

# **Web application for Data visualization of Travel Time Reliability**

P R E S E N T A T I O N

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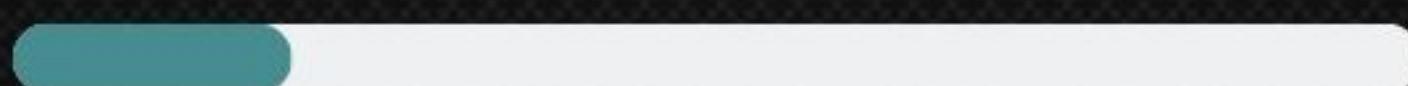
Panuwat Sangsuriya 6231122421

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- 2 Theoretical framework
- 3 Methods and Procedures
- 4 Results and discussions
- 5 Conclusions and recommendation

1

# Introduction

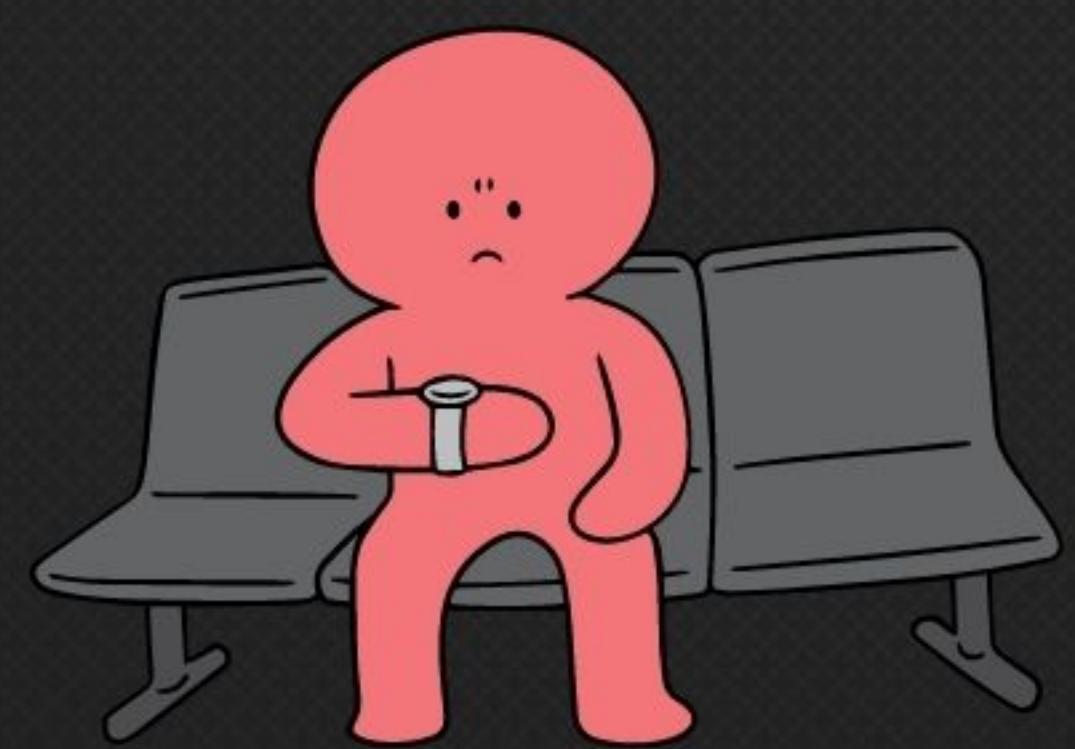


loading 20% ...

# Pain Points



**Being late for  
an appointment**



**Having too much free  
time before an  
appointment**



**Missing an  
opportunity**

## **Objective 1**

To schedule any appointment time from daily to weekly



## **Objective 2**

To display planning time index which helps users to get the appointment on time.



## **Objective 3**

To visualize travel time reliability which helps users chosen the best way.



# Scope of Research

Rama IV Rd. and the intersection of Rama IV Rd.



DATA 1  
**2019**

DATA 2  
**2020**

DATA 3  
**2021**

## **Advantages 1**

Users are able to go to any appointments on time.



## **Advantages 2**

Users are able to plan the travel time accurately.

## **Advantages 3**

Users can use it conveniently and easily understand for choosing the best way



2

# Theoretical Framework



loading 40% ...

# Design Thinking



Empathize



Define



Ideate



Prototype



Test

# Competitor Analysis



Direct competitor



Indirect competitor



Replacement  
Competitor

# Customer Journey



Awareness



Consideration



Decision



Retention



Loyalty

# Theory

- Planning time index เป็นการคำนวณเวลาทั้งหมดที่ใช้ในการเดินทาง โดยมีวิธีการคิดคือนำ 95<sup>th</sup> percentile ของ travel time มาหารด้วย free-flow travel time ตามสูตรดังนี้

$$PTI = \frac{\text{Travel Time}_{95\text{th percentile}}}{\text{Free Flow Travel Time}}$$

- Travel time index เป็นการหาอัตราส่วนระหว่างค่าเฉลี่ยของ Travel time กับ free-flow travel คำนวณตามสูตรดังนี้

$$TTI = \frac{\text{Average Travel Time}}{\text{Free Flow Travel Time}}$$

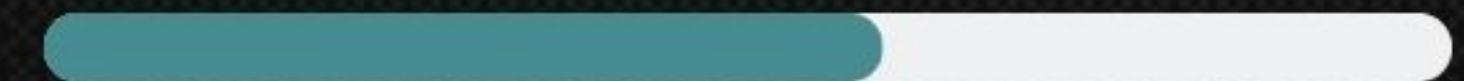
# Theory

- 1 Travel time
- 2 Planning time
- 3 Buffer time



3

# Methods and Procedures



loading 60% ...

# User Experience design process

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Empathize

Define

Ideate

Prototype

Test



## Empathize

“ Traffic is a significant concern when it comes to travelling, especially in Bangkok. The unpredictability of travel times can greatly impact daily life, causing travellers such delays sometimes more than necessary. ”



## Empathize

1

Competitor analysis

2

Feature analysis

3

User research

Direct Competitor

Indirect Competitor

# 1

## Competitor analysis

### Direct Competitor

#### Google Maps

##### Strength:

- Able to plan departure and arrival time in advance at any time.
- Accurate and up-to-date information
- Report about traffic issues
- Display multiple destinations

##### Weakness:

- Overwhelming user interfaces for some user
- Limited offline functions

#### Apple Maps

##### Strength:

- Able to plan departure and arrival time in advance for 15 days.
- Ease use for IOS users
- Real-time traffic information, including congestion, accidents, etc.
- Ask Siri for directions

##### Weakness:

- Outdated information
- Misplaced landmarks

# Competitor analysis

## Indirect Competitor

### Grab Driver

#### Strength:

- Estimated charge and travel time after booking.
- Advanced booking up to 7 days
- A double drop-off option

#### Weakness:

- Limited availability in certain areas

### LINE MAN

#### Strength:

- Estimated travel time after booking
- Real-time tracking
- Finding a taxi quickly, even during peak hours

#### Weakness:

- Unable to plan a trip in advance

### BOLT

#### Strength:

- User-friendly interface, easy for users to book rides
- Affordable price

#### Weakness:

- Problems with payment processing

## 2

## Feature analysis

Features	Google Maps	Apple Maps	Grab Driver	LINE MAN	BOLT
Set directions	✓	✓	✓	✓	✓
Set a time and date	✓	✓	✓	✗	✗
Set route options	✓	✓	✗	✗	✗
Location information	✓	✓	✓	✗	✗
Report traffic issues	✓	✓	✗	✗	✗
Measure distances	✓	✓	✓	✓	✓
Estimated travel time	✓	✓	✓	✓	✓
Saved places	✓	✓	✓	✗	✗
Add stop	✓	✓	✓	✗	✗
Navigation	✓	✓	✓	✓	✓
Notification	✓	✓	✓	✓	✓
Extra time	✗	✗	✗	✗	✗

3

## User Research

According to the research, We chose

**“area outsiders/first-timers”**

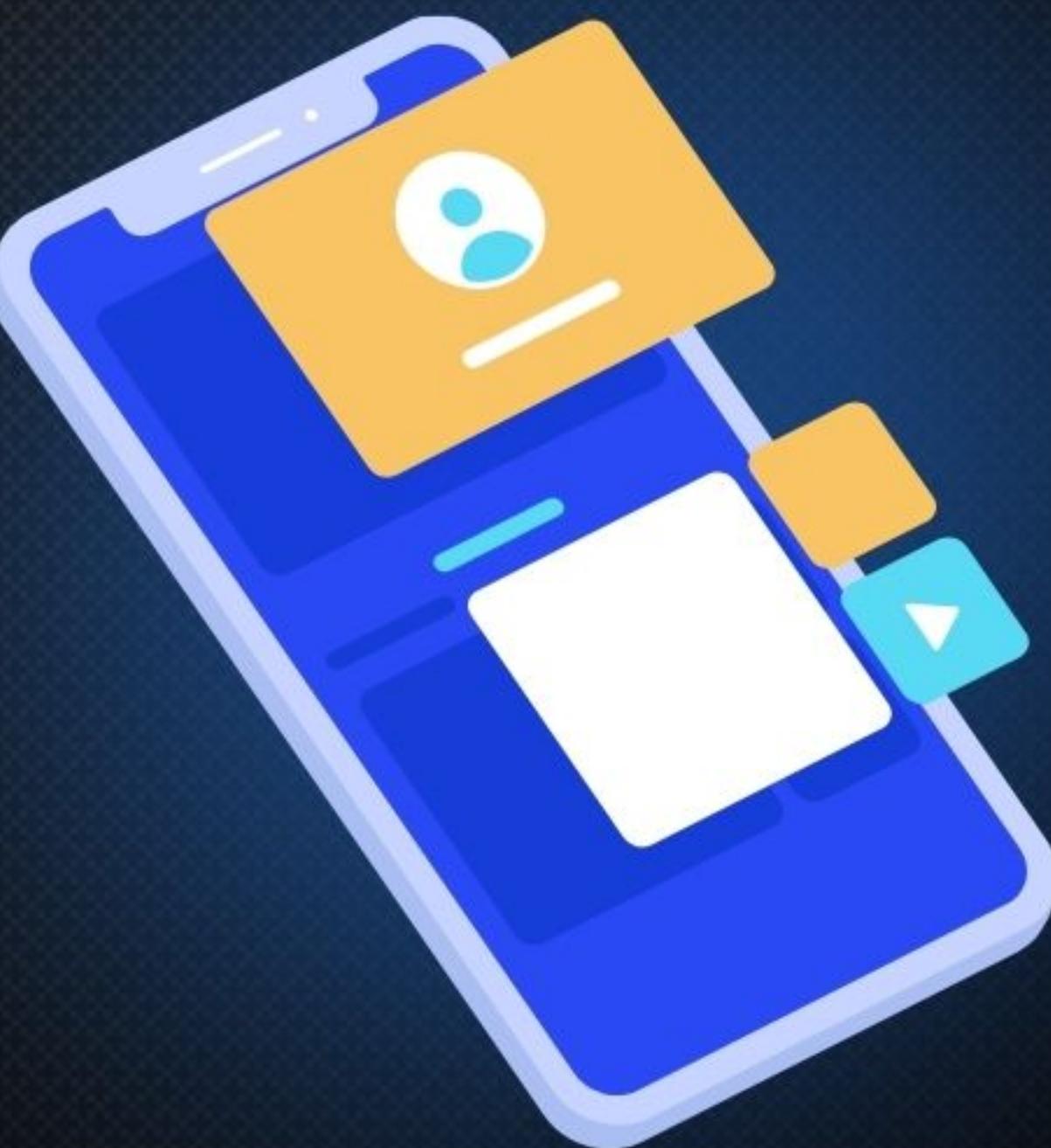
as the target users which I found to be most impactful.



## Define

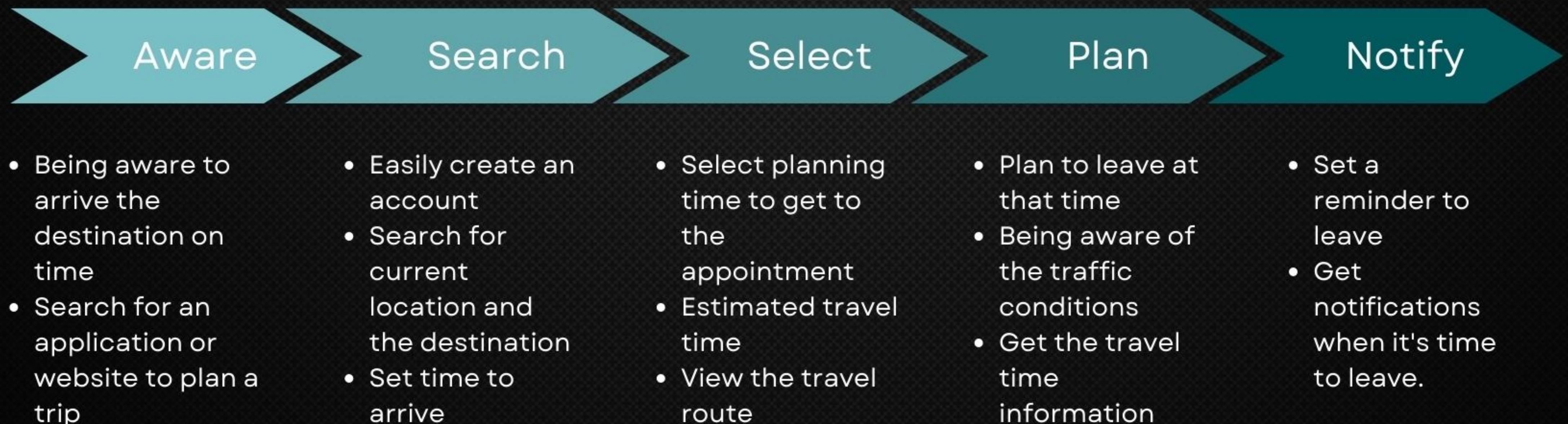
“ We focused on solving travel time planning issues in daily life by using the application to plan travel time in advance. The application displayed total travel time estimation data and the reliability of travel time in graphs to help users make informed decision.

