



**PROJECT PROPOSAL
SEMESTER 10**

PAHLAWAN TAMAN

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**This report is prepared to fulfil the requirement of
CPP401 Final Project**

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DISCLAIMER

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ABSTRACT

Pahlawan Taman is a platform specifically made for public parks in Indonesia. The platform is aimed to raise people awareness on public parks and provides convenience when choosing public parks as their place of destination.

The insight that leads to this development of this platform is, numerous sources and news in Indonesia regarding declining visitors rate for public parks and many public parks needed to be revitalized which cost a lot of money, the revitalization is necessary because public parks are no longer considered to be the interest of Indonesian people when choosing their destination.

The development of the platform is chosen to prove a theory that online digital platform will continually raises people awareness of the platform's targeted point. The features that are available for the Pahlawan Taman platform are also carefully selected and implemented in order for the platform to meet its goal.

One of the features is to find a nearby public park according to user's current location in order to provide convenience when locating a public park. This feature is made possible thanks to geographic API provided by Google Maps.

Another feature that is expected to spread and increase people awareness of public parks is the reward system. The reward system will give the platform's users a contribution point for every contribution they make. The contributions in this platform are uploading a park, cleaning a park, creating an event, and joining an event. The point then can be publicly shown off in the platform's homepage called 'hall of fame'. This kind of royalty systems is believed to encourage users to keep using the platform which ultimately increase their awareness of the platform's targeted point, public parks.

TABLE OF CONTENT

DISCLAIMER	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
LIST OF FIGURES	vi
LIST OF TABLES	viii
1 INTRODUCTION	1
1.1 Problem Statement.....	2
1.2 Objectives.....	2
1.3 Scope	2
1.4 Target User	2
1.5 Project Timeline.....	3
2 LITERATURE REVIEW	4
2.1 Introduction.....	4
2.2 Review on the Existing System	6
2.2.1 Exist 1	6
2.2.2 Exist 2.....	8
2.2.3 Comparison with Pahlawan Taman Platform	10
3 SYSTEM ANALYSIS	14
3.1 System Development Process	15
3.1.1 Project Planning and Oversight	15
3.1.2 System Requirement Analysis.....	16
3.2 System Modelling	23
3.2.1 Process Modelling	23
3.2.2 Logical Modelling.....	24
3.2.3 Data Modelling.....	27
4 SYSTEM DESIGN	28
4.1 Design Forms and Reports	29

5	IMPLEMENTATION AND TESTING	36
5.1	Testing and Documentation	38
6	CONCLUSION	40
6.1	Problem Faced During Implementation.....	40
6.2	System Strengths and Limitation.....	40
6.3	Future Enhancement	41
	REFERENCES	42
	APPENDIX.....	45

LIST OF FIGURES

Figure 1.1: Gant chart of project timeline	5
Figure 2.1: Google Maps place's popular time report	7
Figure 2.2: Traveloka location details page	8
Figure 2.3: Traveloka location details page (2)	9
Figure 2.4: Project system life cycle	12
Figure 3.1: Pahlawan Taman General Support diagram	23
Figure 3.2: DFD Level 0	23
Figure 3.3: DFD Level 1	24
Figure 3.4: Park Browsing Flowchart	24
Figure 3.5: Park Creation Flowchart	25
Figure 3.6: Event Creation Flowchart	25
Figure 3.7: Event Flowchart	26
Figure 3.8: Park Review Flowchart	26
Figure 3.9: Pahlawan Taman ERD	28
Figure 4.1: Pahlawan Taman Homepage Hero	29
Figure 4.2: Pahlawan Taman Login Dialog	29
Figure 4.3: Pahlawan Taman Signup Dialog	30
Figure 4.4: Pahlawan Taman Authenticated State UI Changes	30
Figure 4.5: Pahlawan Taman Homepage Park Tab.....	31
Figure 4.6: Pahlawan Taman Homepage Event Tab	31
Figure 4.7: Pahlawan Taman Hall of Fame	32
Figure 4.8: Pahlawan Taman Upload Park Contribution Page	32
Figure 4.9: Pahlawan Taman Clean a Park Contribution Page	33
Figure 4.10: Pahlawan Taman Create event Contribution Page	33
Figure 4.11: Pahlawan Taman Park Detail Hero	34
Figure 4.12: Pahlawan Taman Park Detail Event and Review Section	34

Figure 4.13: Pahlawan Taman Review Dialog	35
Figure 4.14: Pahlawan Taman Event Detail Page	35
Figure 5.1: Pahlawan Taman's Agile Board	36
Figure 5.2: Pahlawan Taman's Database Schema	37
Figure 5.3: Pahlawan Taman's Implemented Hero Section	37
Figure 5.4: Pahlawan Taman's Park Detail Page	37
Figure 5.5: Pahlawan Taman's Park Detail Page (2)	38
Figure 5.6: Pahlawan Taman's Recent Park/Event Tab	38
Figure 5.7: Pahlawan Taman's Event Detail Page	38
Figure 5.8: Pahlawan Taman's Hall of Fame	39
Figure 5.9: Pahlawan Taman's Reward System Unit Test	39
Figure 5.10: Pahlawan Taman's Unit Test Result	40
Figure A.1: Interview documentary photo 1	45
Figure A.2: Interview documentary photo 2	45
Figure A.3: Interview documentary photo 3	45

LIST OF TABLES

Table 2.1: Platform Comparison Table 10

Table 3.1: Concept Brief Table 22

CHAPTER 1

INTRODUCTION

Public Park is one of the places of destination for everyone ranging from child to adults doing various activities such as socializing, playing, or working. In Indonesia, public parks are scattered across the country. In Depok itself (a city in Indonesia), there are 65 parks those are accessible by public (Vika, 2022).

The problem for these local parks is, there are not many visitors for the parks. Reasons for this problem can be the fact that, public park is no longer an interest for Indonesian citizen due to other popular destination choices like cafés, malls, or restaurants. Another possible reason is local parks are just simply not known or invisible for Indonesian citizen.

In this information age, everything can be gathered using search engine on the Internet. This is not limited to searching for places of destination, one can search using various queries to get a list of places within their fingertips.

The effect of this on local parks is, search engines tend to show places with high popularity or high demand which are usually malls, cafés, or restaurants. This makes local parks not to be the first choice of destination for people, as it is rarely showed up as a suggestion in search engines.

Even though search engines will show a local park if one queried by the name or specific query related to local parks, the information presented is not detailed enough. Think of this like a travel/hotel finder platform that shows the hotel's detailed facility for the users, and this is not the case for local parks. Though this is acceptable as search engine is not specifically made for local parks.

The presented solution is to create a platform specifically made for local parks in Indonesia. The features of this platform are aimed to overcome the mentioned problem, the first and foremost is to show nearby local parks according to user location and providing them a detailed information regarding the park like its location, reviews, facilities such as bathroom, mosque, wi-fi, and street food vendor.

The platform also provides a way to engage user even more to play at parks. By providing a reward system for any contributions that user makes to a park or to the platform such as uploading a park, cleaning a park, reviewing a park, and signing up/creating an event at a park.

1.1 Problem Statement

Nowadays, public parks are losing its popularity and visitors compared to other popular places like cafés, malls, or restaurants. The cause can be less of people awareness in regard to public parks. This digital era also plays role in this problem, in this digital era, every information can be gathered through the Internet, especially search engine. The problem is, public parks themselves are not very popular in search engine due to less popularity compared to other public places, which causes the search engines tend to not shows public parks as a suggestion for people's destination, and it is also the provided information regarding public parks is not very detailed and minimal.

When searching for destination, people tend to want to know the full details of the destination like its reviews, facilities, and features. However, these details are not present in the search result. And compared to other places like cafés or restaurants there are numerous platforms that provided these details like Zomato and Swiggy, while there are not any platforms that does the same for public parks.

1.2 Objectives

The project develops the platform for public local park in Indonesia which aims to provide convenience for Indonesian citizen to find nearby local parks around them, get full details regarding the park like its facility, location, and reviews. This platform also aims to encourage and increase Indonesian citizen awareness of local park in Indonesia by providing a reward system in the platform that aims to encourage the users to do activities in parks even more.

1.3 Scope

The project's platform will provide convenience for every Indonesian citizen to find nearby local parks its details. The project also provides an ability to create a public event at a park which will be beneficial for those parks' artist and street performer who regularly perform their talent at parks.

1.4 Target User

This project contains only 1 target user, which is Indonesian citizen. These users will be called 'park heroes' as by using the platform they are contributing to local parks by playing, cleaning, uploading, and creating/joining an event at a park. These features will all be available to every user as there is no user role separation to eliminate user experience complication on signing up and using the platform in general.

1.5 Project Timeline

Figure 1.1 shows Gantt chart of this project timeline.

