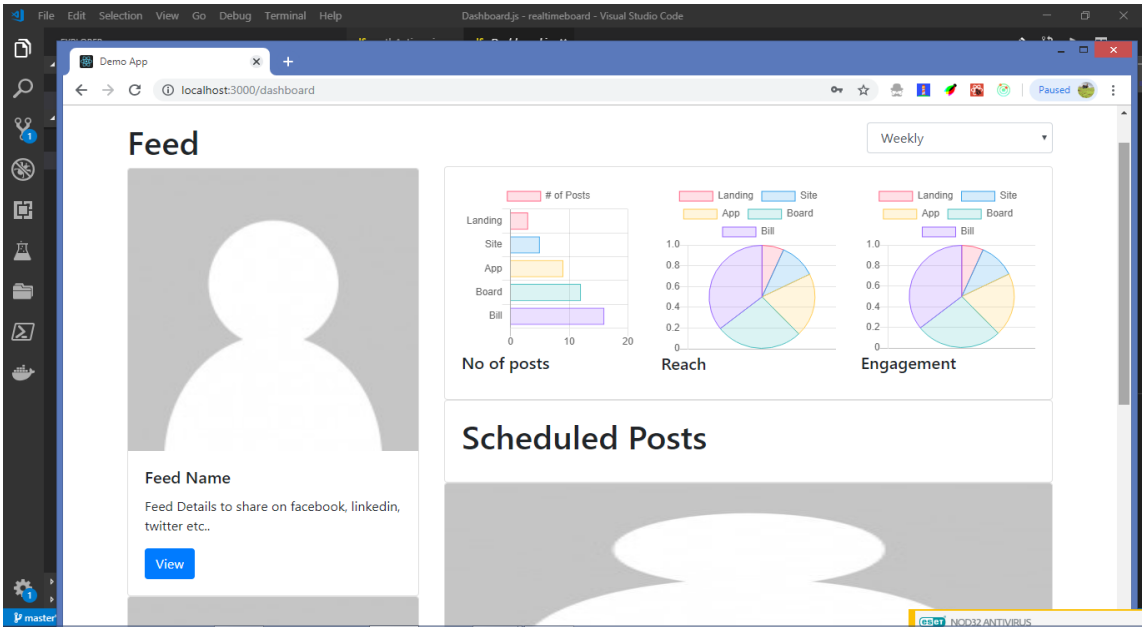


Figure 5.3 Dashboard

5.2.4 ANALYTICS:

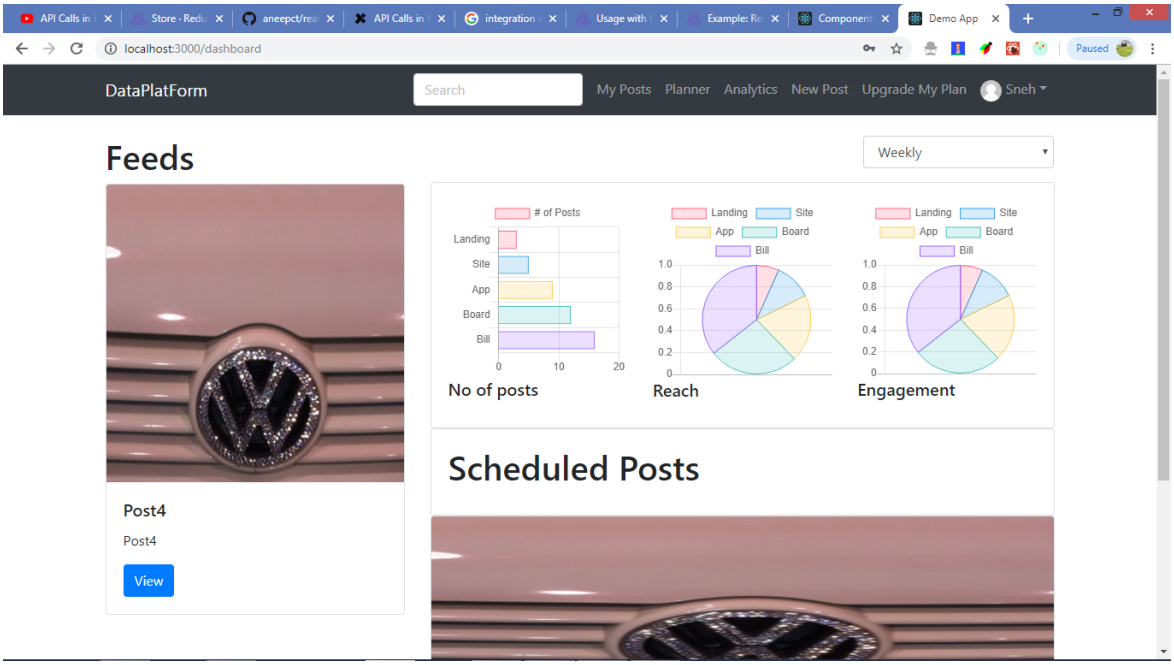


