Design and Implementation of Mobile Applications

Trenord – Travel

POLITECNICO
MILANO 1863

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Application scenarios for new features of the Trenord App

Scenario 7

Features for train tourism

This project aims to offer a pleasant tourist experience to railway travelers, allowing them to plan personalized itineraries using rail transport as the main means of travel. Integrating information on attractions, accommodations, and restaurants along the route will ensure a complete tourist experience.

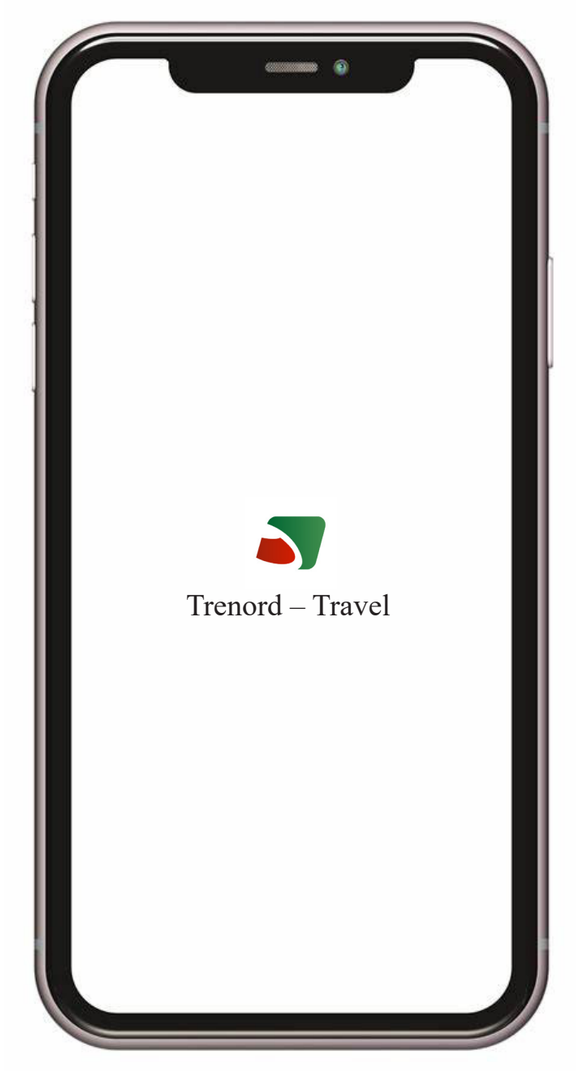
The use of the E015 API catalog made available by Regione Lombardia can provide numerous data sources. Examples: parking status, metro line status, railway line status, events, territory, points of interest, weather alerts.