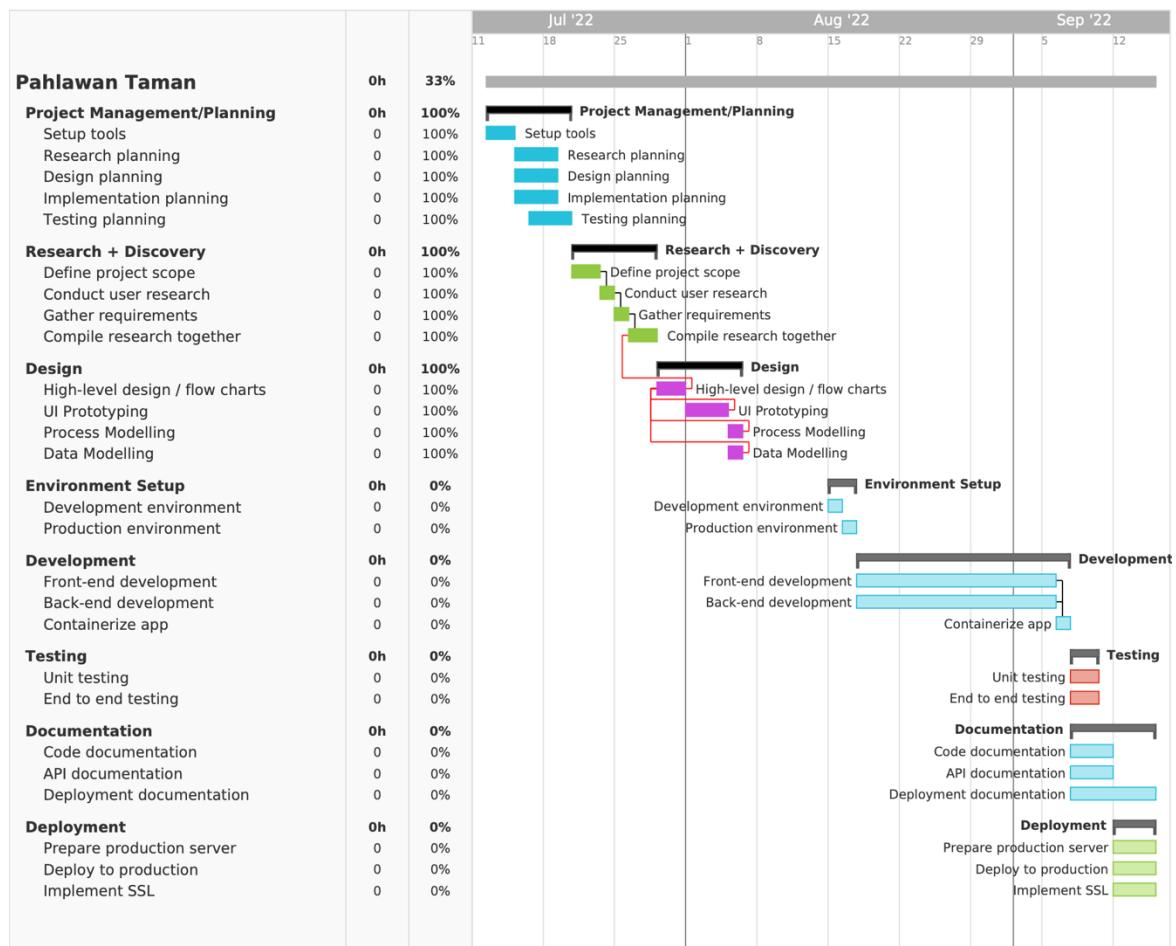


Figure 1.1: Gantt chart of project timeline

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Public parks in Indonesia are numerous and scattered across the country. In the capital city of Indonesia (Jakarta) itself, there are 2166 public parks (katadata, 2017). The problem does not lie with the number of public parks itself, in fact the number of public parks in Indonesia can be categorized as many.

Instead, the problem lies with the number of visitors for those parks. The visitors for public parks in Indonesia have been declining. As an example, a used to be famous local park in Bali, needs to be revitalized as currently the park can be seen to have no visitors at all in a day. When it was famous, it could have 3 thousand visitors but according to the park's authority, as of right now, the park can be seen to have no visitors at all (Divianta, 2022). Another example is Taman Nasional Komodo Indonesia which has declining visitors rate in 2021 for 76% (Kusnandar, 2021). There are still many other examples of declining visitors rate for Indonesian local parks. And it can be concluded that local parks in Indonesia does no longer have as many visitors as how it used to be. Or it can be said that local parks are no longer an interest or a popular choice of destination for Indonesian people.

Though the reason causing this problem can be many, through interviews that the writer has done, it can be concluded that one reasoning of this problem is the lack of people awareness regarding local parks. 2 out of 3 interviewees said that they do not go to the park as they do not know there are nearby parks around them and they do not even think about parks when choosing their place of destination.

Another possible reason is mentioned by one of the interviewees who said in this digital era, people's choice of everything is decided by information found in search engines. The interviewee said, when searching for a place to hang out or work, parks are rarely showed up as a suggestion. The reasoning of this can be the fact that parks are not as popular as other public places like cafés, malls, or restaurants, so the search engines algorithm does not recommend it to people.

This reason can actually be linked to less people awareness of public parks, as awareness means having knowledge of something (definitions, n.d.). And search engines are the source of knowledge and information in this digital era, and for them to rarely shows up parks as

suggestions causes people to not have knowledge on public parks which leads to less people awareness.

The solution to combat less awareness of public parks is to create a platform specifically made for parks. Creating a platform is believed to be the solution as online platform is proven to raise people awareness on the platform's specific target (Jena et al., 2020).

Though there exist multiple platforms those are similar, none of them provides enough information or features for local parks. Example of these platforms are Google Maps and Waze which provides information such as its location and reviews but none of the details and facilities that a park might have.

The details and facilities are a crucial criterion for people when selecting their destination. Just take an example when choosing a restaurant online. When choosing, people tend to want to know the menu and the food prices. This does not too dissimilar with public places like parks, when choosing public places its facilities like bathroom, access of foods, and place of prayer becomes an important consideration for them. The presented platform will provide this information for users.

Another crucial criterion when choosing public places is activities. A source claim that what makes a public place great is to have more activities that enables people to have an opportunity to participate (Arch Daily, 2020). As a way to implement this, the platform will provide a feature for people to create and join activities/events in a park. This feature is aimed more to street performers and park artists who regularly performs their talent at parks. By implementing this feature, people will have activities to choose from in a park.

And to keep the user engaged on using the platform and playing in a park, the platform implements a reward system that gives point to every "contribution" made to the platform or parks. These contributions are uploading a park, cleaning a park, playing in a park, and joining/creating an event in a park. These contributions will reward an achievement and point that can be used to be shown off to other users that is believed to encourage people to keep using the platform and to play in parks.

In conclusion, declining visitors rate for Indonesian local parks has been occurring, and one of the possible reasons is caused by less people awareness of public parks. The presented solution for the problem is to create an online platform specifically made for local parks as online platform is proven to raise people awareness. Not only the platform will increase people awareness, but it also aims to increase convenience when choosing local parks by providing necessary information that a park might have, like its facilities, activities/events, and features.

The platform also implements a reward system to keep the user engagement of playing in a park and using the platform.

2.2 Review on the Existing System

Upon searching for existing systems, the writer could not find any identical platform/system, or at least one that is enough to be said to tackle the same problem. The closest systems are maps or navigation apps like Waze and Google Chrome which provides ability to search for public places like parks by providing its location, photos, and reviews but none of them provides specific features necessary for parks like its details, facilities, and events.

Travel platforms like Agoda, Traveloka, or Trivago are usually focused on places that requires a payment or ticket to enter. Places like these are usually owned by private organizations or companies and cannot be equated with public parks which belongs to federal, state, or municipal governments which should not require payment or ticket to enter as it counts as public facilities (TCLF, n.d.).

In this paper, the writer is going to compare the project's platform with one of each system categories explained above, they are Google Maps and Traveloka which evaluated to be the most similar to the project's platform.

2.2.1 Exist 1

Existing System 1 – [Google Maps](#)

Google maps is one of the most popular navigation/maps app. This system provides feature to search for public places like parks. The information provided by Google Maps for parks are useful, it provides the park's photo, reviews, location, and operating hour. Though it is missing some necessary information like park's facilities, details, and events, Google Maps remains a great system to find nearby public parks. On that note, Google Maps also has several limitations, here are the advantages and disadvantages of Google Maps in terms of public parks:

A. Advantages

- a) Provides numerous public parks

Google Maps is if not the most popular maps app in Indonesia. Upon using Google Maps, it provides numerous public parks. The way this system works is similar to the project's platform, it is by enabling user to upload a park to the platform. Obviously,

Google Maps has been around for a long time, and there are already a lot of public parks that were uploaded to Google Maps.

- b) Provides advanced features/information in regard to park's popularity

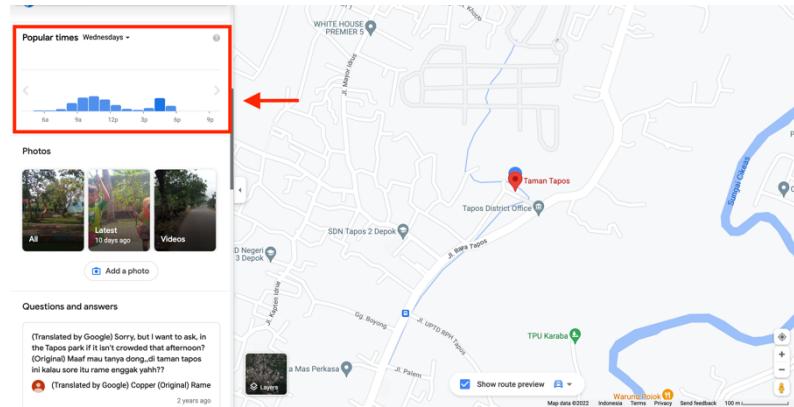


Figure 2.1: Google Maps place's popular time report

In Google Maps, one can see if a public park is currently crowded or not. People also can see the popular time for a public park to be crowded. This can be beneficial in regard to activities at the park.

- c) Provides numerous collaboration/community features

In Google Maps, people can change or issue a report if there is a mistake to a park's information. For example, if a submitted park has a wrong address, one can issue a change for the correct park's address and the change will be implemented after it's been reviewed. Another community feature is, Google Maps provides review system for parks, and it also provides QnA system for anyone to ask and answer a question regarding a park or other places.

B. Disadvantages

- a) Necessary information is not provided

Google Maps is not specifically designed for public parks, so its design and input aim for more general public place information. The necessary information missing is park's facilities, details, and events.

- b) Cannot make contribution to a park/place

Comparing Google Maps to presented platform solution, Google Maps does not have a feature to make contribution to a park such as creating an event, cleaning a park, or checking in at a park. Though it is to be expected as Google Maps is not specifically made for parks but all public places.