Figure 5.4 analysis

5.2.5 SCHEDULAR:

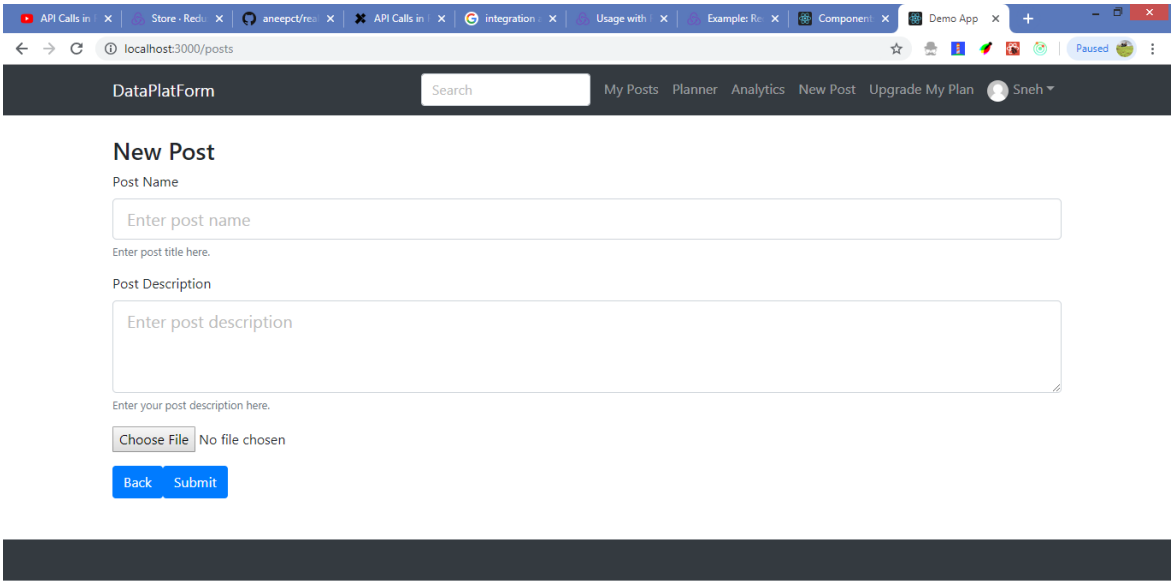


Figure 5.5 schedular

Output:

Figure 5.6 schedular output

5.5.6 PRICING:

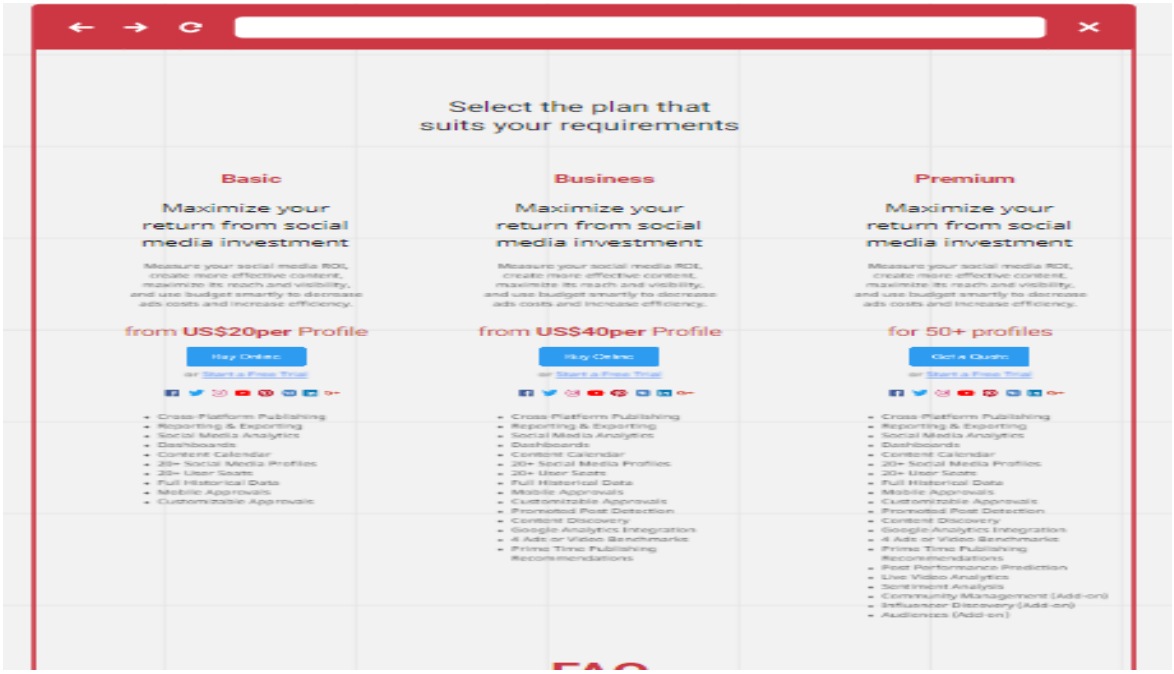


Figure 5.7 pricing

CHAPTER6: IMPLEMENTATION AND TESTING

IMPLEMENTATION PLANNING

6.1 CODING STANDARDS

- Coding Standards contribute to an improved comprehension of source code. Perhaps one of the most influential aids to understanding the logical flow of an application is how the various elements of the application are named. A name should tell "what" rather than "how." By avoiding names that expose the underlying implementation, which can change, you preserve a layer of abstraction that simplifies the complexity.
- Naming Conventions make programs more understandable by making them easier to read. They can also give information about the function of the identifier – for example, whether it's a constant, class, etc. which can be helpful in understanding the code.
- Reasons for using the coding standards are
  - Uniform distribution
  - Sound understanding
  - Encourages Good programming skills.

```go
package main

import (
    "fmt"

    fb "github.com/huandu/facebook"
)

func main() {
    res, err := fb.Get("/827325840733010_1526620994136821/likes", fb.Params{
        "summary":      "total_count",
        "access_token": "EAAhGGEWRwIcBAIHl8g0j0tPfMTuVnemBa9U6jDPjws0Ok2TECvoWASSp3qKKam983XZBsggOAfGogHvl3HZAohCDqWRnF\
    if err != nil {
        fmt.Println(err.Error())
    } else {
        fmt.Println("Here is my Facebook first name:", res["summary"])
    }
}
```

Figure 6.1 Code snippet

- As better code management and better code quality is the major point to be considered the best editor to use is Visual Studio Code. The main benefits of using visual studio code is the extensions provided by the visual studio market place like path intelligence, Live server, CSS Geek which makes writing code easier and flexible. For hosting the websites we use surge.sh.

- For initial testing and learning, tools from Facebook such as Graph API explorer and other tools like Postman have been used to get a better idea and for ease of use.

- The program is like we are supposed to create components in Angular like Referral page component, Login page component, Signup page component. Theses all components are in one module named App and the modules are connected to each other. Further we have Authentication Module that is responsible for the Authentication of the user that is logged in and uses JWT token authentication to store the data of the user based on the token.

6.2 TESTING METHODS:

- The objective of the system testing is to ensure that all individual programs are working as expected, that the programs link together to meet the requirements specified and ensure that the computer system and the associated clerical and other procedures work together. Systems are not designed as entire systems but they are tested as single system. The analyst must perform both unit and system testing.
- Different types of testing methods are available. We have tested our system for different aspects like Does the application meet the goals for which it has been designed? This was a very important question that stood before us as the application was designed to be implemented on such a large network.
- To fulfil its goal of being able to run on different system we went through a series of test at different places where this is supported to be used the most. As we need to make our system efficient enough, we need to test it thoroughly.
- Finally we tested the system with the real-time data, for which it is actually designed. We are almost successful in satisfying our needs as it was designed according to their requirements. But it is very necessary to maintain this application and so our work is not still over.