”



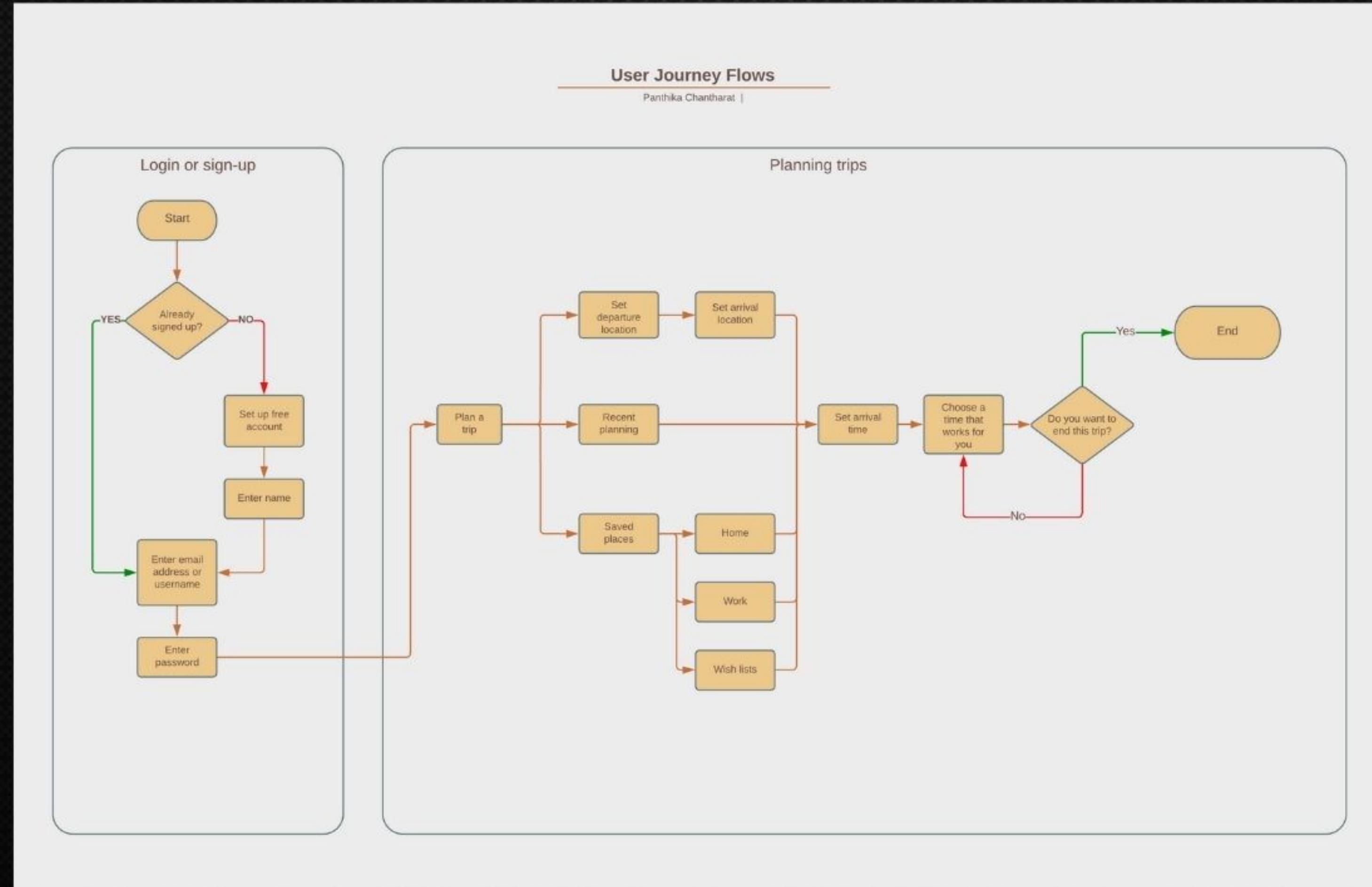
# Customer Journey

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# Ideate — User Flow





# Ideate — Sampling Size

**Group A**  
 $n = 6$

**Test prototype A**

**Group B**  
 $n = 6$

**Test prototype B**



# Prototype

The screenshot illustrates the trip planning process in Prototype A:

- Planning your time:** A form to enter destination details (Current location, Where to go?, Arrive time) and a bar chart showing travel times for different departure times.
- Samyan Mitrtown to Queen Sirikit Center:** Departure at 10:07, Arrival at 11:00, Travel time 53 min.
- Done:** Confirmation screen with a bar chart.
- Trip History:** Recent places (Lumpini Park, Queen Sirikit Center), set arrival time (Arrive time), and a map showing the route from Samyan Mitrtown to Queen Sirikit Center.
- Your trip:** Summary of the trip from Samyan Mitrtown to Queen Sirikit Center, travel time 53 min, extra time 17 min, and traffic congestion information.

The screenshot illustrates the trip planning process in Prototype B:

- Planning your time:** A form to enter destination details (Current location, Where to go?, Arrive time) and a bar chart showing travel times for different departure times.
- Samyan Mitrtown to Queen Sirikit Center:** Departure at 10:07, Arrival at 11:00, Travel time 53 min.
- Done:** Confirmation screen with a bar chart.
- Trip History:** Recent places (Lumpini Park, Queen Sirikit Center), set arrival time (Arrive time), and a map showing the route from Samyan Mitrtown to Queen Sirikit Center.
- Your trip:** Summary of the trip from Samyan Mitrtown to Queen Sirikit Center, travel time 53 mins, leaving at 10:07 in 16 miles, reminds you to leave, and traffic congestion information.