2.2.2 Exist 2

Existing System 2 – [Traveloka](#)

Traveloka is an Indonesian startup company that provides travel agent services (Travelling platform). The platform provides various services from hotel, plane tickets, taxi, car rental, and public attractions.

Diving deeper into the platform, the writer found that Traveloka and other travelling platforms cannot be said to be the same as the presented project's platform. This is due to these travelling platform systems that usually provides only public places with entrance tickets. This is different from the project's public park definition which belongs to the government and does not require entrance ticket or any other sort of payment to enter as it categorized as public facilities. But still, the features of these travelling platform especially Traveloka is similar with the project's platform, here are its advantages and disadvantages:

A. Advantages

- a) Provides good information details regarding a public place

When it comes to provided information by Traveloka, it answers concerns mentioned earlier when choosing a public place. The information provided is comprehensive and useful when choosing a public place, the included information includes the place's

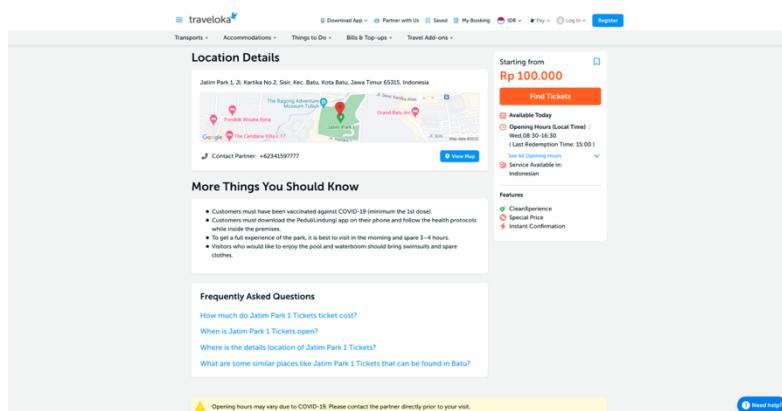


Figure 2.2: Traveloka location details page

facilities, location, opening hour, contact number, and even information to get the best experience when visiting the place.

b) Official and authorized places

Unlike Google Maps and the presented project's platform, every public places in Traveloka are uploaded officially by the owner or person responsible of the place ensuring officiality and eliminating fraud and deception.

B. Disadvantages

a) There are no public parks

The ultimate point of Traveloka is to provides services to its customers by selling tickets or other services. Public parks are owned by the government and does not require any entrance ticket, hence why public parks are not listed as Traveloka's list of places.

b) Complex UI/UX

Because Traveloka focuses not only on public places, the UI/UX can get complex at times. Though the provided information is great, the presentation can be confusing for new users as the page can be pretty crowded with text and has little sense of separation for each section.

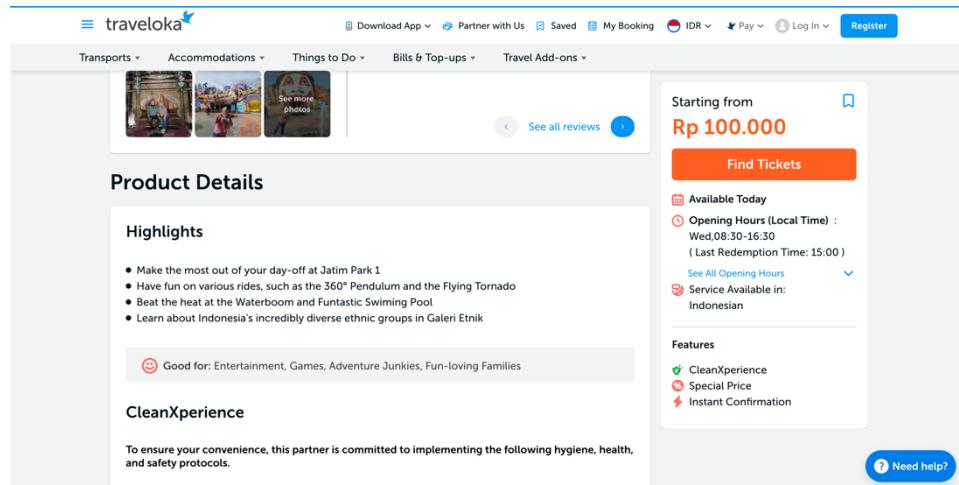


Figure 2.3: Traveloka location details page (2)

2.2.3 Comparison with Pahlawan Taman Platform

Table 2.1: Platform comparison table

Factors	Google Maps	Traveloka	Pahlawan Taman
System Classification	Navigation/maps	Service-oriented platform	Utility platform
Focuses on	Navigation	Travel agency service	Public parks
Data source	Satellite imagery, geological survey, user input for public places	Official authorized user input	User input
Sufficient data (public parks provided)	Yes, includes many public parks and other public places	Does not include public parks	Will only include public parks
Provided information regarding public parks	Photos, operating hour, location, reviews, contact info, QnA	Photos, operating hour, location, reviews, contact info, description, features, facilities, FAQ	Photos, location, reviews, features, facilities, events, park hygiene status
Userbase	Huge userbase, from around the world	Userbase from around Asia, but focuses on Indonesia	Will only focus on Indonesian userbase
Is information provided sufficient enough for public parks?	Lacks crucial information such as park's features and facilities	Place listing does not include public parks, but if there were any, it would be sufficient	Yes, the platform is specialized for public parks. The provided information will be supplied according to research result.

1) Requirements and constraints on the system to be developed

Requirements:

- Rest API Service (Express JS)
- Front-end Service (Nuxt JS)
- Database (MongoDB)
- Geographic API

Constraints:

- Geographic API may not provide information for needed use case

2) Requirements and constraints on project documentation

Requirements:

- Project proposal
- System modelling diagram (Process, logical, and data modelling)
- User form input design
- Code documentation
- API documentation
- Deployment documentation

Constraints:

- Code documentation for API service might depend on the geographical API that continuously need to be monitored
- The proposed data modelling might not be accurate to the real database design, as the database used is NoSQL database.

3) Position of the project in the system life cycle

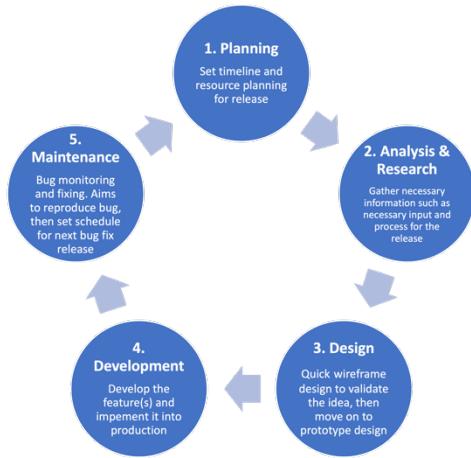


Figure 2.4: Project system life cycle

4) The selected program/acquisition strategy or any requirements or constraints on it

Requirements:

- NuxtJS (Front-end framework, SSR is needed to enhance platform's SEO)
- Express JS (Framework for rest API service)
- MongoDB (NoSQL database)
- Google Maps API
- VPS

Constraints:

- Google Maps API might not provide features/information needed for the platform

5) Requirements and constraints on project schedules and resources

Requirements:

- Able to deliver the project in set time constraints

Constraints:

- The project might need expensive maintenance and running cost in the future if the project grows huge userbase, the cost is needed to enhance to more resourceful VPS.

- 6) Other requirements and constraints, such as on project security, privacy, methods, standards, interdependencies in hardware and multimedia development

Requirements and standards:

- Implement JWT standard for authenticating with the rest API
- Encrypt user's password
- Handle/put user file upload to CDN instead of VPS to avoid data loss
- Use reverse proxy to enable advanced use case such as port protection, caching, monitoring network request to the services (front-end, back-end)
- Disable the API from being requested from external network other than the front-end service through reverse proxy
- Implement SSL to enhance secure connection between the user and the platform

Constraints:

- The VPS, services, and reverse proxy scheme may get very complex considering the project's time constraints
- The CDN resource might need bigger storage in the future that will make the project's cost more expensive

CHAPTER 3

SYSTEM ANALYSIS

This project is heavily dependent on theories found in research phase. Those theories are converted into features that will be implemented on the platform which ultimately leads to the main goal which is to improve people's awareness of public parks. Because of those features and theories are working side by side, and there are many, the writer has chosen agile as an approach to software development methodology. The conversion of theories into features are not done directly, instead they are analyzed first bits by bits and turned into a specification which leads to high-level design software like flowchart, DFD, etc. Such technique is called structured system analysis and is used by the writer to convert those theories into features.

Agile enables development of the platform to be continuous or incremental through small bits of releases (Wrike, n.d.). This corresponds to the found theories which all of it are unique and aims to solve different kind of problem. For example, the planned reward system is going to be implemented based on theory that users will have emotional connection with the platform that leads to loyalty to the platform (Rocket Marketing Group, 2022). The way this theory is going to be converted into a feature is by analyzing it, first the writer should understand the theory thoroughly and then analyze its input, process, and output, usually the writer document this into high level-level design system like flowcharts, this is also an example of structured system analysis methods.

As can be seen, this theory is turned into a feature, so called reward system feature. And this feature might not correlate to other feature and its development can be independent. By using agile, one can prioritize the development of this feature and at the end of the development can review if the feature really solves the intended problem.

This is where the feature and theory work side by side, if the feature has been reviewed to be not effective by looking at the theory behind it, then the development of the feature should be done in different approach by probably looking for other theories. This means the development of the feature goes back to step 1, and this is made possible by using agile method as the method specify development of a release can go back to 1 if it is evaluated not to be efficient.

In conclusion, the writer uses agile as an approach to software development methodology and uses structured system analysis to turn theories into features. Agile as a methodology for software development enables the writer to incrementally add features to the platform by

carefully reviewing it based on the theory, while structured system analysis enables the writer to convert those basic theories into a specification or high-level design system for easier development.