6.2.1 BACK-BOX AND WHITE-BOX TESTING:

- In black-box testing a software item is viewed as a black box, without knowledge of its internal structure or behaviour. Possible input conditions, based on the specifications (and possible sequences of input conditions), are presented as test cases.
- In white-box testing knowledge of internal structure and logic is exploited. Test cases are presented such that possible paths of control flow through the software item are traced. Hence more defects than black-box testing are likely to be found.
- The disadvantages are that exhaustive path testing is infeasible and the logic might not conform to specification. Instrumentation techniques can be used to determine the structural system coverage in white box testing. For this purpose tools or compilers that can insert test probes into the programs can be used.

6.2.2 CODE COVERAGE:

- The way to make sure that you have got all the control flow covered is to cover all the paths in the program during the testing (via white-box testing). This implies that both branches are exercised for an ‘if’ statement, all branches are exercised for a case statement, the loop is taken once or multiple times as well as ignored for a while statement, and all components of complicated logical expressions are exercised. This is called Path Testing. Branch Testing reports whether entire Boolean expression tested in control structures evaluated to both true and false.

- Additionally it includes coverage of switch statement cases, exception handlers and interrupts handlers. Path testing includes branch testing as it considers all possible combination of individual branch conditions. A simpler version is Statement Testing which determines if each statement in the program has been executed at least once. The coverage via Path Testing includes the coverage via Statement Testing.

6.3 TEST CASES:

No.	PURPOSE	INPUT	EXPECTED OUTPUT	OUTPUT	RESULT	REMARKS
1	Login	User Name and Password	User Homepage	Invalid User name and Password	Pass	User name and Password must be correct
	Login	Invalid User details	Failure due to invalid details	Same page showing	Pass	
2	Sign up	Valid Email ID and Password	Home page	Home Page	Pass	
		Invalid Email ID and Password	Failure due to invalid details	Registration page	pass	
	Google Login	Click on the Google button	Page to accept the requested permissions	Page to accept the terms and conditions	Pass	Valid access token and request parameters
3	Facebook login	Click on the Facebook login button	Page to accept the requested permissions	Page to accept the requested permission	Pass	Valid access token and request parameters
4	Schedule Post	Provide valid media, Time, date and content	The database is updated	Valid details in DB	Pass	
5	Generate Report	Select the metrices	Report is generated	Report details in the DB	Pass	

CHAPTER7: FUTURE ENHANCEMENT

FUTURE ENHANCEMENTS

6.4 LIMITATIONS OF THE SYSTEM:

- The system is still growing so some of the features are yet to be added.
- The system is not integrated with a payment gateway
- The frontend integration is still in progress

6.5 FUTURE ENHANCEMENTS:

- Searching for influencers will be added in future
- Payment gateway integration will be done in the future
- Features like search via Hashtags will be added in future.

CHAPTER8: CONCLUSION

CONCLUSION

8.0 CONCLUSION:

- Every project work, doesn't matter software project or any other project, could not be the result of sole effort. We think that the success of any project doesn't depend only on better software development skills but also, zeal to listen and help the users. We experienced that developing this software helped enhance our technical skills of programming. This Application is a good tool for user to user buying books.

8.1 Self-Analysis of Project Viabilities:

- According to me, this projected is completed with the primary functionalities as specified earlier but then again there is lot more than this which can be done. The project is well capable to handle the given job for some particular task but not all of them. So then it is a challenge to further develop it in to a well flagged software as it was challenge to develop up to this very stage.

8.2 Problems Encountered and Possible Solutions:

- There are so many problems encountered during this project.
    - The problem to maintain threshold.
    - The problem to maintain back end service.

8.3 Summary of Project Work:

- It is a great achievement to successfully complete the project. The prior knowledge of software engineering has helped immensely in overcoming the various roadblocks. We have done work with pre-planned scheduling related with time constraints and result oriented progress in project development.

REFERENCES

Web resources

- www.github.com
- www.stackoverflow.com
- www.gowebprogramming.com
- Reactjs.org
- Redux.org

Communities

- Gopher's slack community
- Facebook's group of Go Developers
- Reactiflux – React and Redux developers community
- Codementorx- React and Redux developers are available for help