Prototype A

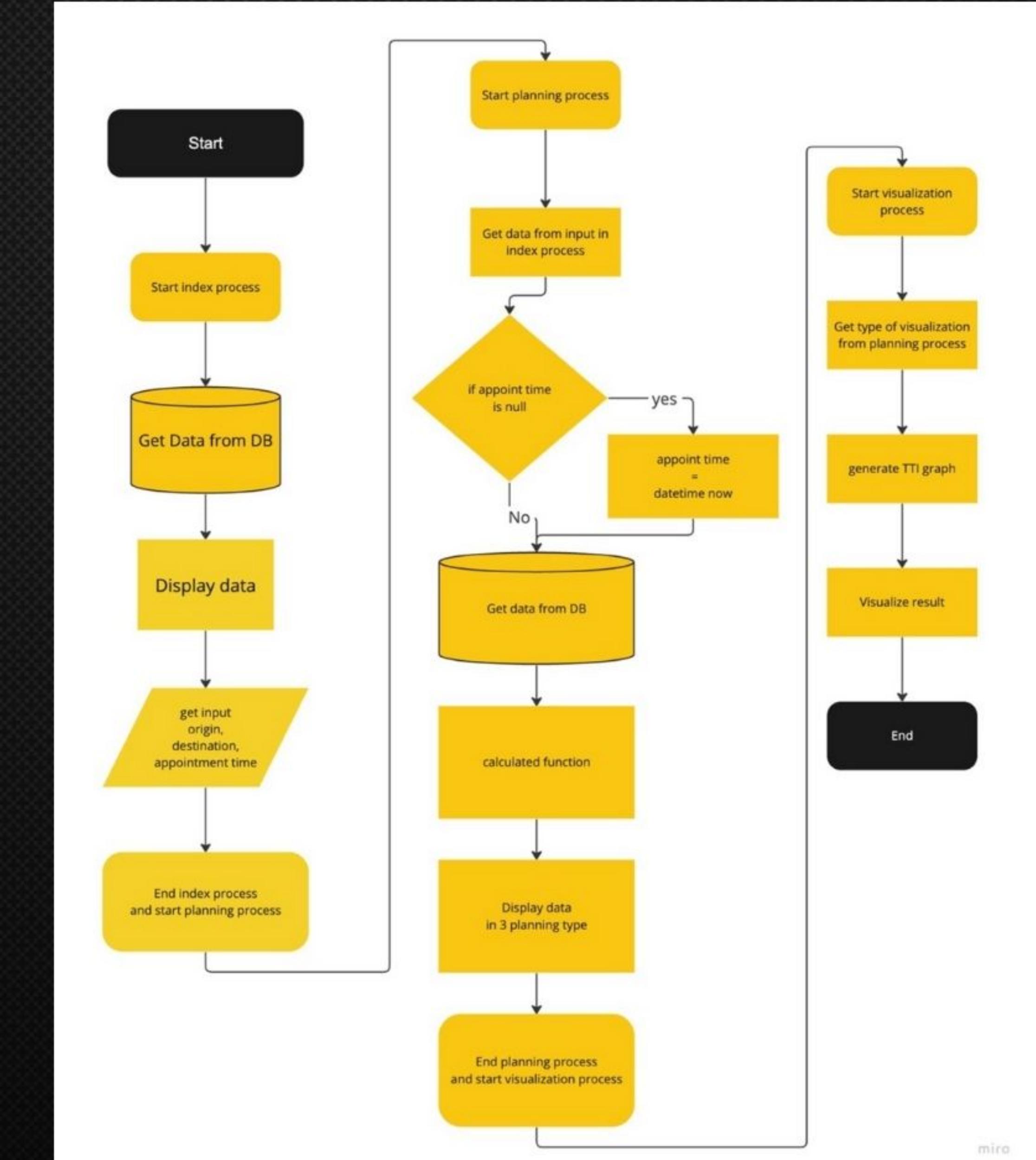
Prototype B

Web application development

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# Application flowchart



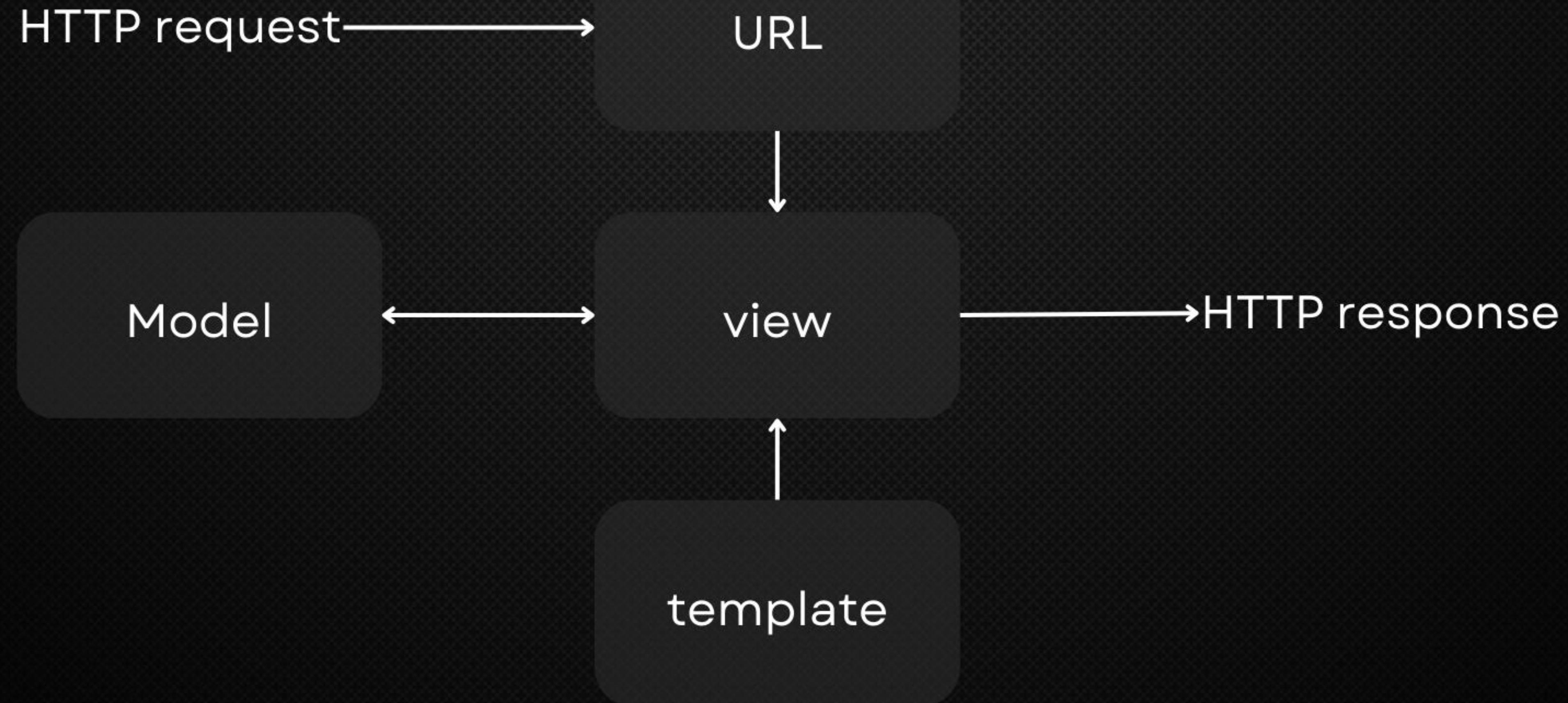


## Application develop tools



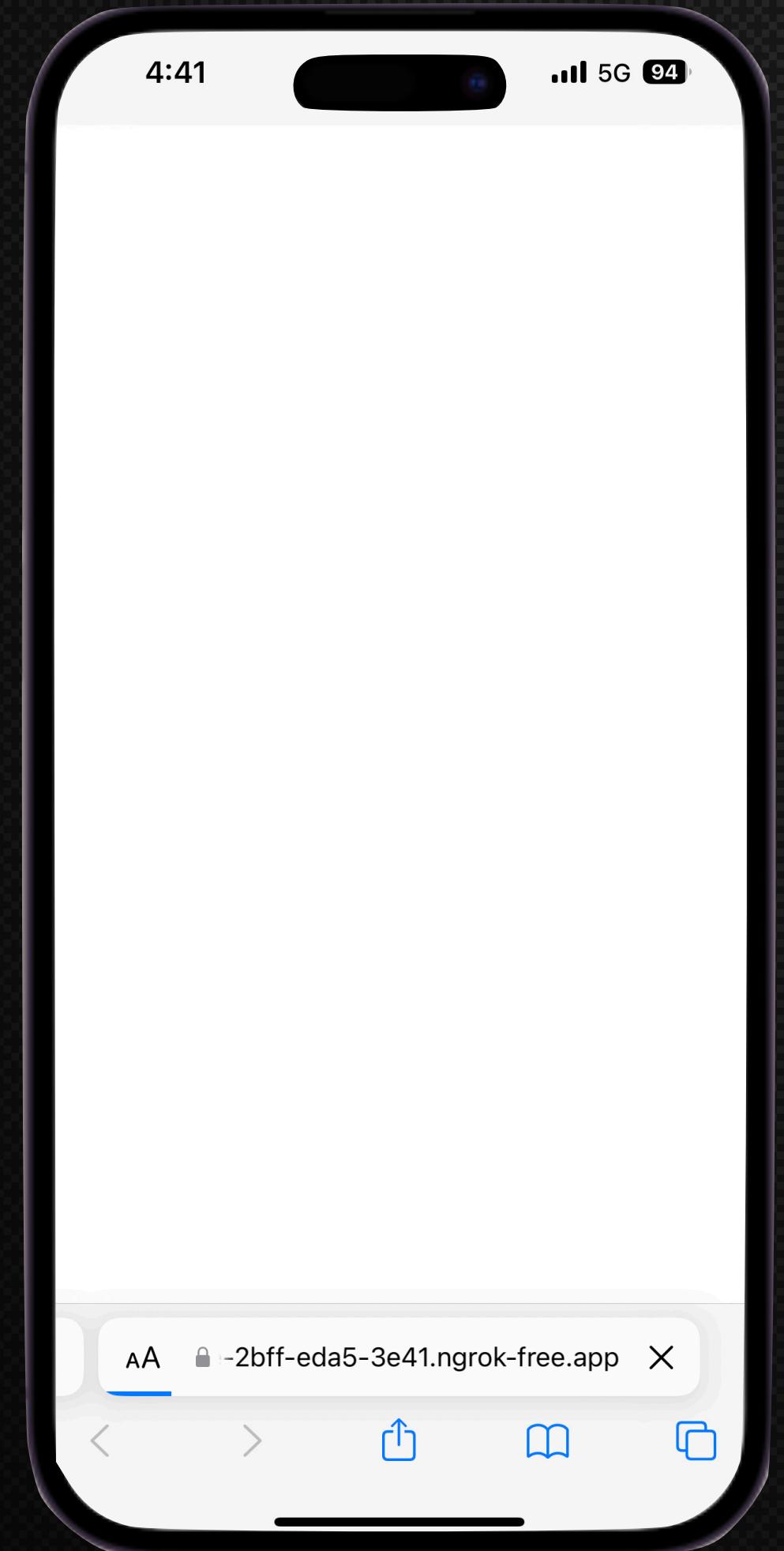


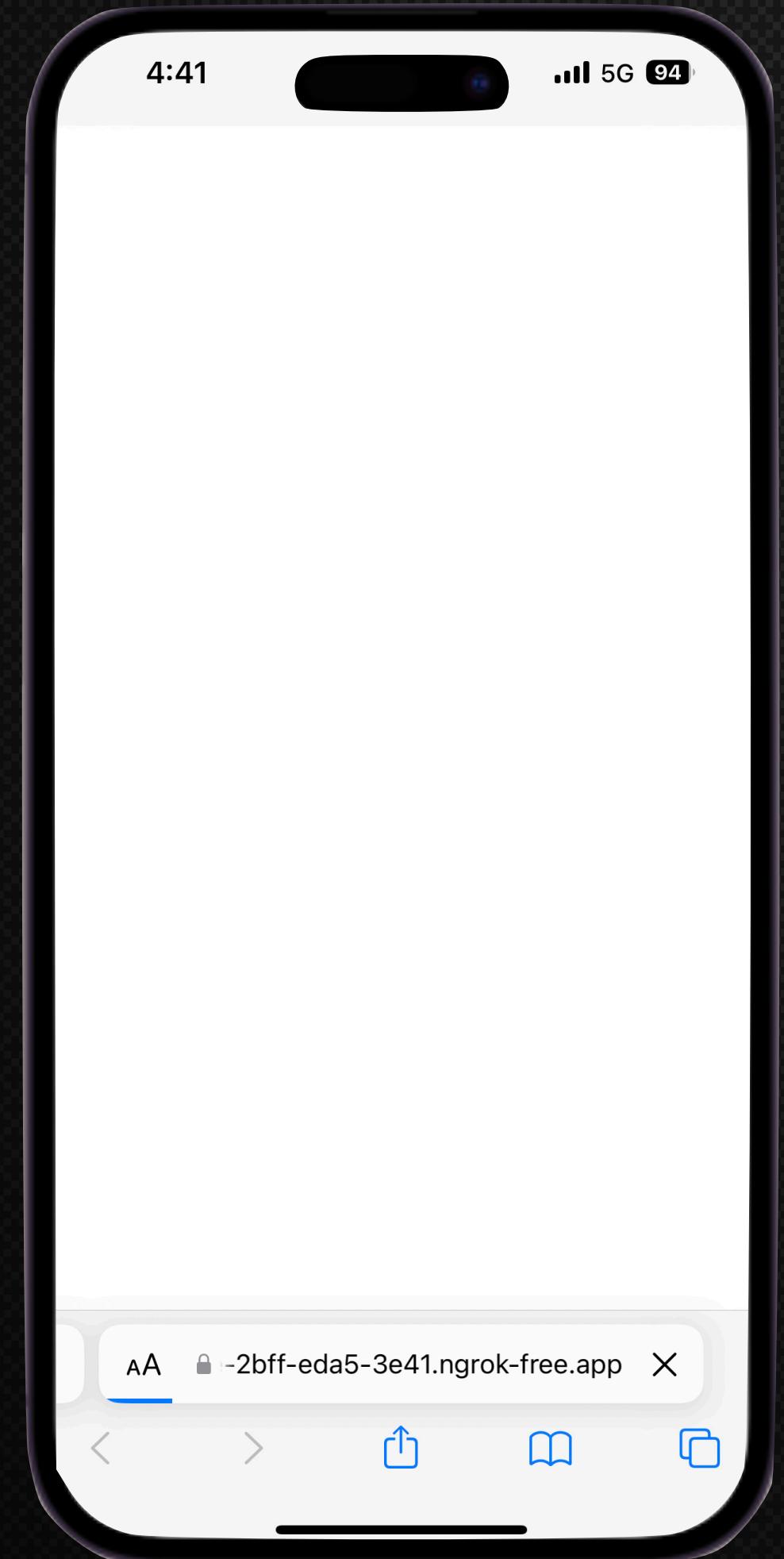