3.1 System Development Process

3.1.1 Project Planning and Oversight

This project heavily uses theory to solve a problem. The defined problem for this project is lack of people awareness regarding public parks.

The gathered theory to solve this problem is to create an online platform specialized for public parks, as online platform is proven to have raised people awareness in regard to the platform's targeted point (Jena et al., 2020).

To validate the theory even more, the writer did several interviews asking and evaluating people awareness of public parks. It can be said that 2 out of 3 interviewees lack awareness of public parks.

The writer also presented the solution with a prototype of the platform, here the writer asked about the usefulness of the platform to raise people awareness of public parks. 3 out of 3 interviewees responded positively with couple of distinct suggestion for the idea and the platform.

These suggestions are definitely an oversight for the project. The first important suggestion is that the use of search engines play roles in deciding which public place to visit for people. This is a great oversight and might be tackled by the platform if its big enough to have a great SEO rank so that it appears at the top of search engine results. The plan to tackle this problem is to develop the platform with compatible tools that comply with SEO techniques, the writer has decided to use NuxtJS framework as it works well with SEO.

The second suggestion is that, nowadays public parks loses its popularity to other public places like cafés, malls, and others. This could be due to lack facilities and features in public parks. The solution to overcome this oversight might require more action other than just developing the platform.

But as a way to try tackling this problem, the writer has implemented a feature that encourage users to have more awareness of public parks and sharing it with others to raise public parks popularity. The feature is creating and joining events

at parks. The theory behind this is, the more event created in the platform, the more people will tend to know about the platform and joining that event by coming to public parks.

The writer also implements a feature based on a theory that will maintain users loyalty to the platform and keeping their awareness of public parks. The theory is that, a platform that rewards its users for doing any contribution to the platform will retain its users better. To answer this theory, the writer has decided to implement a reward system in the platform.

3.1.2 System Requirement Analysis

A. Analysis of user input

- a) Browse nearby parks

Inputs:

- Park's name
- Pagination number

Processes:

- Query the database with specified filters

Outputs:

- Grid lists consists of parks as a card that contains its name, thumbnail, location, reviews, and hygiene status

- b) Browse for specific park

Inputs:

- Park's slug

Processes:

- Query the database with specified park's slug

Outputs:

- Park detail page consists of its name, photos, location, reviews, hygiene data, facilities, ongoing events, and other similar nearby parks

c) Upload a park

Inputs:

- Park's name
- Park's location
- Park's photos
- Park's facilities

Processes:

- Validate user input
- Check for duplicating park's name
- Save park in the database
- Give rewards point to the user

Outputs:

- Redirected to the homepage
- Increased reward points for the user
- Toast will be shown indicating whether the activity was a success or a failure

d) Review a park

Inputs:

- Rating number
- Review text
- Park's name

Processes:

- Validate user input
- Save review in the database
- Recalculate overall rating for the affected park
- Give rewards point to the user

Outputs:

- Increased reward points for the user
- Toast will be shown indicating whether the activity was a success or a failure

e) Browse nearby events

Inputs:

- Event's name
- Pagination number

Processes:

- Query the database with specified filters

Outputs:

- Grid lists consists of events as a card that contains its title, thumbnail, park location, date, and participant counts

f) Browse for specific event

Inputs:

- Event's slug

Processes:

- Query the database with specified event's slug

Outputs:

- Event detail page consists of its title, description, photos, park location, date, participant lists, and its organizer

g) Upload an event

Inputs:

- Event's title
- Event's description
- Park location
- Event's photos
- Date and time

Processes:

- Validate user input
- Check for duplicating event's title
- Save event in the database
- Give rewards point to the organizer

Outputs:

- Redirected to the homepage
- Increased reward points for the organizer
- Toast will be shown indicating whether the activity was a success or a failure

h) Join an event

Inputs:

- Event's title
- User id through JWT payload

Processes:

- Validate user input
- Save event participant in the database
- Give rewards point to the user

Outputs:

- Redirected to the homepage
- Increased reward points for the user

i) User register

Inputs:

- Username
- User's email
- User's password

Processes:

- Validate user input
- Check for duplicating username and email
- Save user participant in the database
- Encrypt user's password
- Send response payload with JWT token

Outputs:

- Redirected to the homepage
- Saved JWT token in user's browser cookies

j) User login

Inputs:

- User's email

- User's password

Processes:

- Validate user input
- Query user with given email and password
- Decrypt the supplied password to be matched with the one in the database
- Send response payload with JWT token

Outputs:

- Redirected to the homepage
- Saved JWT token in user's browser cookies

k) User photo profile change

Inputs:

- Image file

Processes:

- Validate file size
- Save file image to the CDN
- Modify user's photo field in the db with the file image's name

Outputs:

- Changed photo profile
- Toast will be shown indicating whether the activity was a success or a failure

B. Concept Brief

Table 3.1: Concept brief table

Topic	Awareness of public parks
Objective	Raising Indonesian people awareness of public parks and to help public parks in gaining its popularity
Audience	All Indonesian citizens
Insight	Declining visitors rate for public parks, and some public parks needed to be revitalized as it is evaluated to be not desirable
Strategy	By creating a platform specifically made for public parks in Indonesia, implementing a feature to encourage people to go to public parks more, and providing convenience when finding public parks.

C. System Requirements

- User authentication
- Nearby park finder
- Search feature for parks and events
- User reward system
- User review system for parks
- Event creation for parks
- Event sign up for users
- Support up to 5 photos for events and parks
- Update user profile feature

3.2 System Modelling

General support diagram of Pahlawan Taman platform.