# Django workflow



# **Django framework workflow**



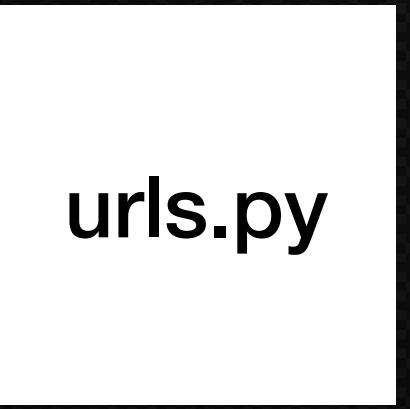




HTTP Request: URL

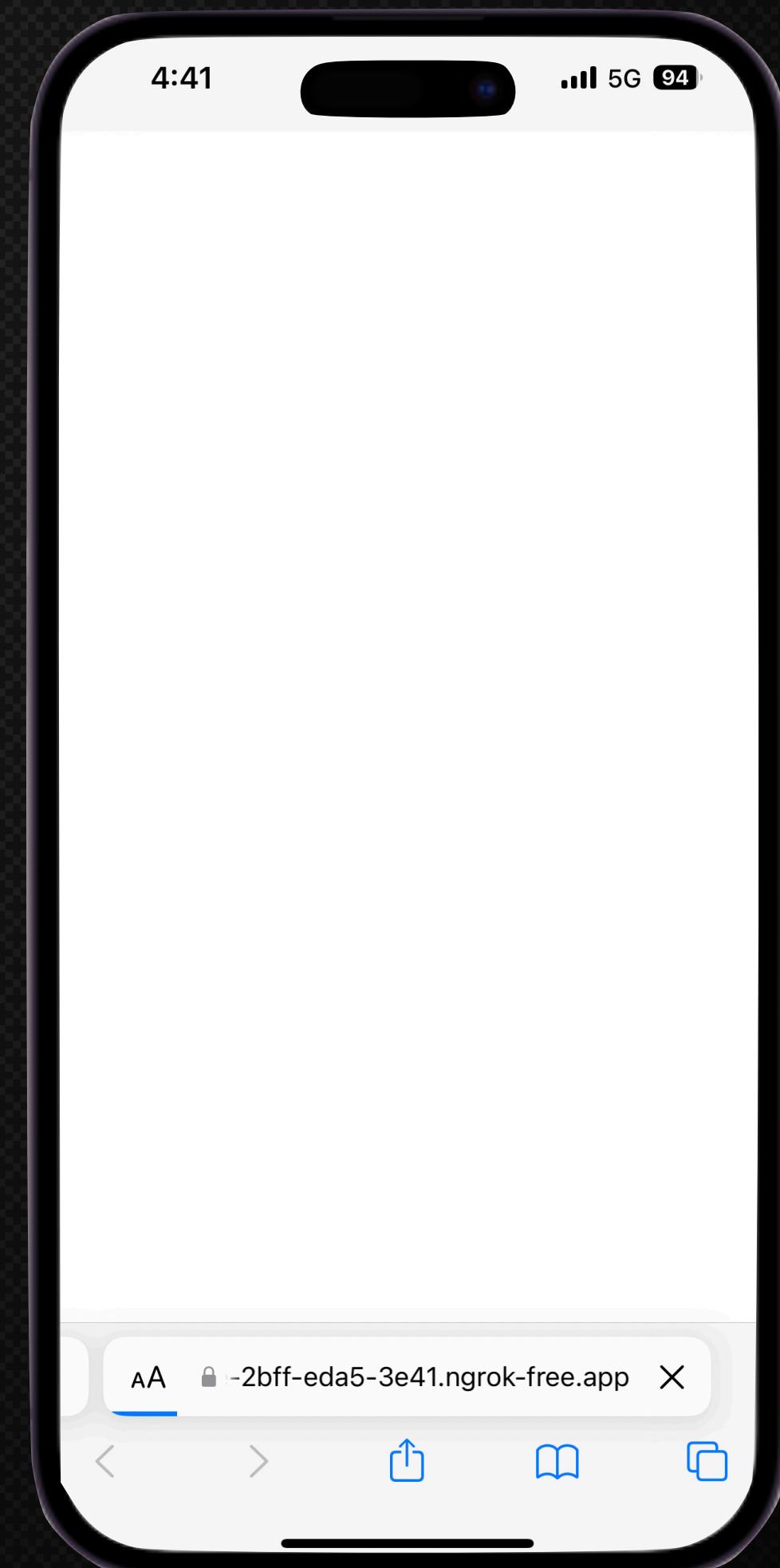
HTTP Request: URL





HTTP Request: URL





urls.py



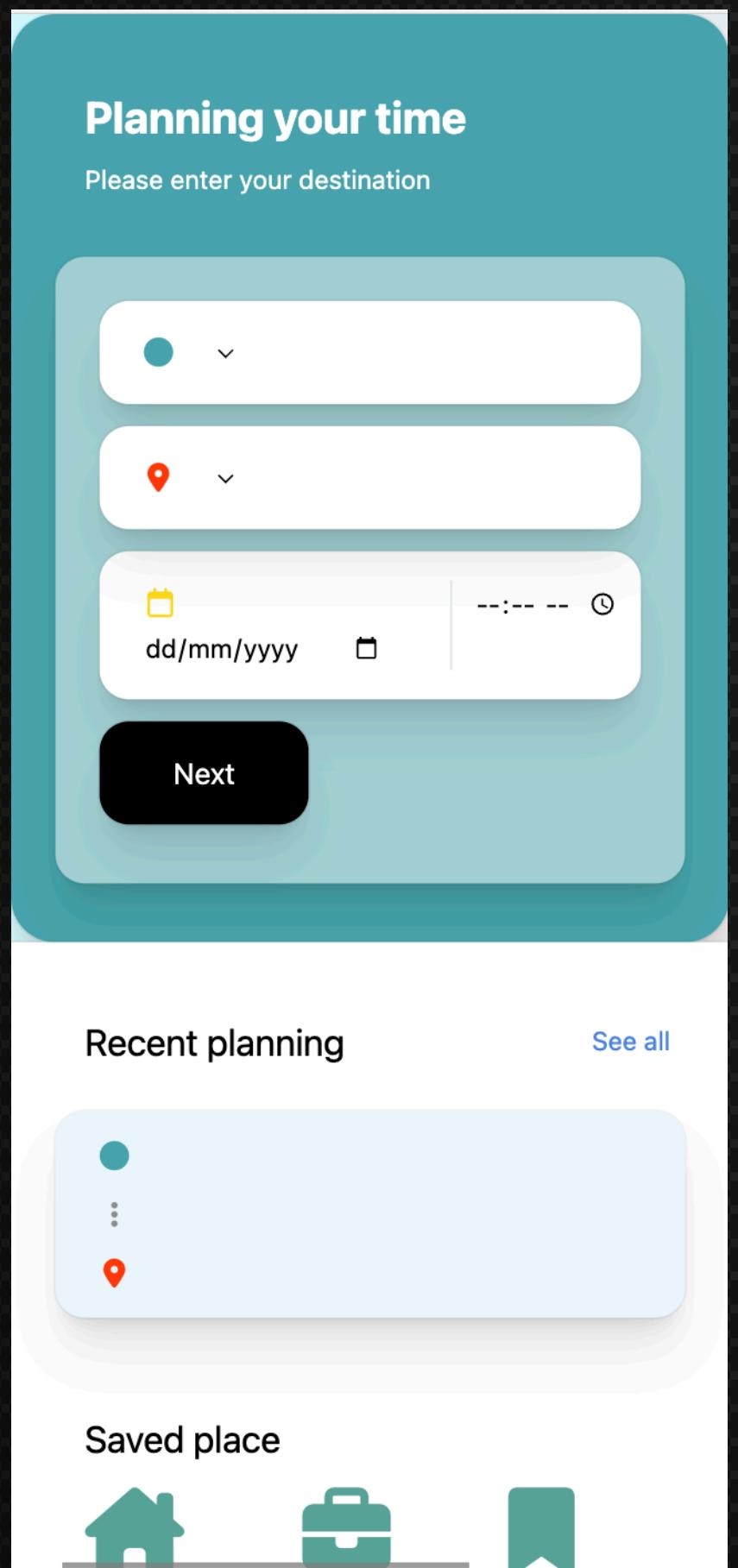
views.py



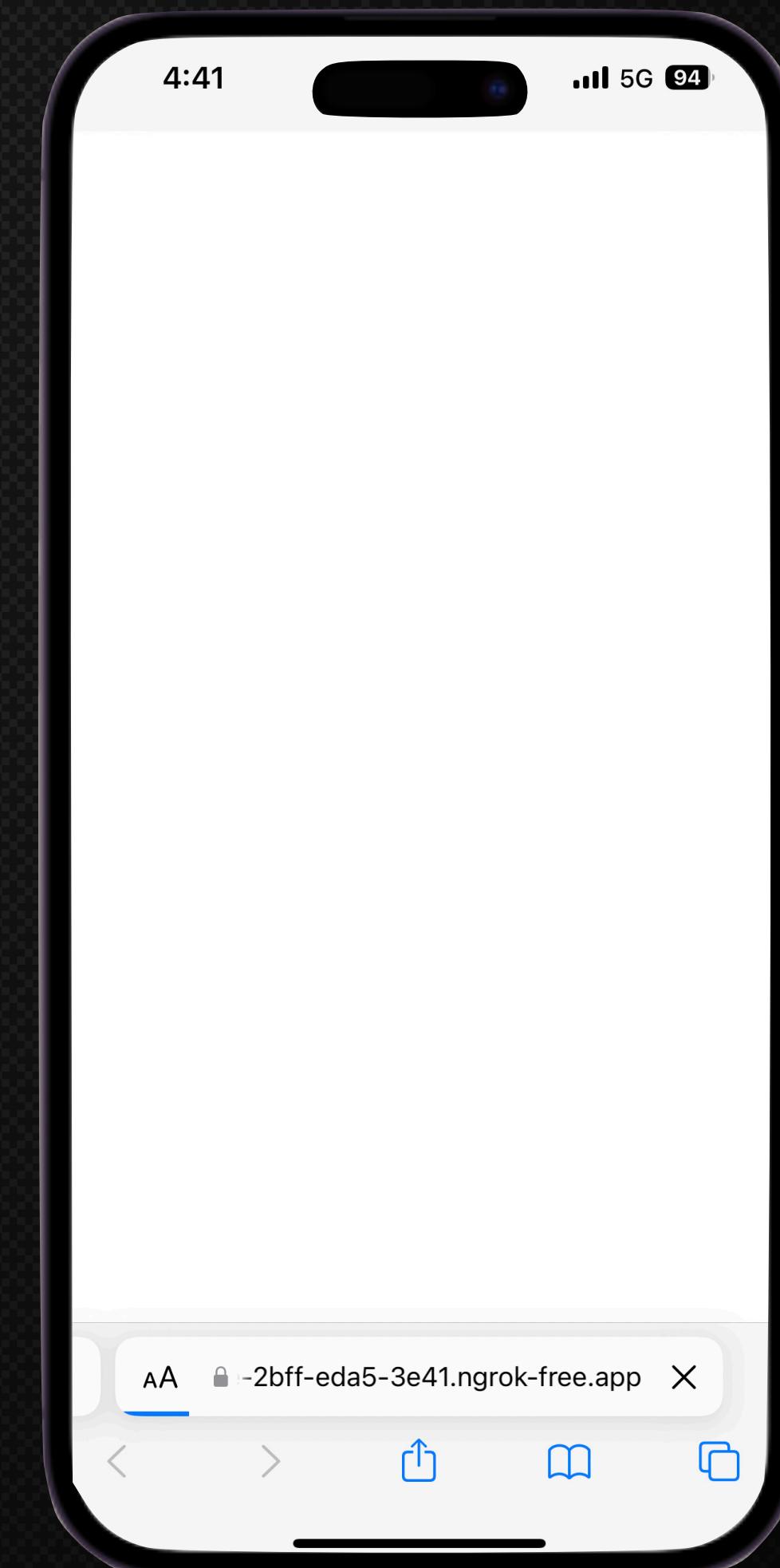
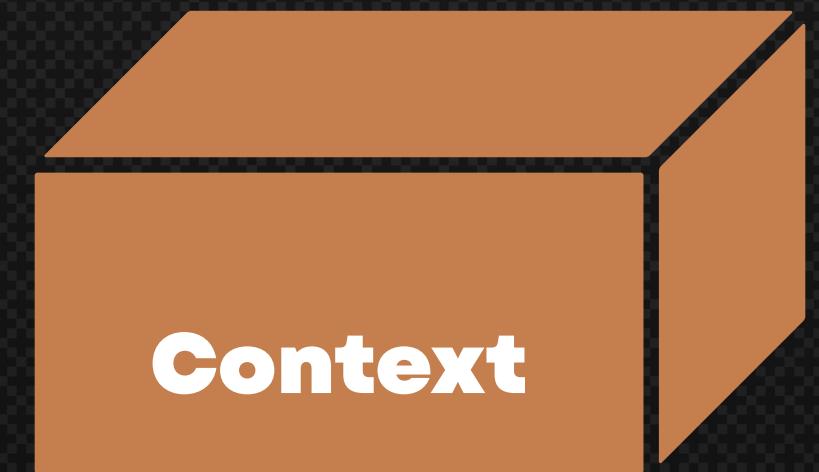
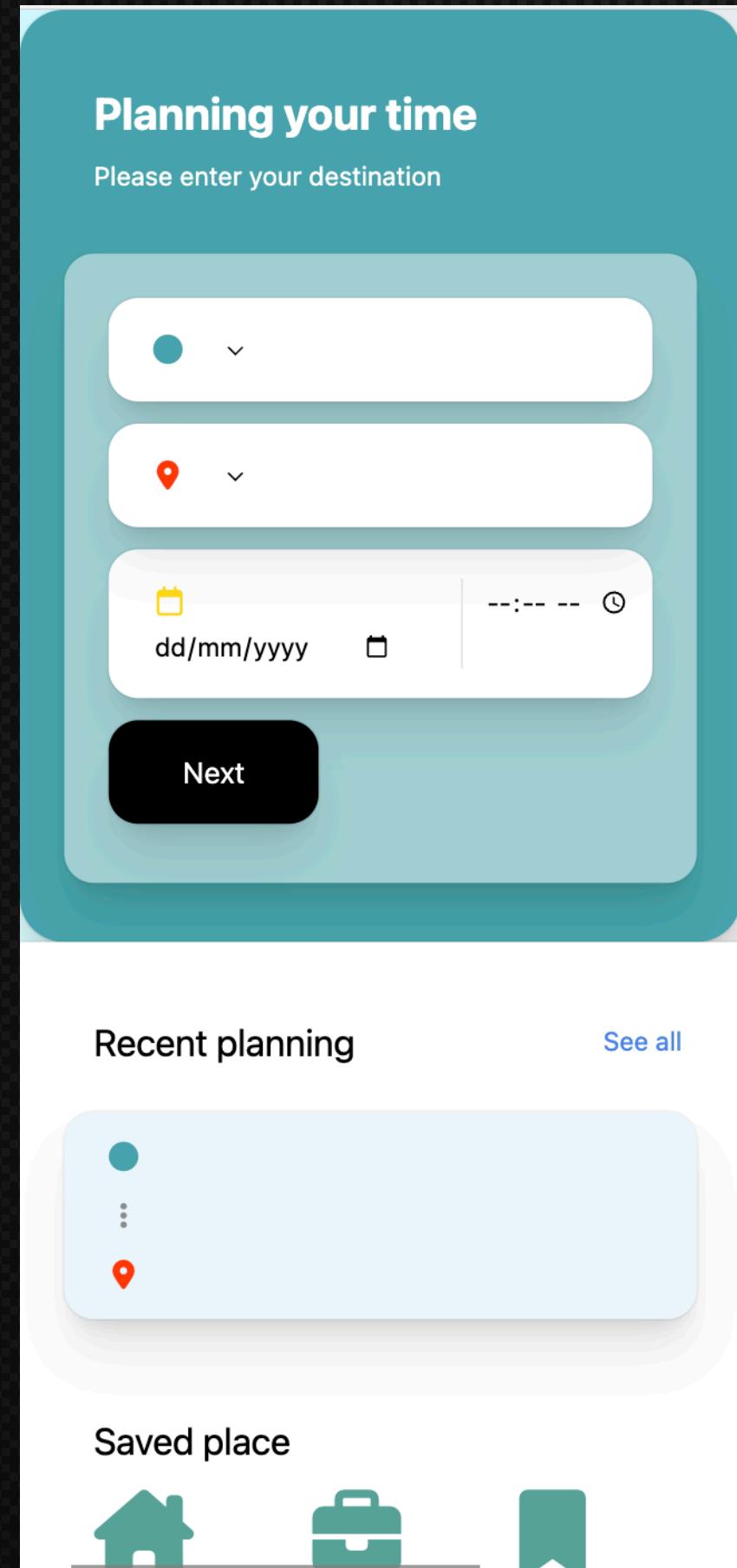
views.py