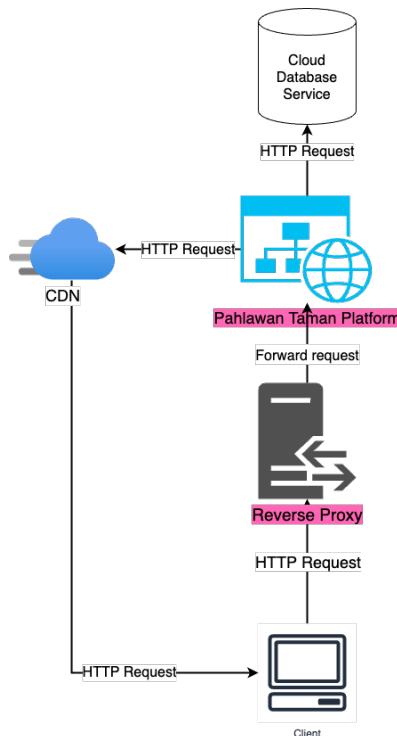


Figure 3.1: Pahlawan Taman General Support diagram

3.2.1 Process Modelling

DFD Level 0

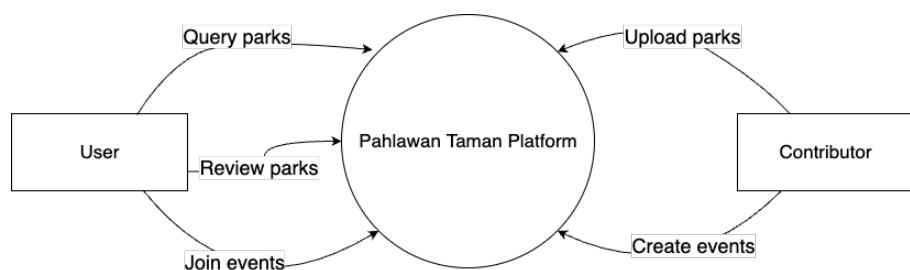


Figure 3.2: DFD Level 0

DFD Level 1

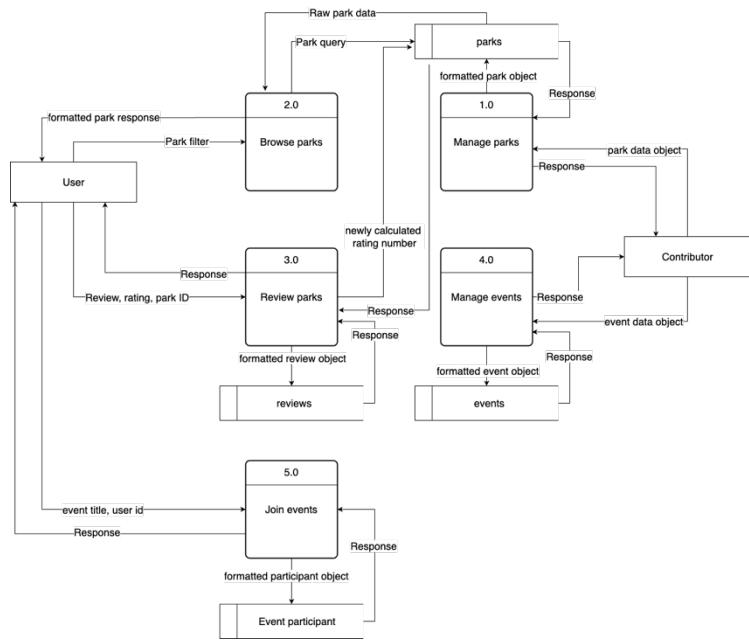


Figure 3.3: DFD Level 1

3.2.2 Logical Modelling

Park browsing flowchart

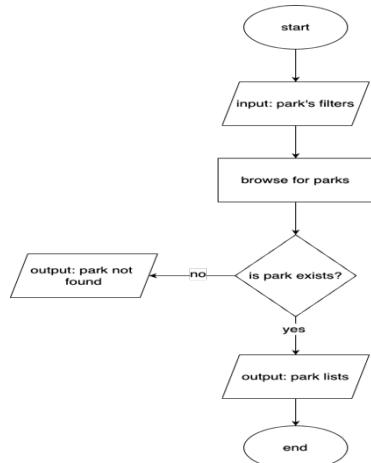


Figure 3.4: Park Browsing Flowchart

Park creation flowchart

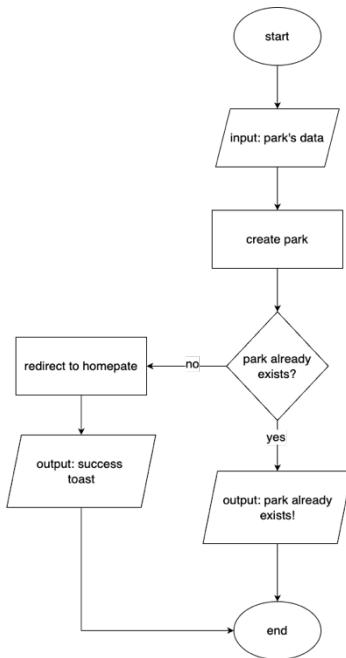


Figure 3.5: Park Creation Flowchart

Event creation flowchart

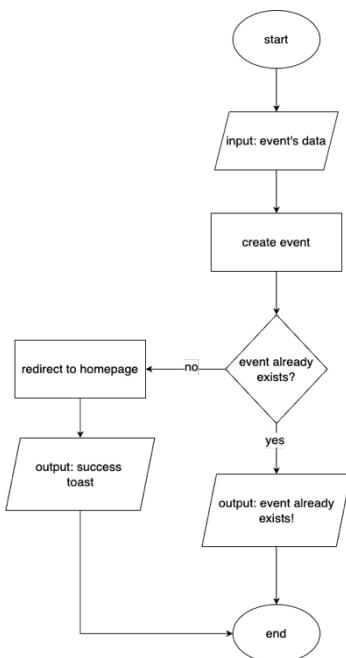


Figure 3.6: Event Creation Flowchart

Event browsing and signing up flowchart

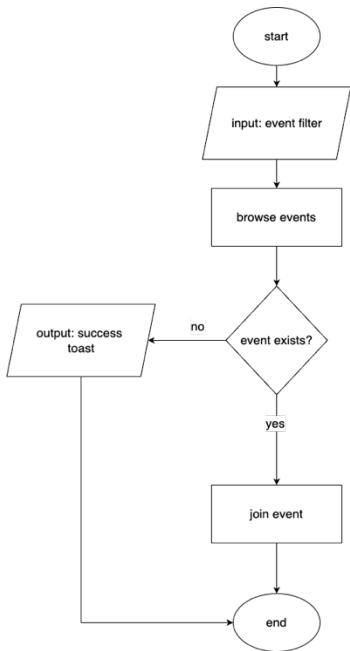


Figure 3.7: Event Flowchart

Add park review flowchart

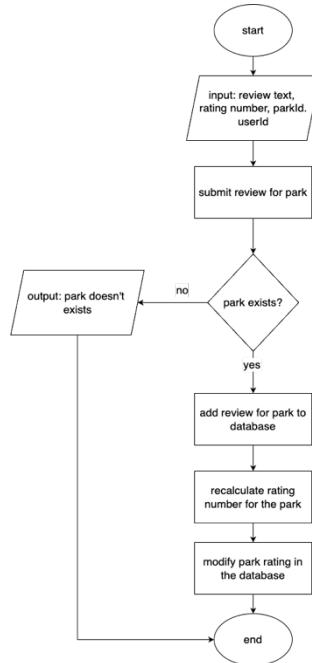


Figure 3.8: Park Review Flowchart

3.2.3 Data Modelling

Pahlawan Taman Platform ERD

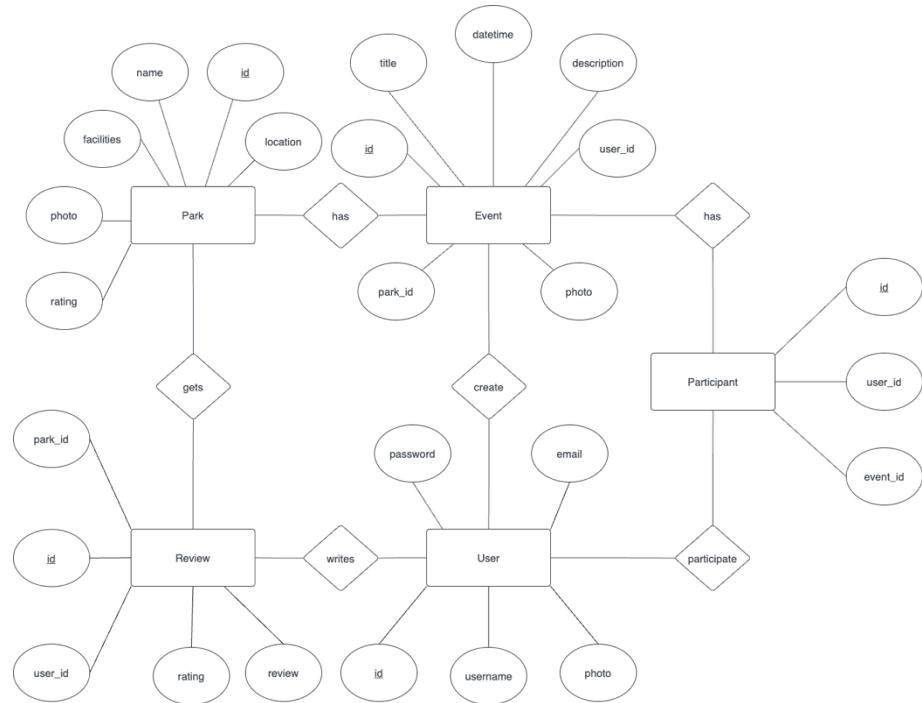


Figure 3.9: Pahlawan Taman's ERD

CHAPTER 4

SYSTEM DESIGN

Pahlawan Taman design aims for interactivity between the platform and the users. The UI design is aimed to adopt ‘fun’ and playful design, this means there will be a lot of animations and transitions to make this possible.

The reason why this is implemented is because interactive, fun, and playful design encourages the users to use the platforms without getting bored. This goes in line with the platform’s goal which is to be used by every Indonesian people whenever they are choosing their destination or public parks.

In total, Pahlawan Taman platform has 6 pages. They are the homepage, contribution pages: upload park, clean a park, create event, park detail, and event detail. Although does not seem like many, because the nature of the platform’s design is aimed to be interactive, a lot of pages in the platform will contain tabs that can be moved or slide to change to another tab.

For example, the contribution pages consist of 3 tabs and is using feature called deep link navigation so that one route can have other routes inside it.

Besides tab, there also will be a lot of dialog and popups, for example the writer does not implement authentication page like login/signup. Instead, the authentication is handled using popup card. This is done to simplify the authentication especially user signup, and potentially encourage users to join the platform.

The homepage of the platform remains the most important page. In the homepage it contains hero section which have search box to search for public parks. Then below it, it will contain list of parks as grid sorted by the nearest park, this is can be done thanks to the geographical API. For other pages explanation, please refer to each individual page explanation in this chapter.

Another thing is, there also will be quite number of forms in the platform. Long forms are usually discouraged users to fill them out (Proximity School, n.d.), instead the writer will try to implement form system in the platform to make it less tedious and monotonous by implementing interactivity inside them.

4.1 Design Forms and Reports

A. Homepage

Starting with the homepage, the first section is the hero section which contains search bar to search for specific park's name. The whole platform also has a sticky navigation bar at the very top of the page. This navbar contains 2 button, the home button and the login button if the user is authenticated.

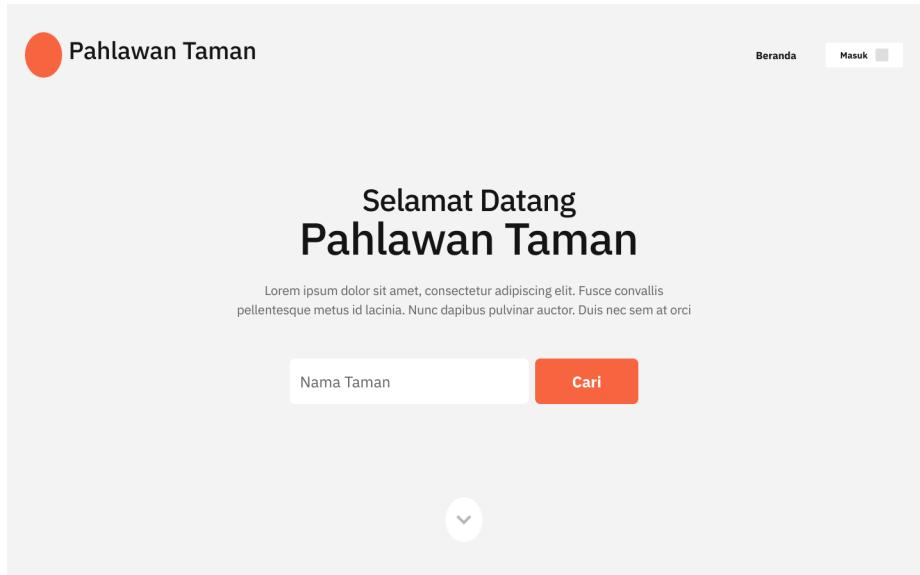


Figure 4.1: Pahlawan Taman Homepage Hero

Clicking on the login button, an authentication dialog will show up to enable user for logging in or signing up.

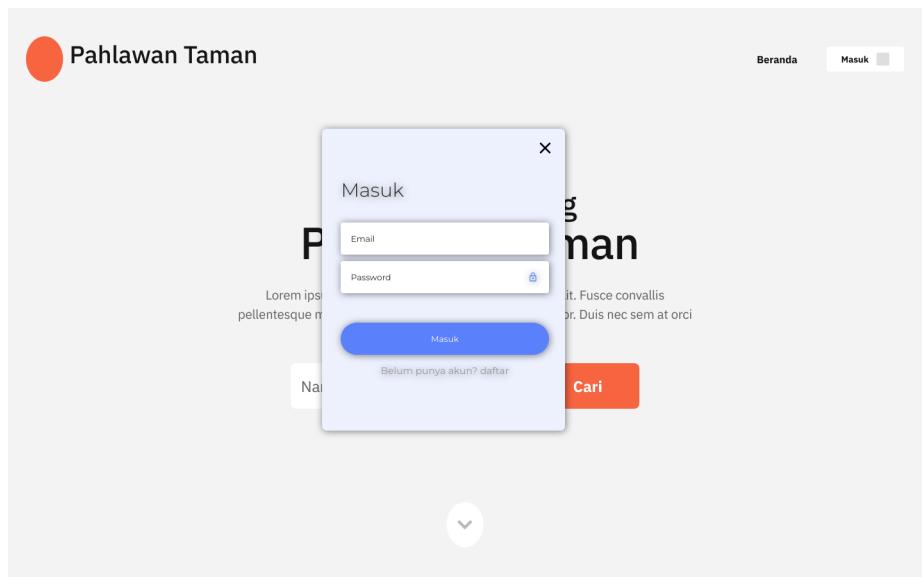


Figure 4.2: Pahlawan Taman Login Dialog

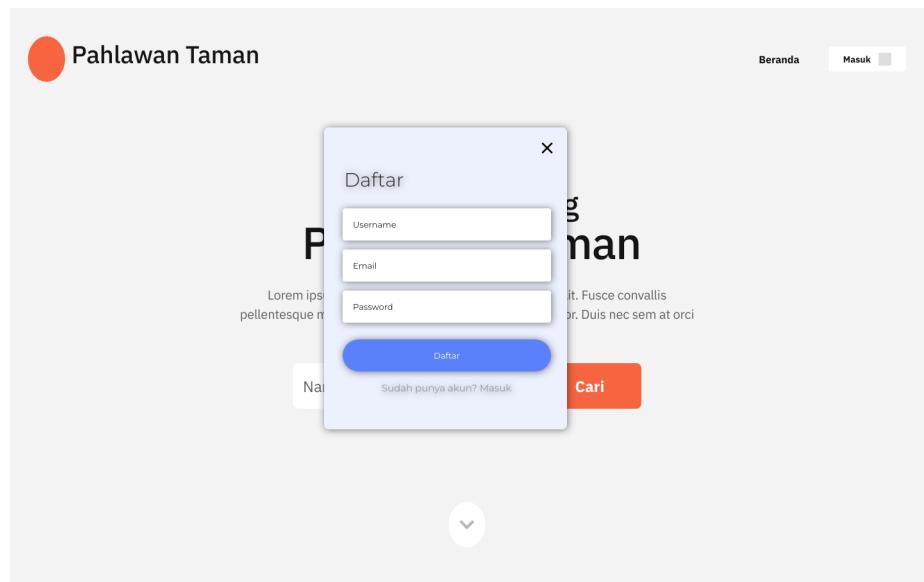


Figure 4.3: Pahlawan Taman Signup Dialog

The authentication form requires user to input email, username, and password for signing up, and to sign in user is required to enter their email and password.

After the user is successfully authenticated, the login button on the navbar will be replaced with profile button that shows the user's photo profile. This button can then be clicked to reveal the username, and contribution point while providing buttons to logout and to go to profile page.

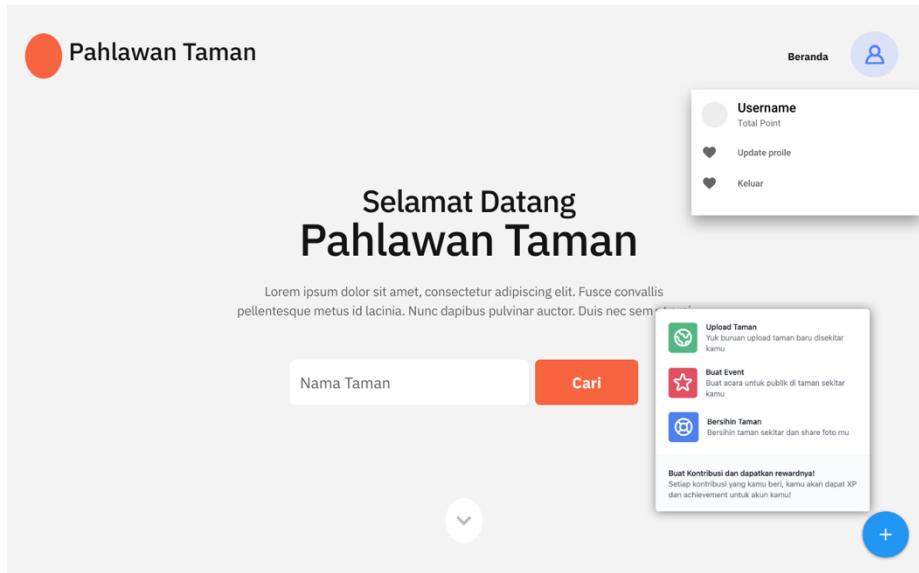


Figure 4.4: Pahlawan Taman Authenticated State UI Changes

Figure 4.4 also shows that, FAB is now visible after user is authenticated, this FAB functions to enable user make contribution to the platform such as uploading, cleaning a park, and creating an event.

Scrolling down the homepage, user can see list of nearby parks as grid lists. This section is a tab that have 2-tab items they are parks and events. Each tab will show its content as a grid lists. Each tab also has pagination button at the bottom.

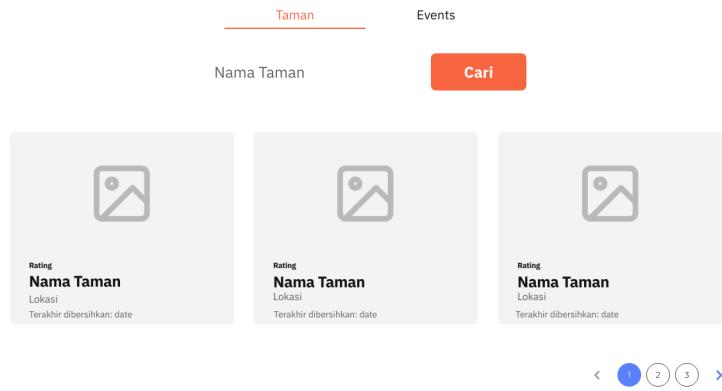


Figure 4.5: Pahlawan Taman Homepage Park Tab

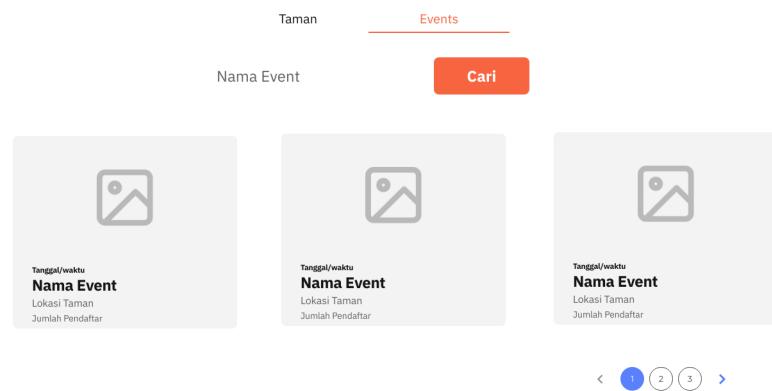


Figure 4.6: Pahlawan Taman Homepage Event Tab

Scrolling down to the bottom of the homepage, user can see 'hall of fame'. This section shows top 3 users who has the most contribution points. This is the section that corresponds to the reward system, the point is used to be publicly shown-off in this section.

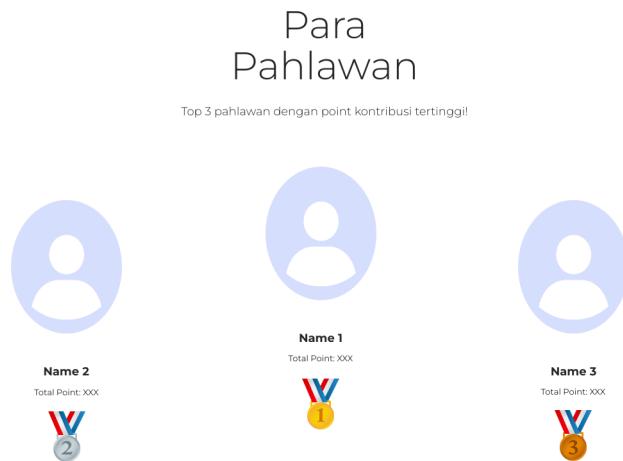


Figure 4.7: Pahlawan Taman Hall of Fame

B. Contribution pages

The contribution page also uses tab system. It has 3-tab items to the contributions. Each contribution page has a different form from the others. The first tab is upload park tab. In this tab, the needed input from user is park's photo which is a file input that only accepts image file such as PNG, JPG, etc. and other required park object such as name, location and facility. The location has append icon in the input that can be clicked to gather the user current location and fill in the input with that data.

Figure 4.8: Pahlawan Taman Upload Park Contribution Page

The second tab is to upload park's cleaning data. This data is used to update the park's hygiene or park's last cleaned date. The form in this tab requires user to upload the proof photo of their cleaning, date of cleaning, and the park that they have claimed to clean. The park input uses dropdown menu that when active can be search using the park's name to make it more convenience.

Buat
Kontribusi

Upload Taman Bersihin
Taman Buat Event

Foto Bukti

Tanggal

Loakasi Taman

✓ SELESAI

Figure 4.9: Pahlawan Taman Clean a Park Contribution Page

The last tab is the create event tab. This tab enables user to create an event that can be publicly joined by other users. This tab requires the event's photo, title, park location, date & time, and also its description as text area.