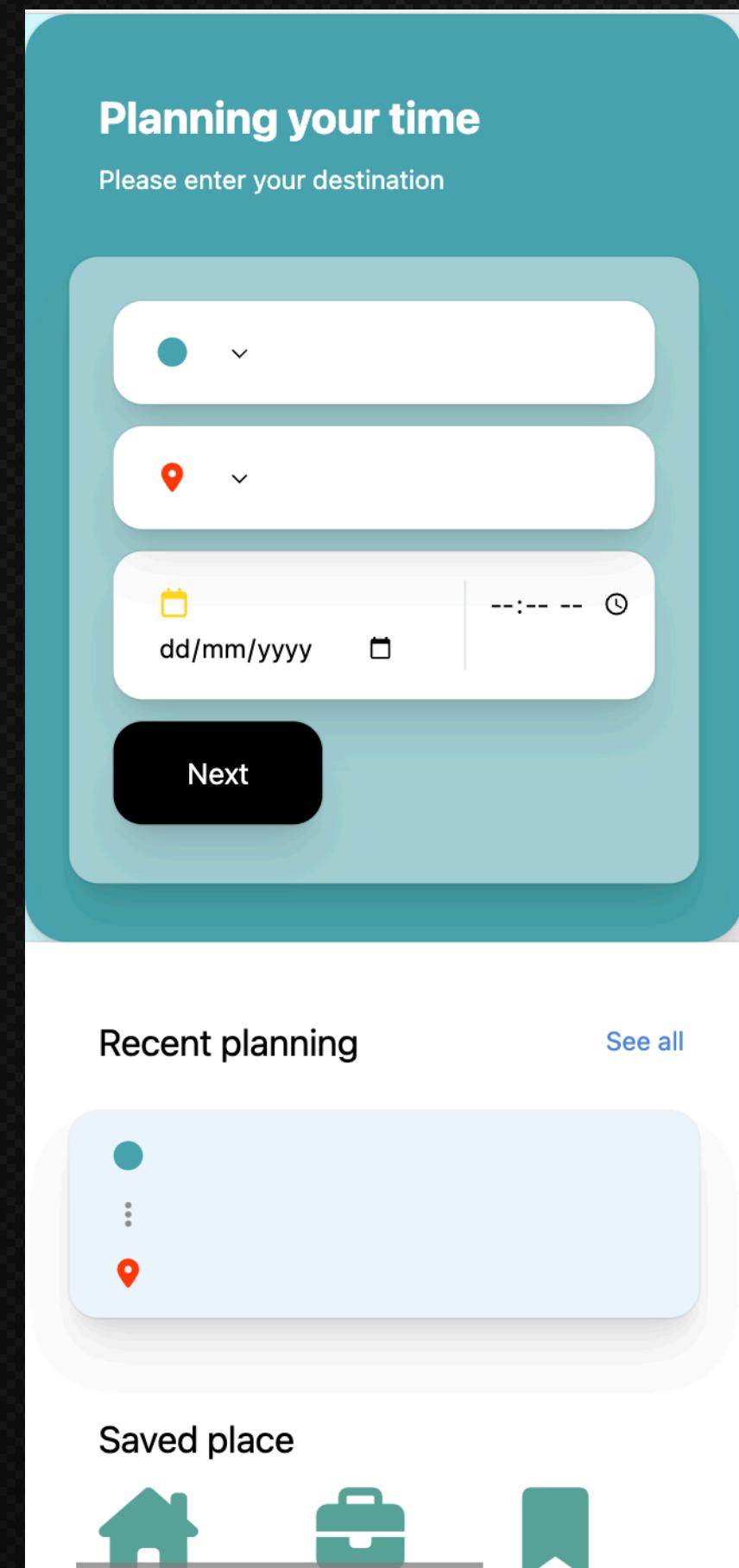
**views.py**



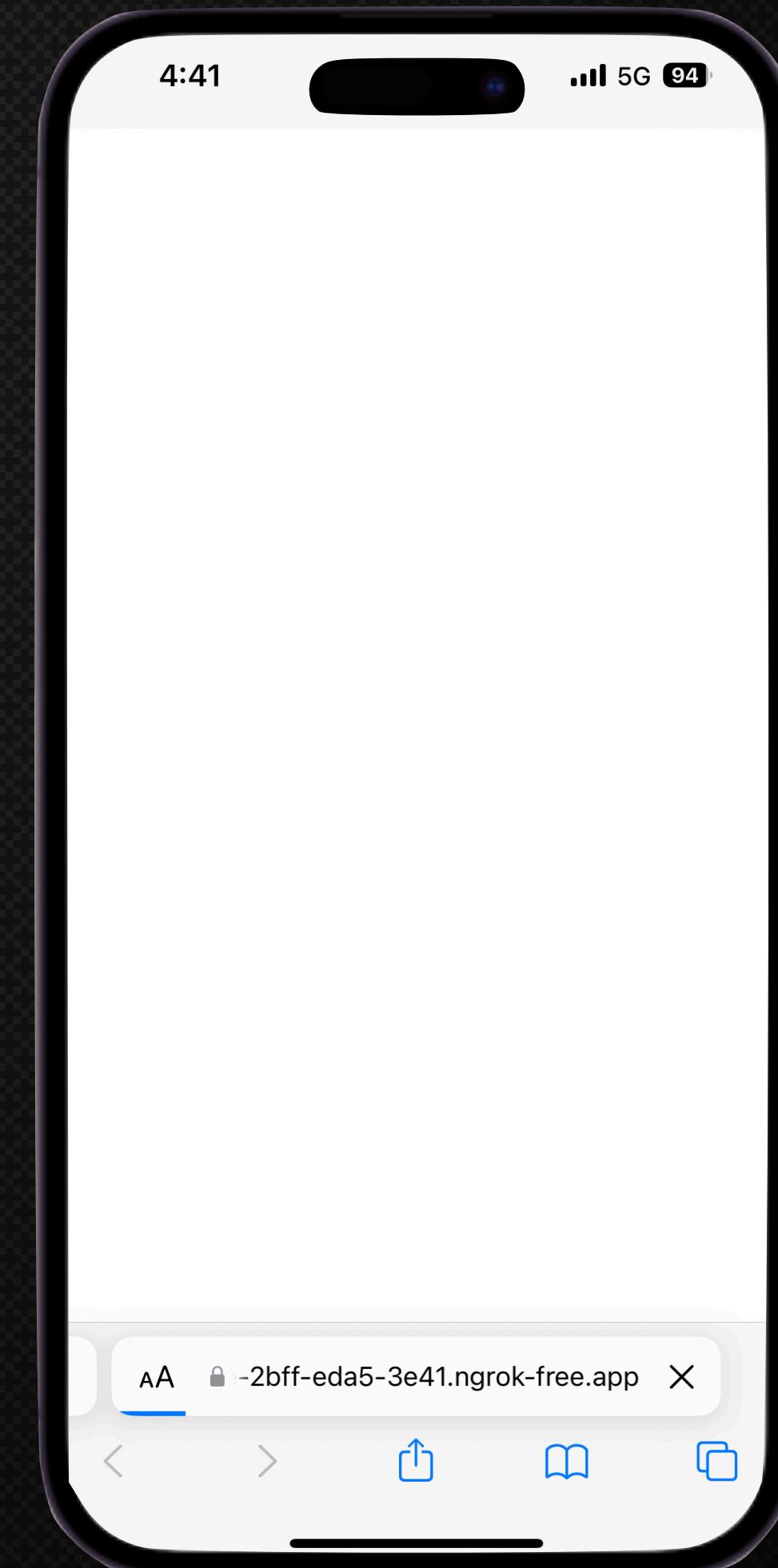
**views.py**



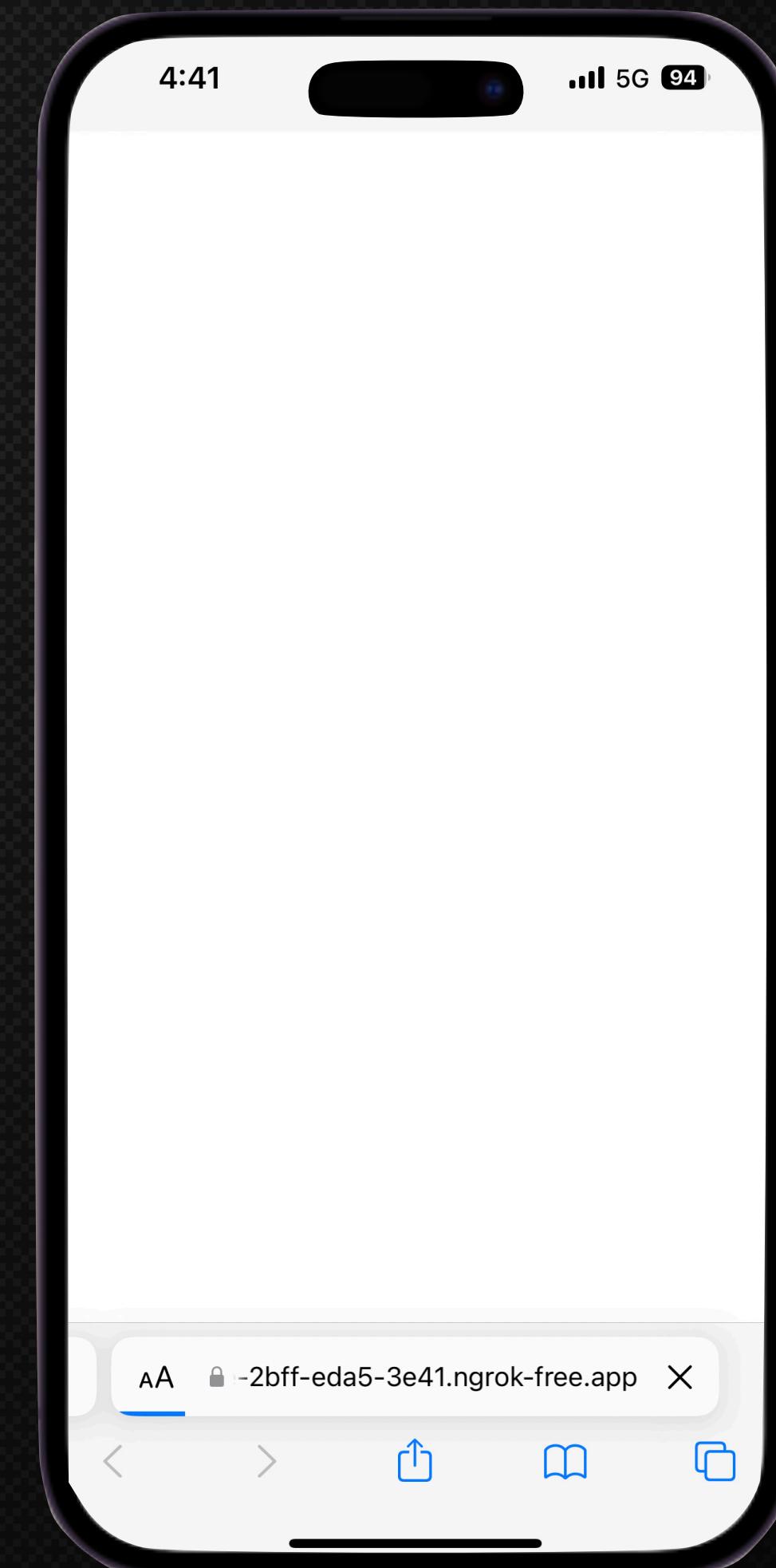
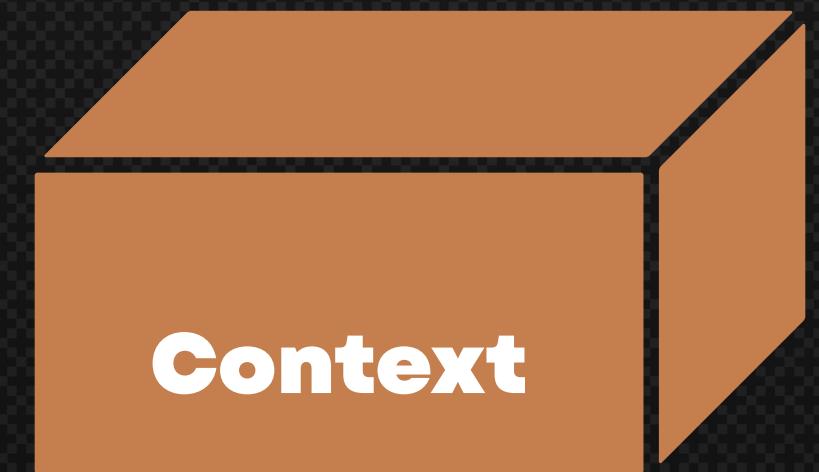
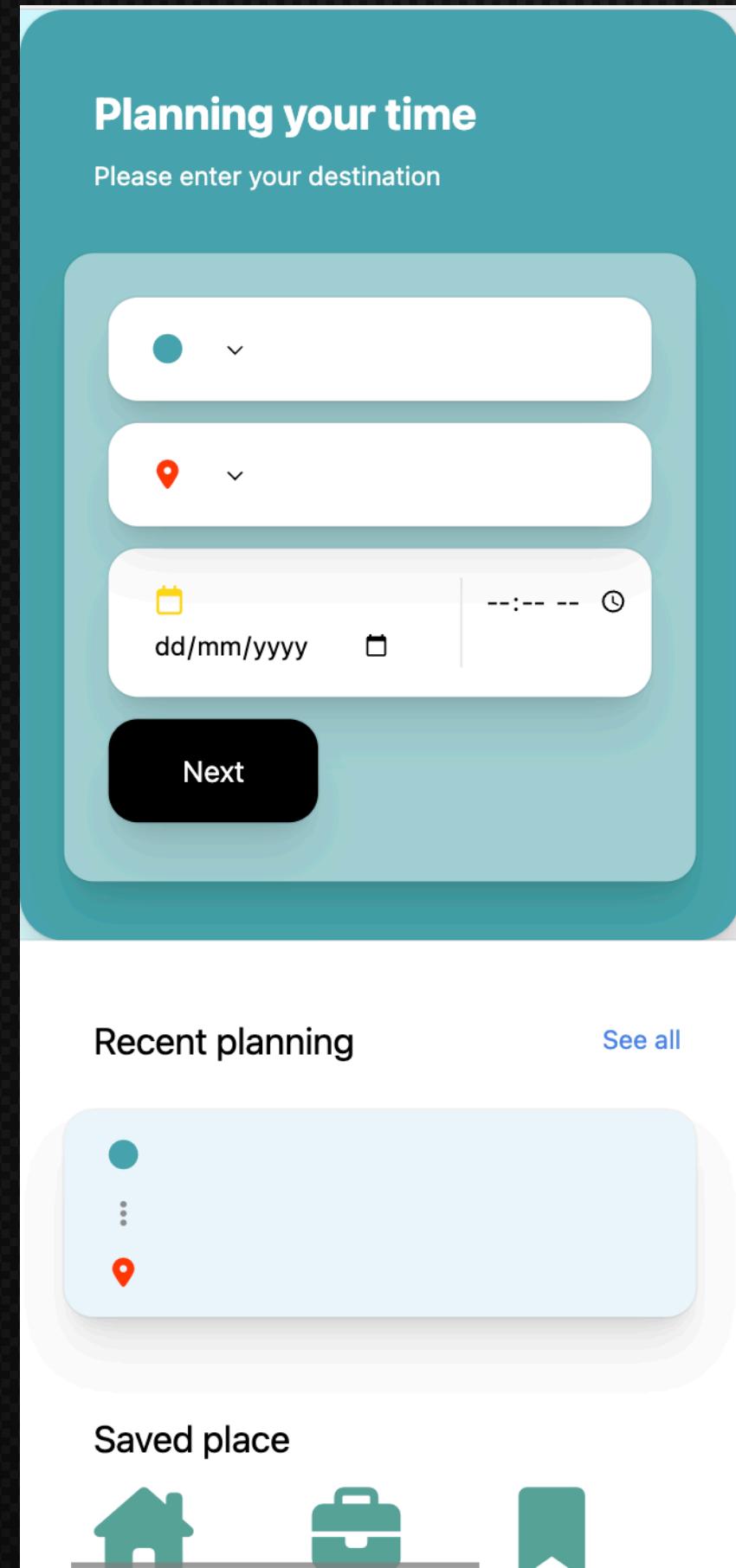
**Data  
Process result**



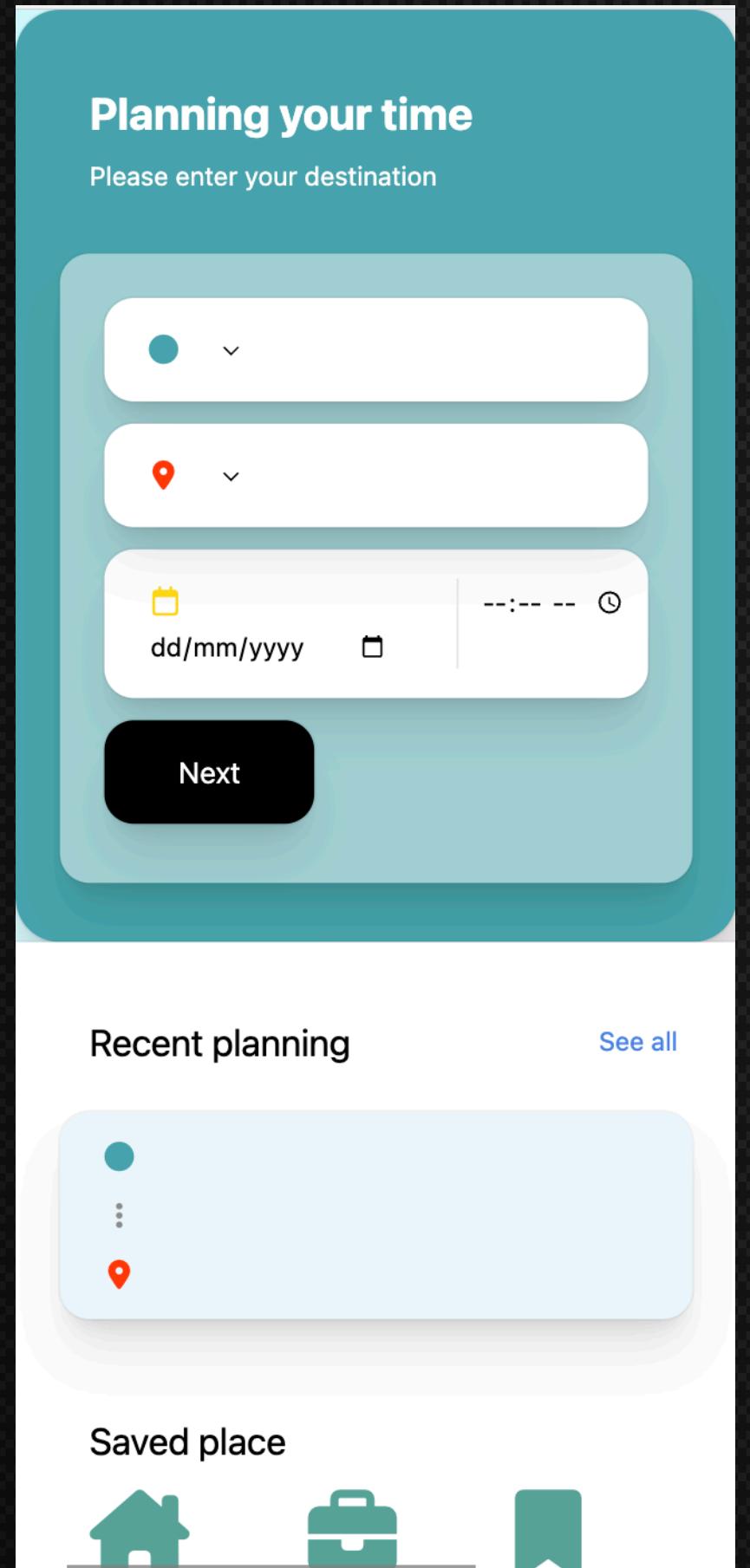
**Context**



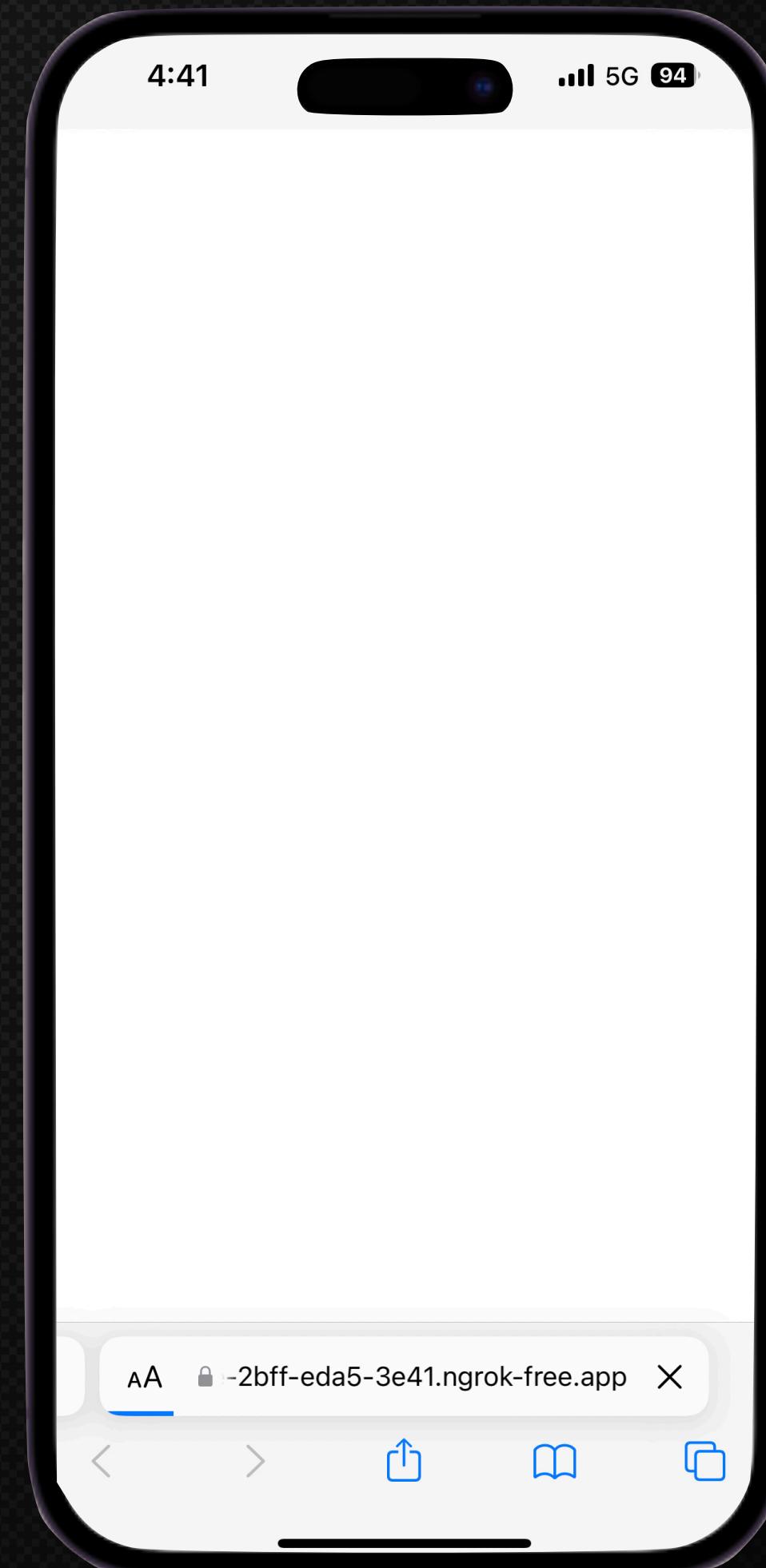
**views.py**



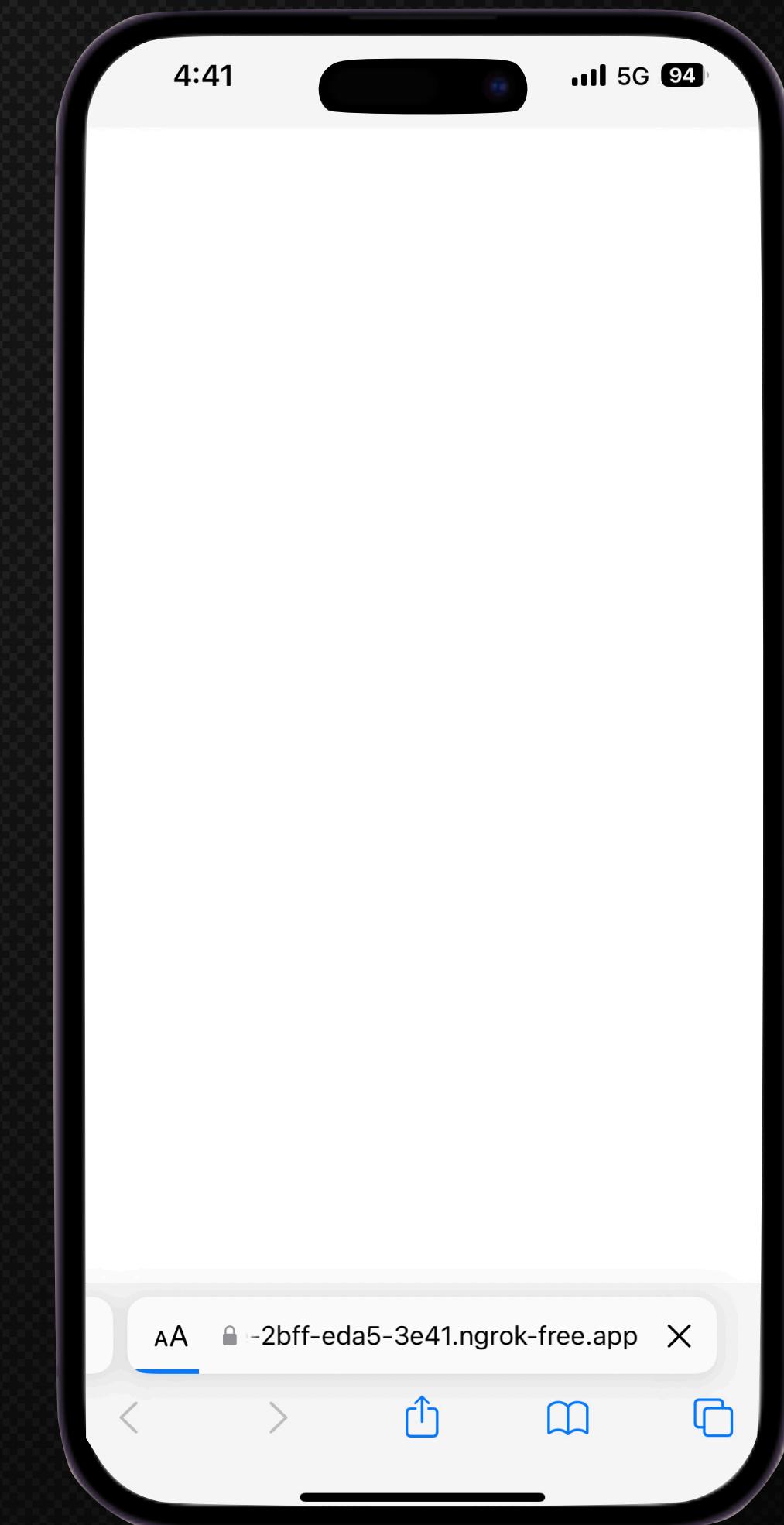
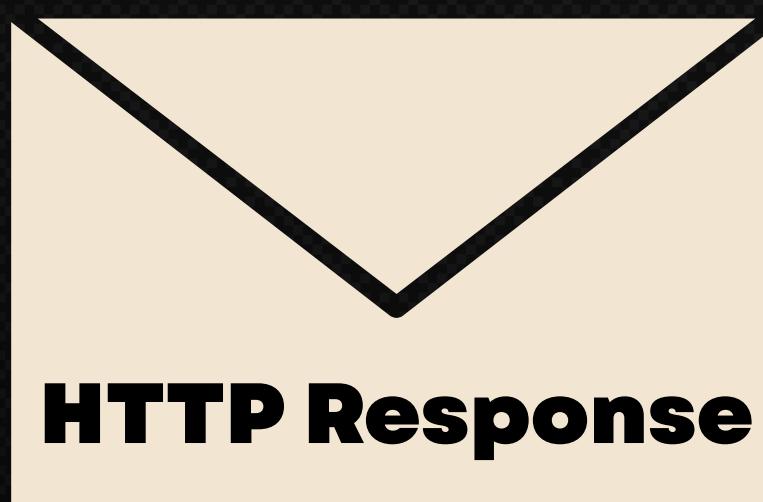
**views.py**

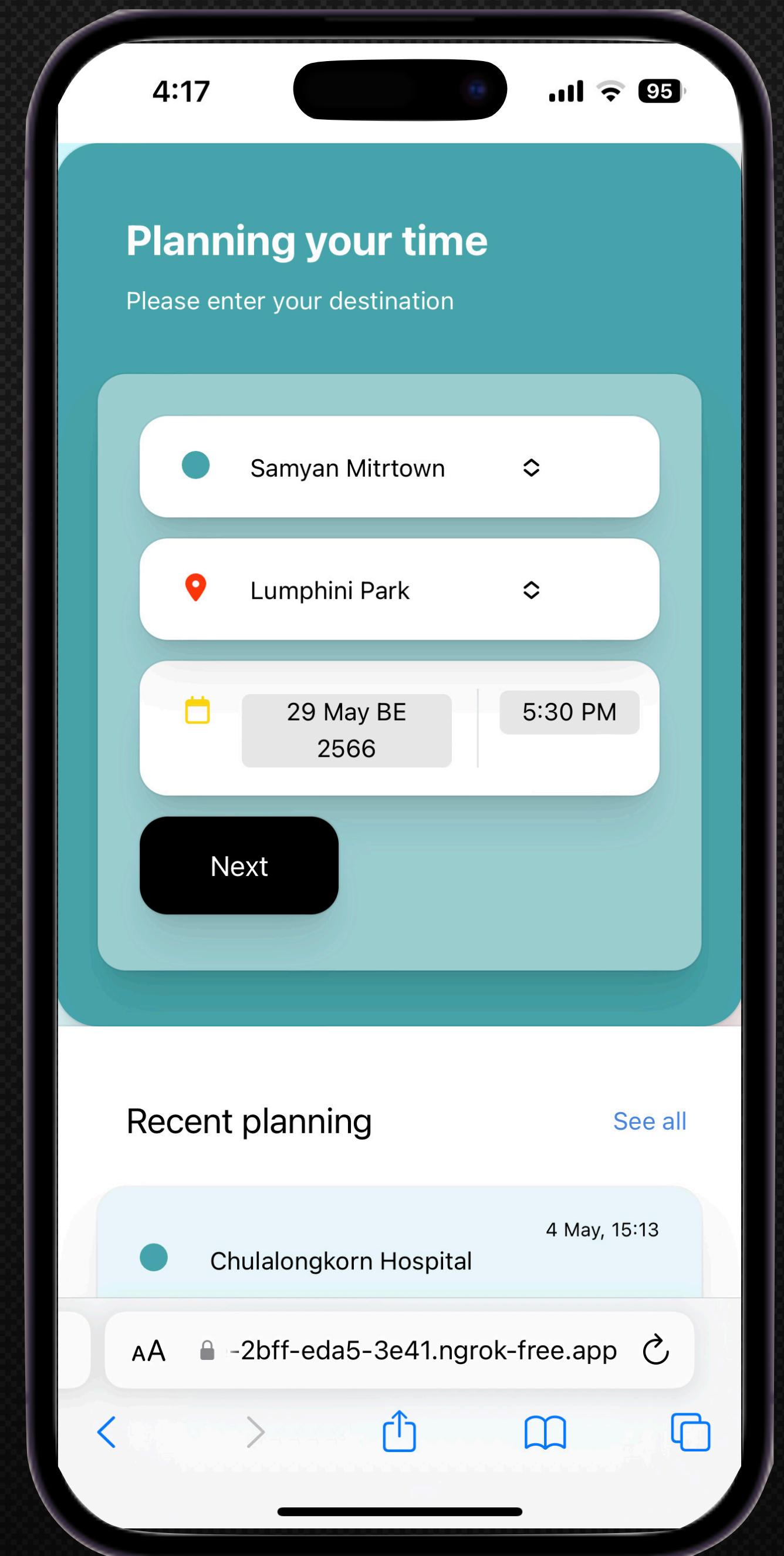


**HTTP Response**



views.py







# Database



## location

use in index page  
for selecting location

## Planning\_temp

temporary table  
for collect planning data

## Varandma

processed data result

## Recentplan

collecting every  
planning history



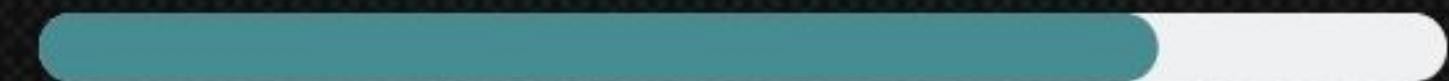
# GitHub check some code



<https://github.com/panutrytobeprogrammer/sv-project>

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# Results and discussions



loading 80% ...