Buat
Kontribusi

Upload Taman Bersihin
Taman Buat Event

Foto Event

Nama Event

Loakasi Taman

Tanggal / Waktu Event

Deskripsi Event

✓ SELESAI

Figure 4.10: Pahlawan Taman Create event Contribution Page

C. Park detail page

The park detail page can be navigated by clicking the card page in the homepage. The routing uses park's slug that was made of its name. In this page user can find park's detailed information, this page has its full viewport height hero that shows the park's name, location, last cleaned date, photo, facilities, and rating.



Figure 4.11: Pahlawan Taman Park Detail Hero

Scrolling down the park detail page, user can find information such as park's ongoing events and park's reviews. The park's reviews section also has a button where user can click to write a review for the park which will show a create review dialog.

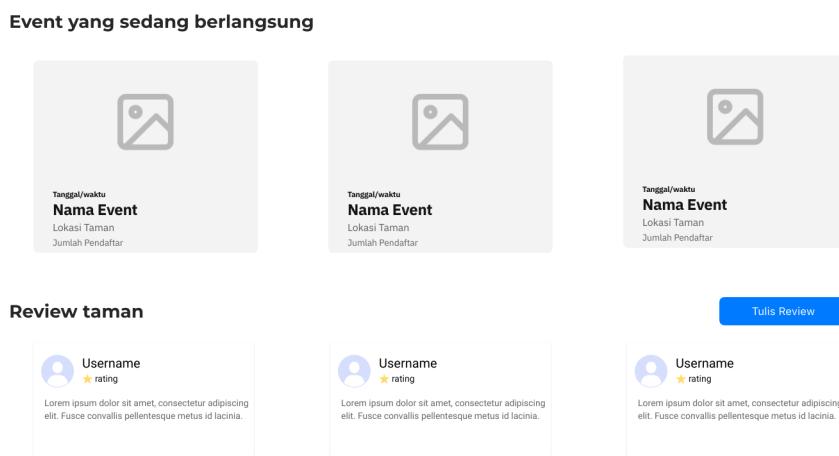


Figure 4.12: Pahlawan Taman Park Detail Event and Review Section

The review dialog provides a form to let user write a review for the park, the form requires the number rating that can be selected as stars, so this number range from 1

to 5. The other input is the review description that user can write on the provided text area.

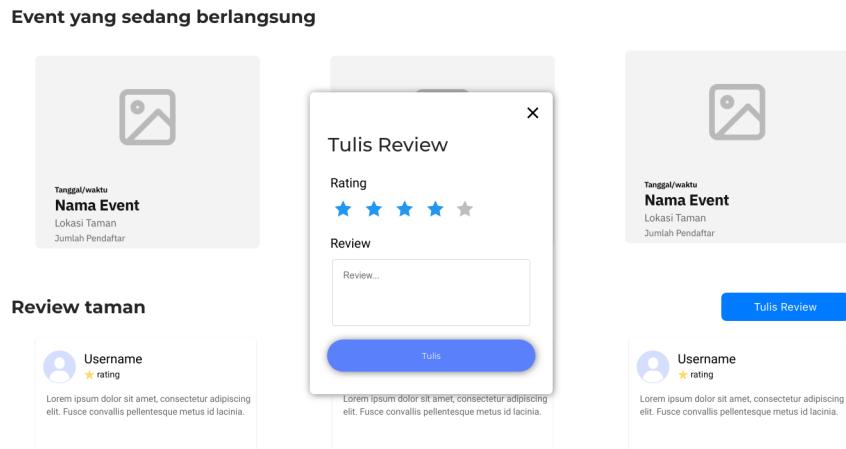


Figure 4.13: Pahlawan Taman Review Dialog

D. Event detail page

The event detail page has a simple full height only hero section. The section tells users the event information such as its name, description, the organizer, park location, date & time, participants count, photo, and also its description. It also provides a button to enable user to join the event.

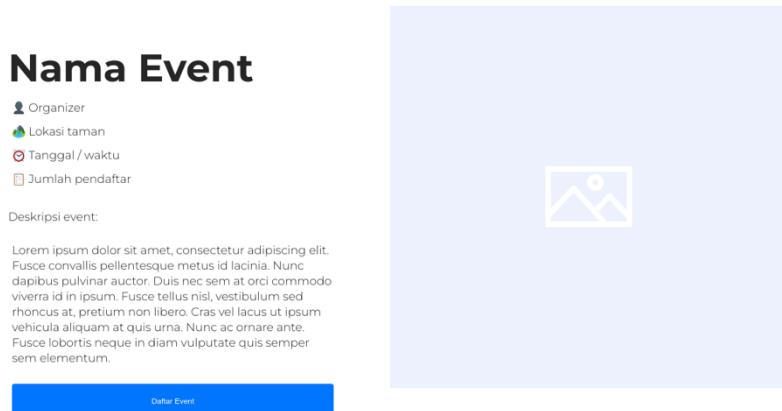


Figure 4.14: Pahlawan Taman Event Detail Page

CHAPTER 5

IMPLEMENTATION AND TESTING

The project has been successfully implemented in respect to the previous software requirement system. The selected software development method (Agile) works flawlessly during the development of the project, Agile makes every development of each features gets split by smaller chunks that increase convenience and makes everything organized and actionable, here is the project's management screenshot board using Agile.

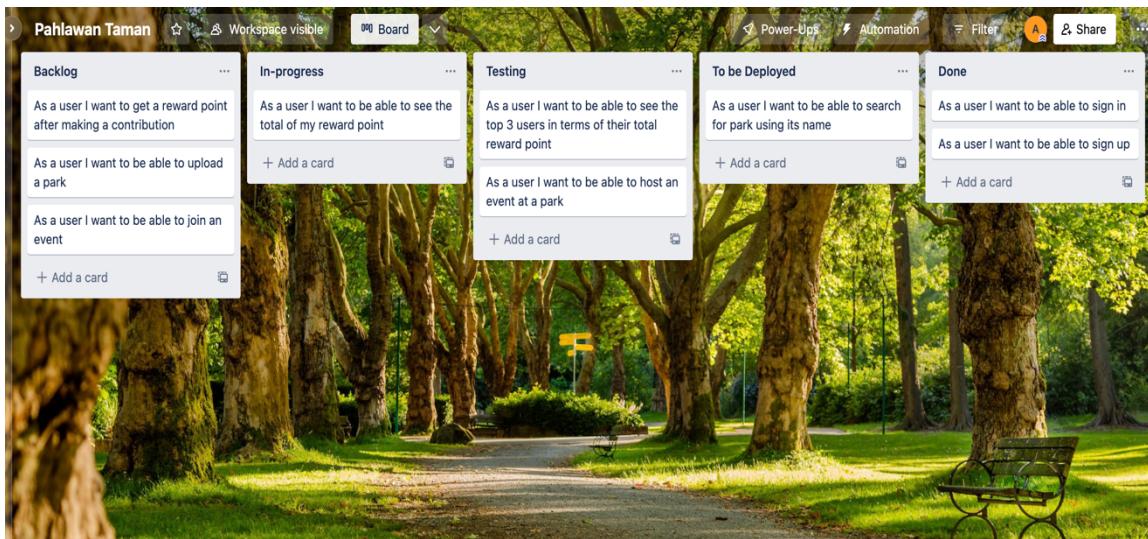


Figure 5.1: Pahlawan Taman's Agile Board

The backlog column contains user stories that are yet to be implemented, these backlog's cards then need to be moved to the in-progress column that indicates the development of a feature is ongoing. If the development of a feature is done, the card is moved to testing which validates the feature's business logic using unit testing, if a feature pass the testing stage it then gets moved to the to be deployed column which indicates the feature needs merging in the version control used, after it is merged, it then gets moved to the done column.

The project was developed mainly by using Typescript language which works well for web app development. This project also uses frameworks for developing the front-end and back-end. The front-end was developed using Nuxt web framework to enable SSR that enhance the web's SEO which the project needed. While the back-end was developed by using ExpressJS that makes development of web API easier.

The database used is a NoSQL database, specifically, MongoDB. NoSQL is used because it is more flexible than SQL database which is needed by this platform since it needs to handle the diversity of public parks information. Here is the schema for the platform.

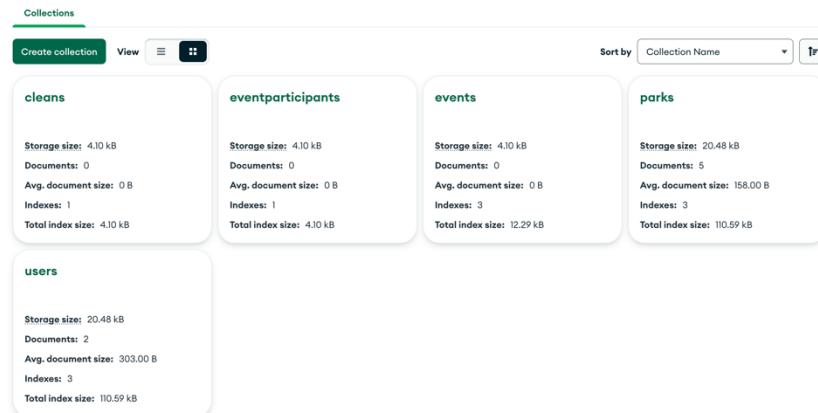


Figure 5.2: Pahlawan Taman's Database Schema

Finally, here is some of the screenshots of the implementation result, the web app can be accessed via url pahlawantaman.com



Figure 5.3: Pahlawan Taman's Implemented Hero Section

Taman Tapos

★ 5

Taman Tapos, HV9P+8C3, Tapos, Kec. Tapos, Kota Depok, Jawa Barat 16457

Belum ada data pembersihan

Fasilitas:

- Kamar mandi umum
- Tempat ibadah
- Pedagang kaki lima

Event yang sedang berlangsung

Figure 5.4: Pahlawan Taman's Park Detail Page

The screenshot shows a dark-themed website interface. At the top right are buttons for 'Buat Kontribusi' and a user profile. Below the header, the text 'Event yang sedang berlangsung' is displayed. A large thumbnail image shows a man standing in front of a screen displaying a presentation titled 'Clean Design UX'. Below the thumbnail, the event details are listed: 'January 21, 2023', 'Bersih-bersih Taman Tapos!', 'Taman Tapos', and 'Peserta: 1 Pahlawan'. To the right of the event details is a 'Review taman' section with two reviews from users 'Arkan Haryo' and 'foo123', both rated 5 stars. A green 'Update Review' button is located at the top right of this section. A small circular icon with a grid of dots is positioned to the right of the review area.