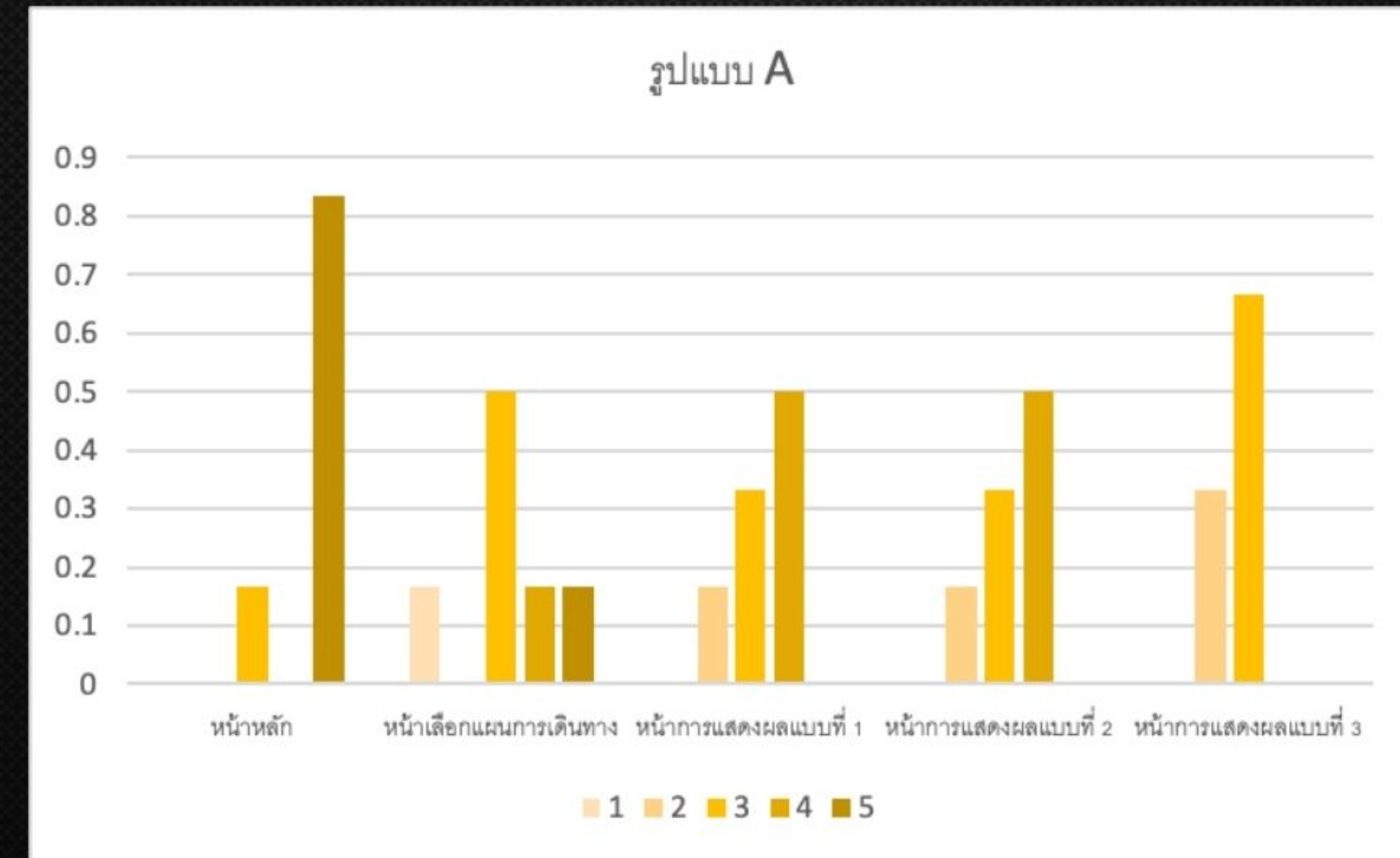
A/B Testing

## Prototype A

รูปแบบ A	คะแนน					
	1 น้อยที่สุด	2 น้อย	3 ปานกลาง	4 มาก	5 มากที่สุด	เฉลี่ย
หน้าหลัก	-	-	16.70%	-	83.33%	4.67
หน้าเลือกแผนการเดินทาง	16.70%	-	50.00%	16.70%	16.70%	3.17
หน้าการแสดงผลแบบที่ 1	-	16.70%	33.30%	50.00%	-	3.33
หน้าการแสดงผลแบบที่ 2	-	16.70%	33.30%	50.00%	-	3.33
หน้าการแสดงผลแบบที่ 3	-	33.30%	66.70%	-	-	2.67



## Prototype A ————— Result

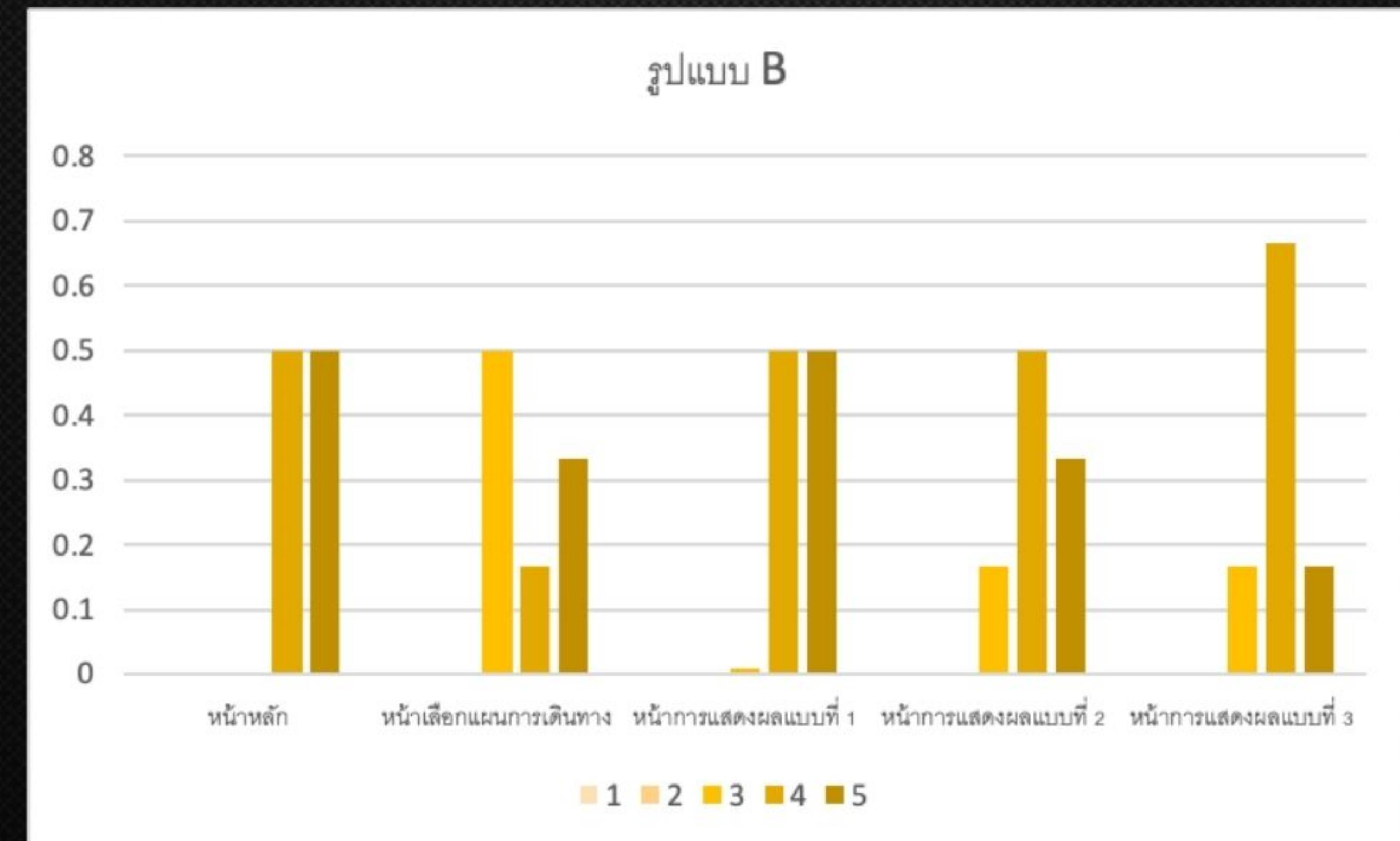


## Prototype B

รูปแบบ B	คะแนน					
	1 น้อยที่สุด	2 น้อย	3 ปานกลาง	4 มาก	5 มากที่สุด	เฉลี่ย
หน้าหลัก	-	-	-	50.00%	50.00%	4.50
หน้าเลือกแผนการเดินทาง	-	-	50.00%	16.70%	33.30%	3.83
หน้าการแสดงผลแบบที่ 1	-	-	-	50.00%	50.00%	4.53
หน้าการแสดงผลแบบที่ 2	-	-	16.70%	50.00%	33.30%	4.17
หน้าการแสดงผลแบบที่ 3	-	-	16.70%	66.67%	16.70%	4.00

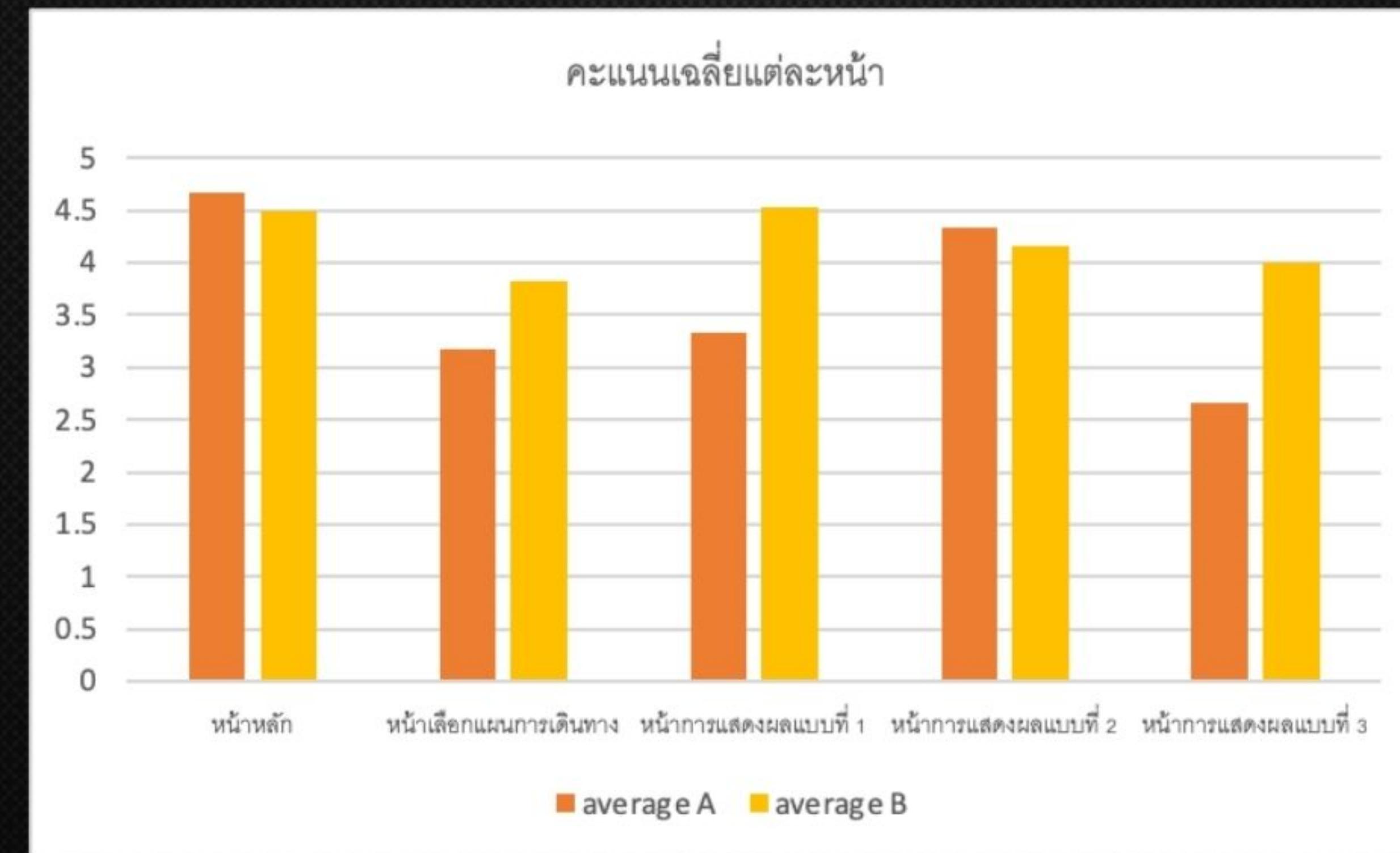


## Prototype B ————— Result





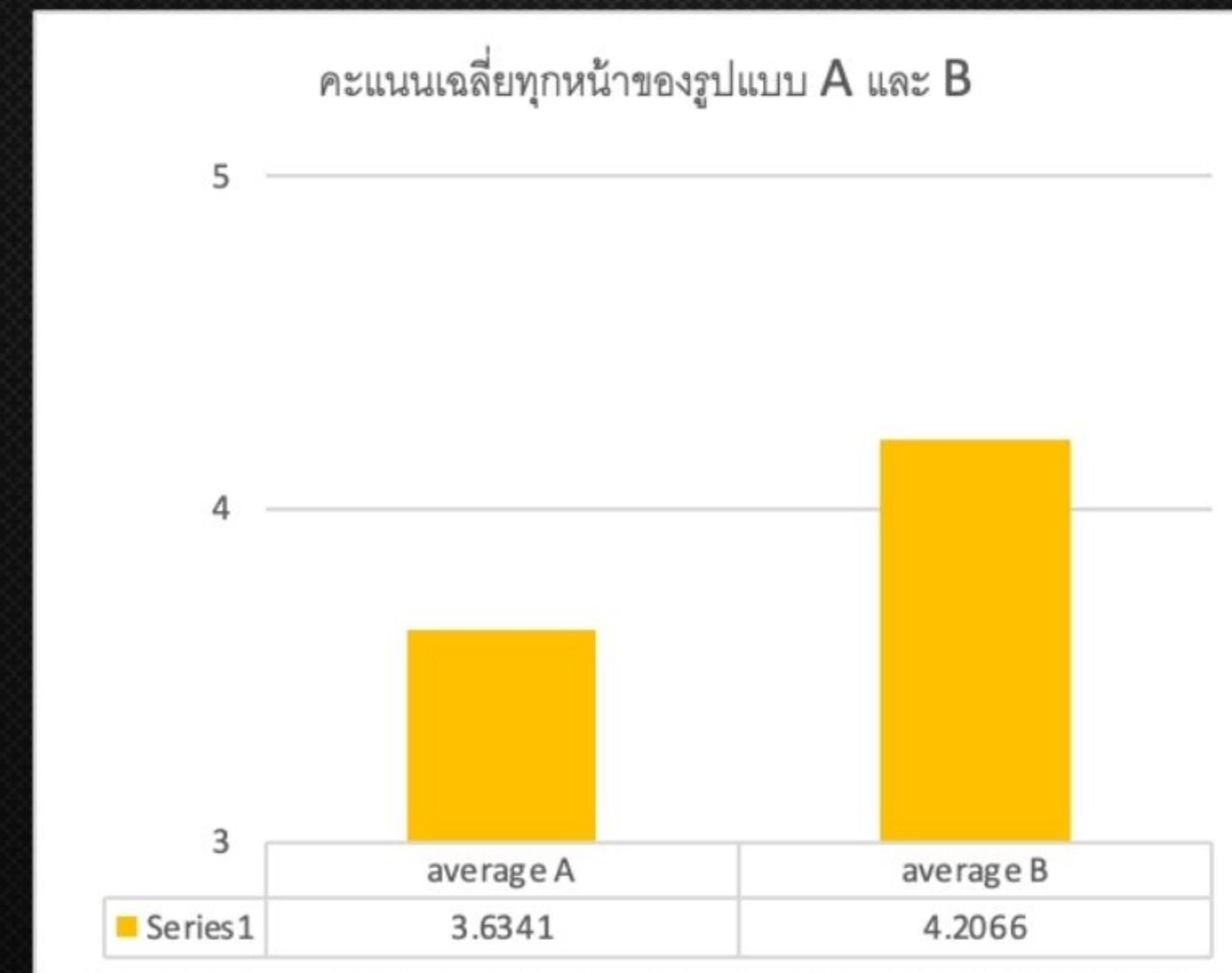
## The average scores



A graph comparing the average scores of each page



## The average scores



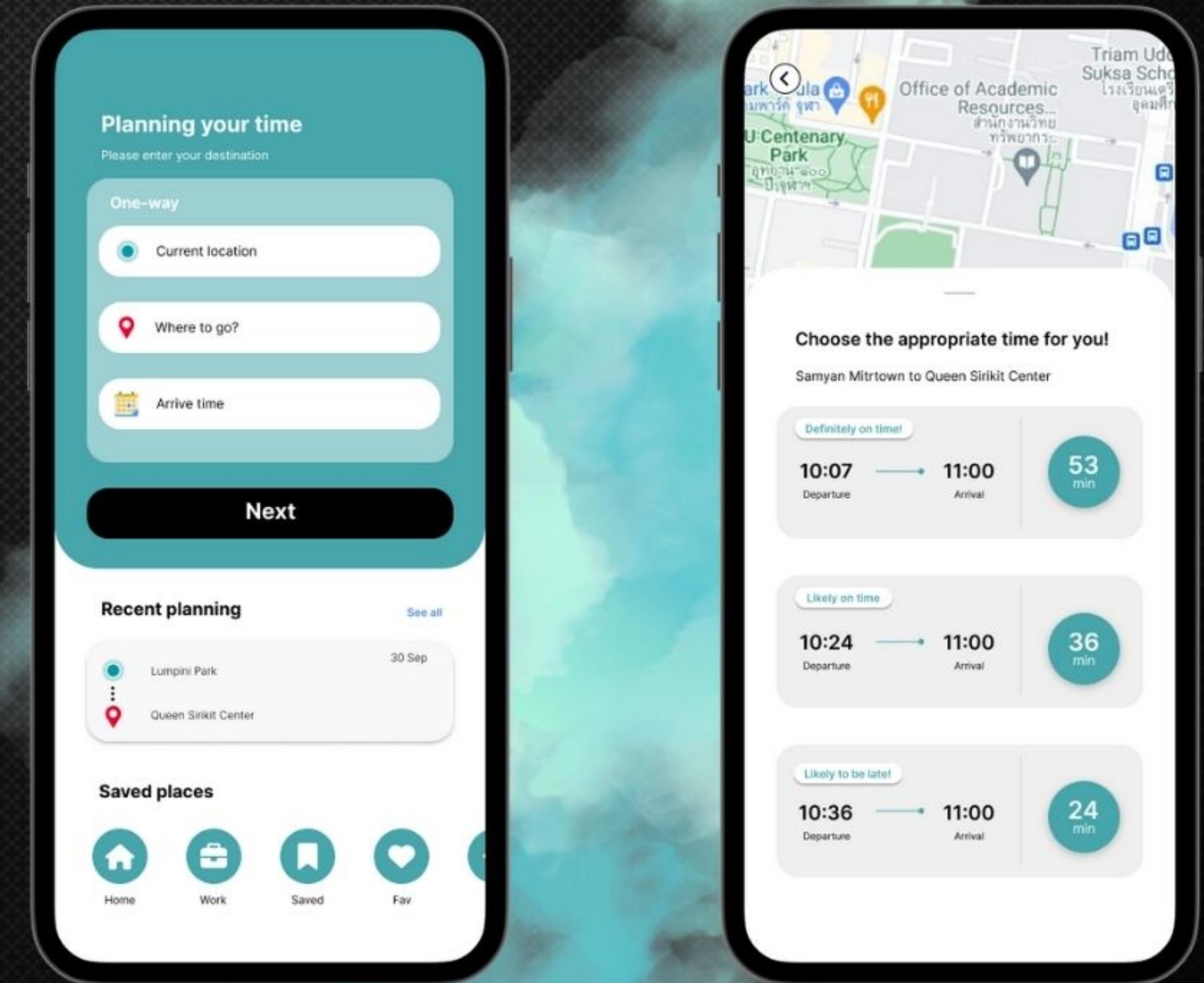
The average score for each page in prototype A is 3.3641, and for prototype B it is 4.2066, out of a total score of 5.

Result

# Step 1

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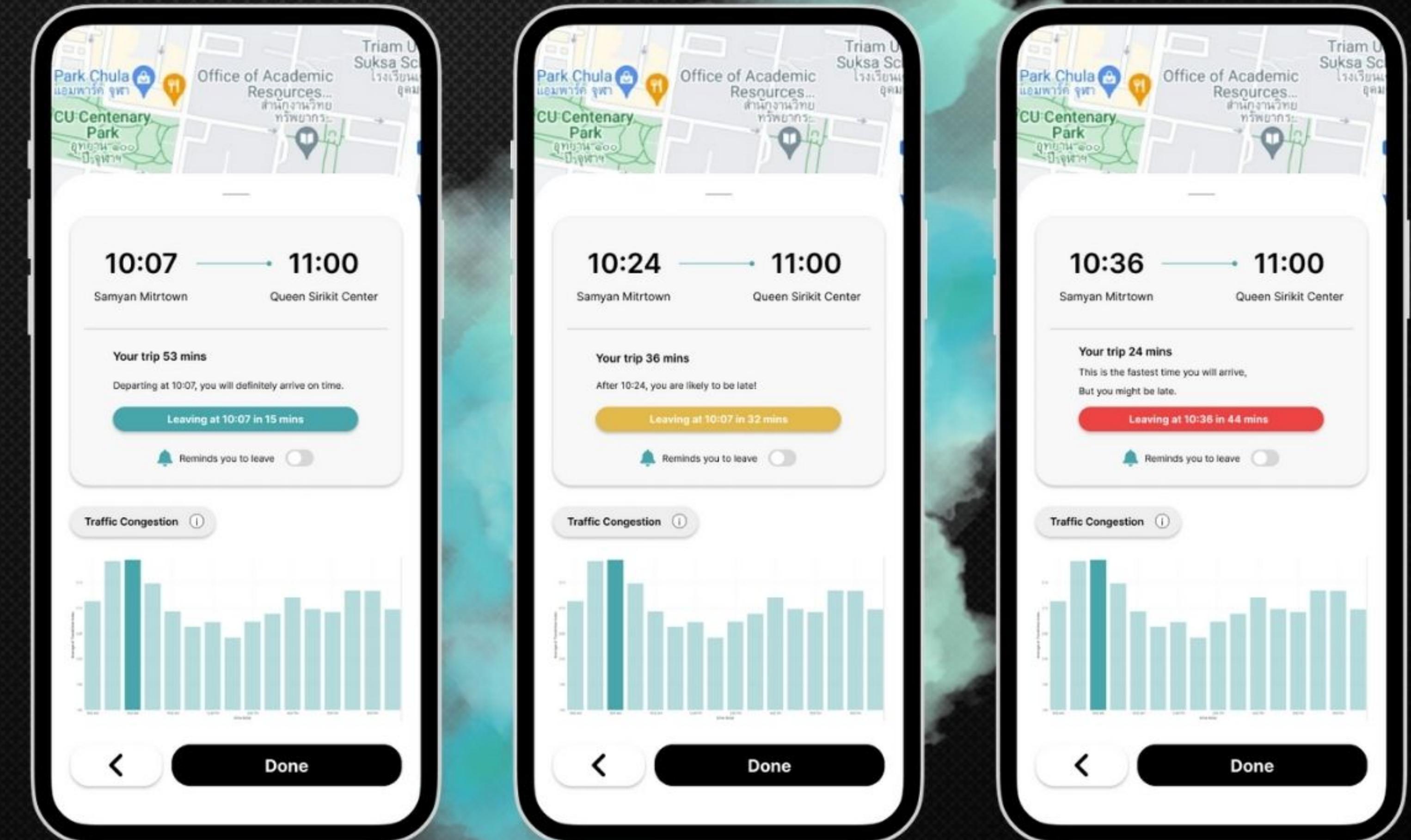
## Home page



## Step 2

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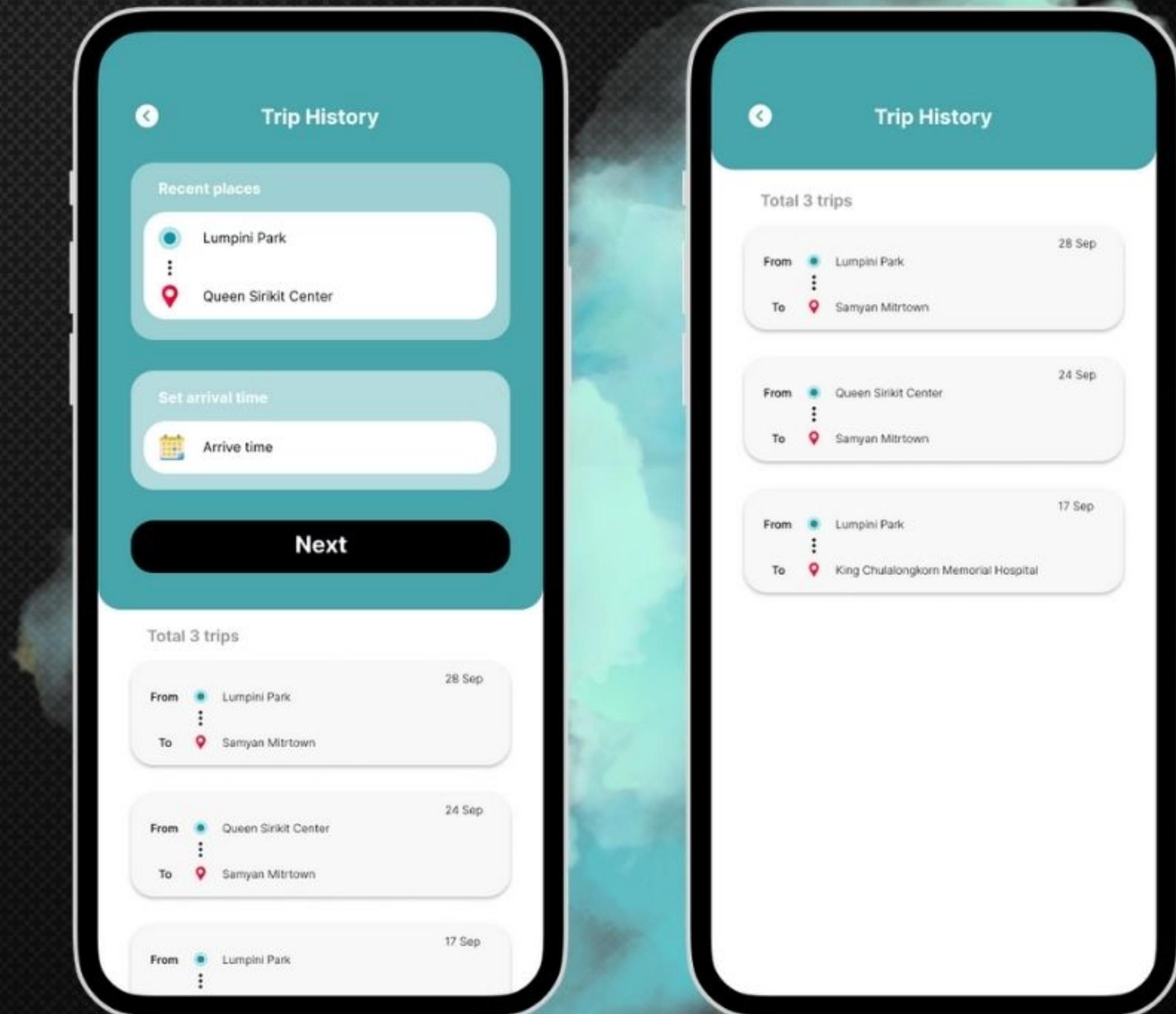
### Results



# Step 3

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## History search



The logo for Google Analytics features the company name "Google Analytics" in a white, sans-serif font. The word "Google" is on the first line and "Analytics" is on the second line. The entire text is contained within a light blue, irregularly shaped blob that resembles a drop of liquid or a cloud. The background of the slide is black.

Google Analytics



## Analysis results

ชื่อ กิจกรรม	จำนวน เหตุการณ์	จำนวนผู้ใช้รวม	จำนวน เหตุการณ์ต่อผู้ ใช้
page_view	82	7	11.71428571
scroll	67	6	11.16666667
user_engagement	42	6	7
form_start	21	6	3.5
form_submit	21	6	3.5
session_start	12	7	1.714285714
first_visit	9	7	1.285714286
รวมทั้งหมด	254	7	36.29



## Analysis results

ชื่อหน้าเว็บและคลาสหน้าจอ	จำนวนการดู	ผู้ใช้	จำนวนการดูต่อผู้ใช้	เวลาในการมีส่วนร่วมโดยเฉลี่ย	จำนวนเหตุการณ์กั้งหมัด
senior project   Home	30	7	4.285	0 นาที 35 วินาที	87
senior project   Visualization	20	5	4	0 นาที 12 วินาที	47
senior project   Login	15	6	2.5	0 นาที 21 วินาที	58
senior project   Planning	12	5	2.4	0 นาที 13 วินาที	45
senior project   Register	3	2	1.5	0 นาที 13 วินาที	10
senior project   Coming Soon	1	1	1	0 นาที 02 วินาที	3
senior project   Trip history	1	1	1	0 นาที 03 วินาที	4
รวมกั้งหมัด	82	7	11.71	1 นาที 17 วินาที	254

5

## Conclusions and recommendation

loading 100% ...

## Conclusions

1

Summary

2

What's next in UX/UI?

3

What's next in application development?

4

Recommendation

# You can try this at home

Try this app to plan your time to the place where you go!

**Prof.**

Dr. Garavig

user: garavig

pass: giveusAplease

Dr. Pawan

user: pawan

pass: giveusAplease

Dr. Chaichoke

user: chaichoke

pass: giveusAplease



**Our friends**

user: test[1-7]

pass: seniorproject123

# Thank You