Figure 5.5: Pahlawan Taman's Park Detail Page (2)

This screenshot shows the search results for parks. At the top, there are tabs for 'Taman' and 'Event', and a search bar with placeholder 'Cari Taman...'. Below the search bar are two cards. The first card is for 'Taman Tapos', featuring a photo of the park, a 5-star rating, and the address 'Jl. Jambore No.1, Harjamukti, Kec. Cimanggis, Kota Depok, Jawa Barat 16457'. The second card is for 'taman bunga wiladatika', featuring a photo of a fountain in a landscaped area, a 5-star rating, and the address 'Jl. Jambore No.1, Harjamukti, Kec. Cimanggis, Kota Depok, Jawa Barat 16452'. Both cards include a 'Pembersihan Terakhir' timestamp: 'January 4, 2023'.

Figure 5.6: Pahlawan Taman's Recent Park/Event Tab

This screenshot shows the event detail page for a 'Summer Camp'. At the top right are buttons for 'Buat Kontribusi' and a user profile. The main content features a large, colorful graphic for the 'SUMMER CAMP' event, which includes the dates 'JUNE 10 - JULY 20', the title 'SUMMER CAMP', and a forest scene with tents and deer. To the left of the graphic, event details are listed: 'John Doe' (organizer), 'taman bunga wiladatika' (location), 'January 12, 2023 | 8:11 PM' (date and time), and '1 partisipan' (participants). Below these details is a descriptive text block: 'Lorem ipsum dolor sit amet consectetur adipisicing elit. Ipsam modi ut consectetur deserunt, in doloribus. Reprehenderit quae voluptibus odit, repellat ipsum deleniti, quisquam quis natus molestiae quasi est rem aut?'. A green 'Daftar Event' button is located at the bottom left of this section. At the very bottom of the page, there is a footer with links: 'Beranda', 'Tentang Kami', 'Komplek Lipi Pondok Rajeg No.12 Bogor, Indonesia.', and a green 'Hubungi Kami' button.

Figure 5.7: Pahlawan Taman's Event Detail Page

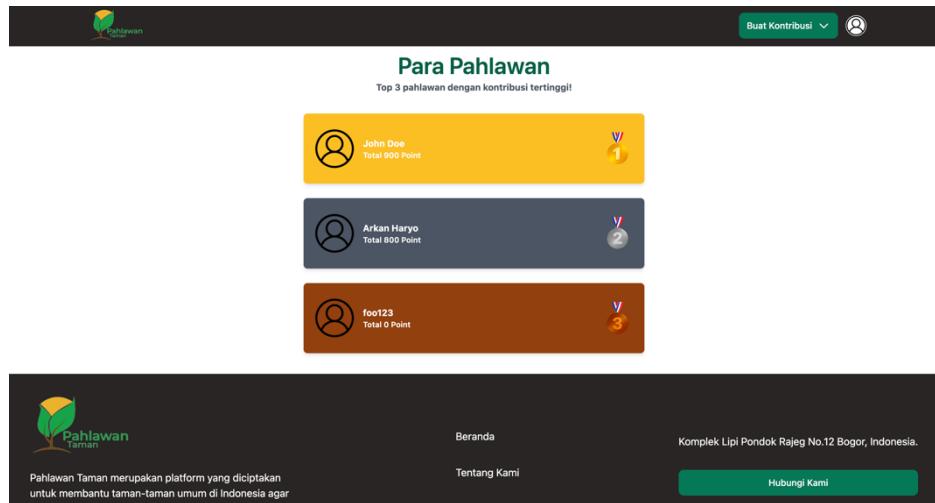


Figure 5.8: Pahlawan Taman's Hall of Fame

5.1 Testing and Documentation

This project uses unit testing for the platform's business logic and e2e/black box testing for the overall application flow. Below is the screenshot of a unit test to validate against a function that calculate total user's reward point after they have done contributing.

```

import { addRewardPoint } from '@services/rewards'
import { Contribution } from '@services/contribution'

describe('ingredient price calculation', () => {
  const loggedInUser = {
    name: 'John Doe',
    email: 'johndoe@gmail.com',
    rewardPoint: 300,
  }

  it('adds 100 to loggedInUser reward point and return 400', () => {
    expect(addRewardPoint(loggedInUser, Contribution.CREATE_PARK)).toBe(400)
  })
})

```

Figure 5.9: Reward System Unit Test

```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL
> npm test
> test
> jest

PASS  tests/parks.test.ts
PASS  tests/rewards.test.ts

Test Suites: 2 passed, 2 total
Tests:       3 passed, 3 total
Snapshots:   0 total
Time:        2.227 s
Ran all test suites.

```

Figure 5.10: Pahlawan Taman's Unit Test Result

The project code documentation can be found in the project's readme file. Whereas the API documentation is attached as a picture below, the author also has provided API documentation and testing environment that can be imported to Postman (API testing and documentation app).

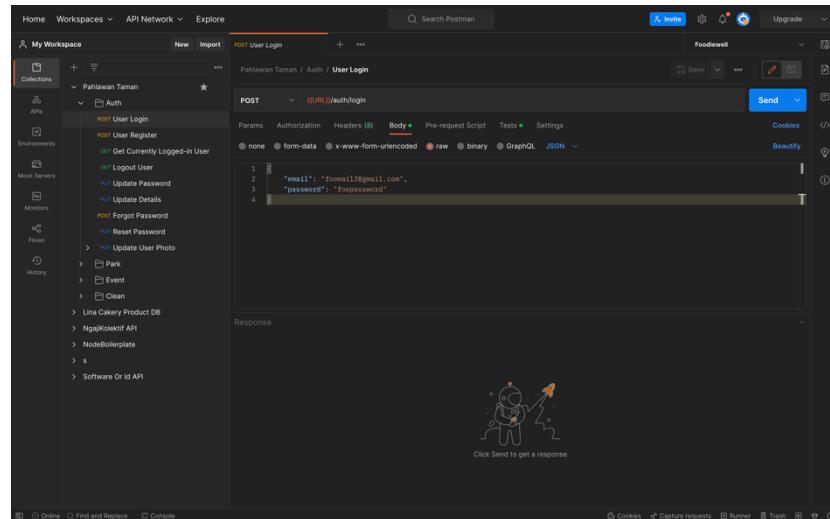


Figure 5.11: Pahlawan Taman's Postman Environment

CHAPTER 6

CONCLUSION

The implementation of this project was a success even though there are some features or backlog that cannot be implemented right away due to time, resource, and budget constraints. The implemented features are selected by their priority which makes this project contains only its Most Viable Product (MVP).

The development of this project will not stop here, thanks to well-prepared project's architecture and resource planning, development of future releases and features can be easier not to mention a thorough code and API documentation that this project has.

The biggest challenge of this project was to determine which feature should be released for the initial project's version. This process needs a lot of research as this project's goal is aimed to save public parks in Indonesia so, research on which features contributes the most is necessary.

6.1 Problem Faced During System Implementation

The biggest issue during implementation is the time and resource constraint. This project contains a lot of useful backlog and user stories, but unfortunately not all of them can be implemented right away as the project's initial version. Fortunately, the planning of the project is thorough enough so the architecture of this project's codebase is already aimed to accommodate next backlog and features.

6.2 System Strengths and Limitation

The strength of the project's system is the architecture and its implementation that makes this project flexible of development in the future (scalable). Not to mention that the technologies used by this project does not require powerful machine to run, this is because the project uses package bundler that makes it smaller and efficient in terms of its size. The limitation of this project is that, the front-end framework used (Nuxt) is still in the beta version during the creation of this project. This beta version without a doubt will have a breaking changes that requires future developers to migrate a lot of things and encounter lots of error due to framework version upgrade.

6.3 Future Enhancement

Future enhancement of this project is all of the unimplemented backlog or features. Especially the park's rating and review which needs another database schema and modification of existing park schema. Thankfully, this project uses NoSQL so, the database relation is not as strict like SQL databases. Another enhancement would be the development of GraphQL API instead of REST. This would make API request from front-end even more convenience.

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APPENDIX

Interview of the platform documentary photos

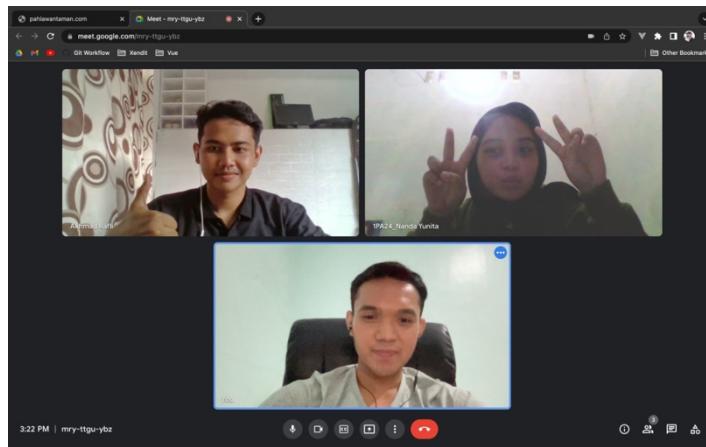


Figure A.1: Interview documentary photo 1



Figure A.2: Interview documentary photo 2



Figure A.3: Interview documentary photo 3