User Profile

- Railway travelers

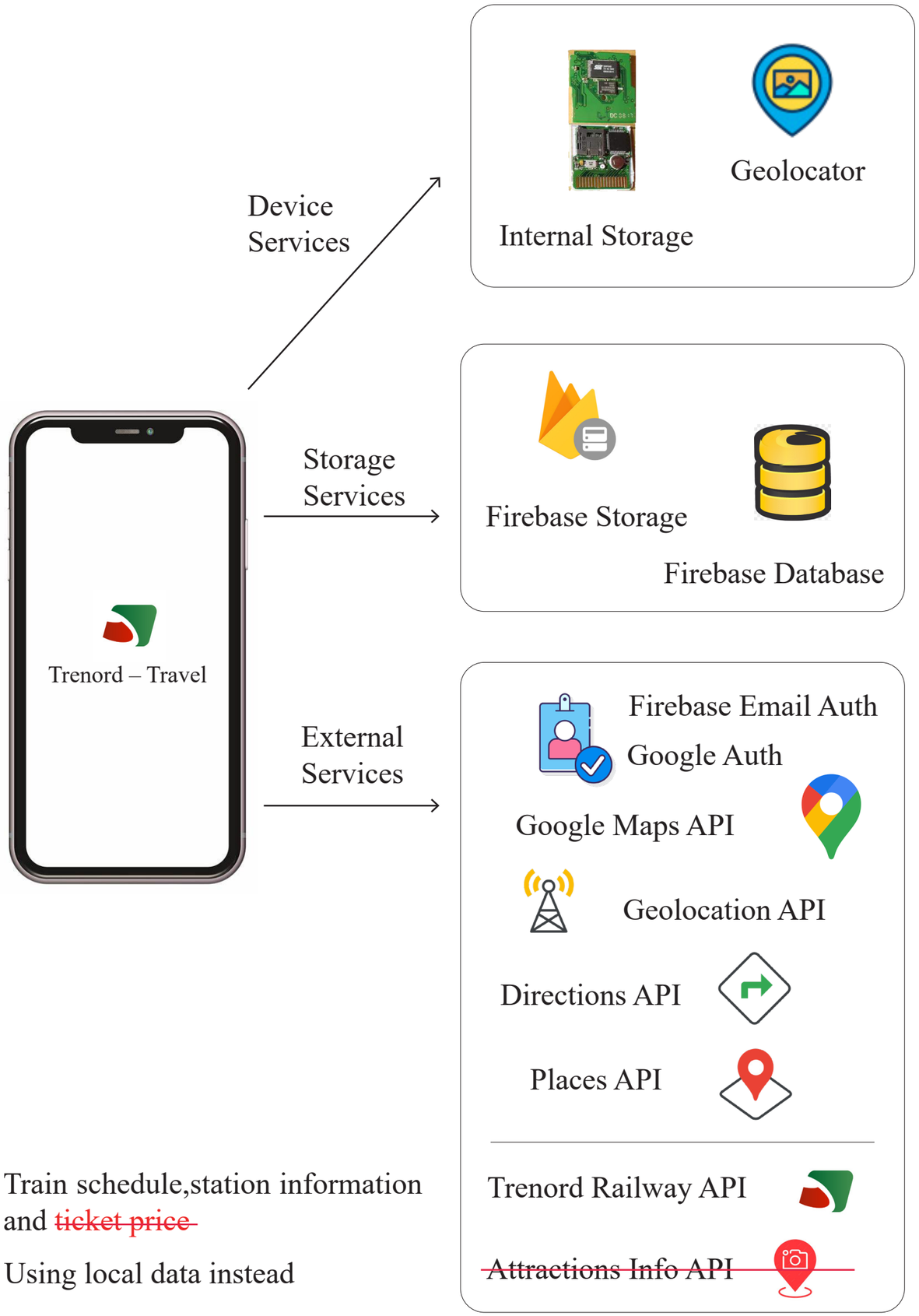
Objective

- Plan personalized itineraries
- Access integrated information
  - Attractions
  - Railway information



Main Features

- User account management
- Trip planning
- Map Navigation and Positioning
- Train Information
- Attractions Search and Recommendation



Train schedule,station information and ~~ticket price~~

Using local data instead

Application Architecture

Flutter Framework

MVC Architecture

- Model (data layer) Firestore Database
- View(responsive UI)
- Controller(input)

Firebase back-end

- Map provided by GoogleMaps
- Train infomation provide by Trenord Railway

Trenord Railway API

Parameters

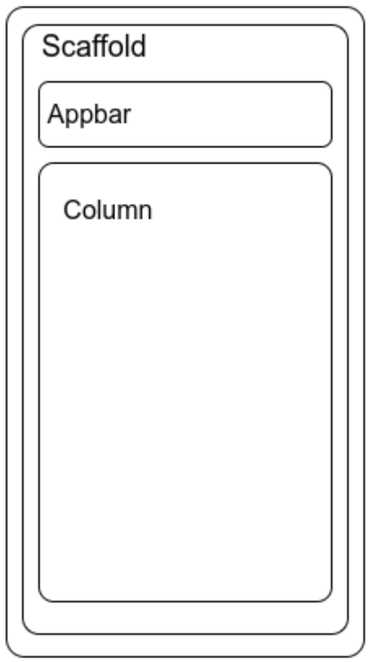
Name	Mandatory?	Type	Example	Description
orig	Yes	String	Milano Cadorna	Name of the origin station. The endpoint will perform a fuzzy search and return the most similar station found
dest	Yes	String	Saronno	Name of the destination station. The endpoint will perform a fuzzy search and return the most similar station found
page	No	Int	1	Page of travel solution to return. Each page contains five travel solutions. 0 if not present.
products	No	String	`true`, `tickets`	If present, a `products` key will added to each travel solution with the products that allows to travel using the proposed travel solution. **The `true` option is deprecated. In future versions this endpoint will only return tickets**.
departure_date	No	String	`yyyyMMdd`	Desired departure date. Today if not present
departure_hour	No	String	`HH:MM`	Desired departure hour. Now if not present.

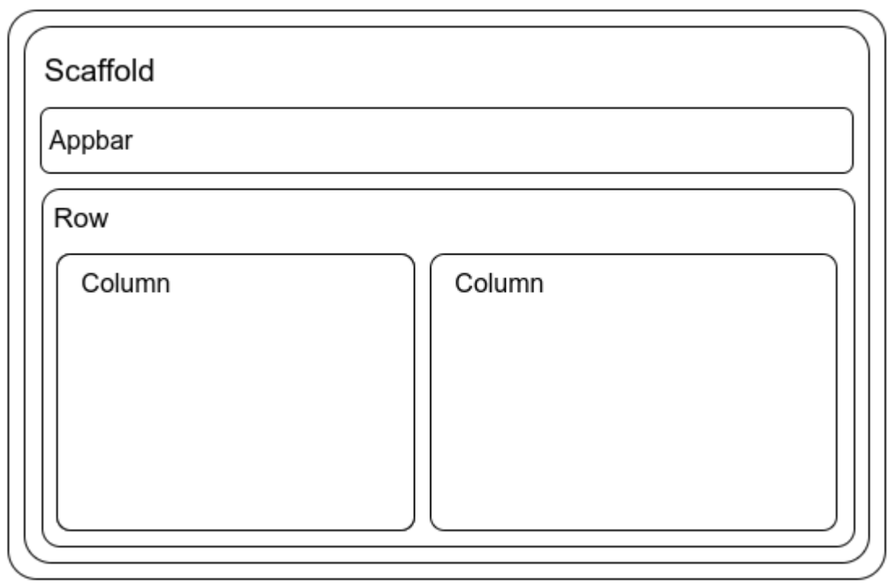
Response

The endpoint returns an array with five solutions, each solution has four main sub objects:

- `journey_list`: Information about trains and stops
- `price`: **Deprecated information about pricing**
- `pricingModels`: **Deprecated information about pricing**

LayoutBuilder

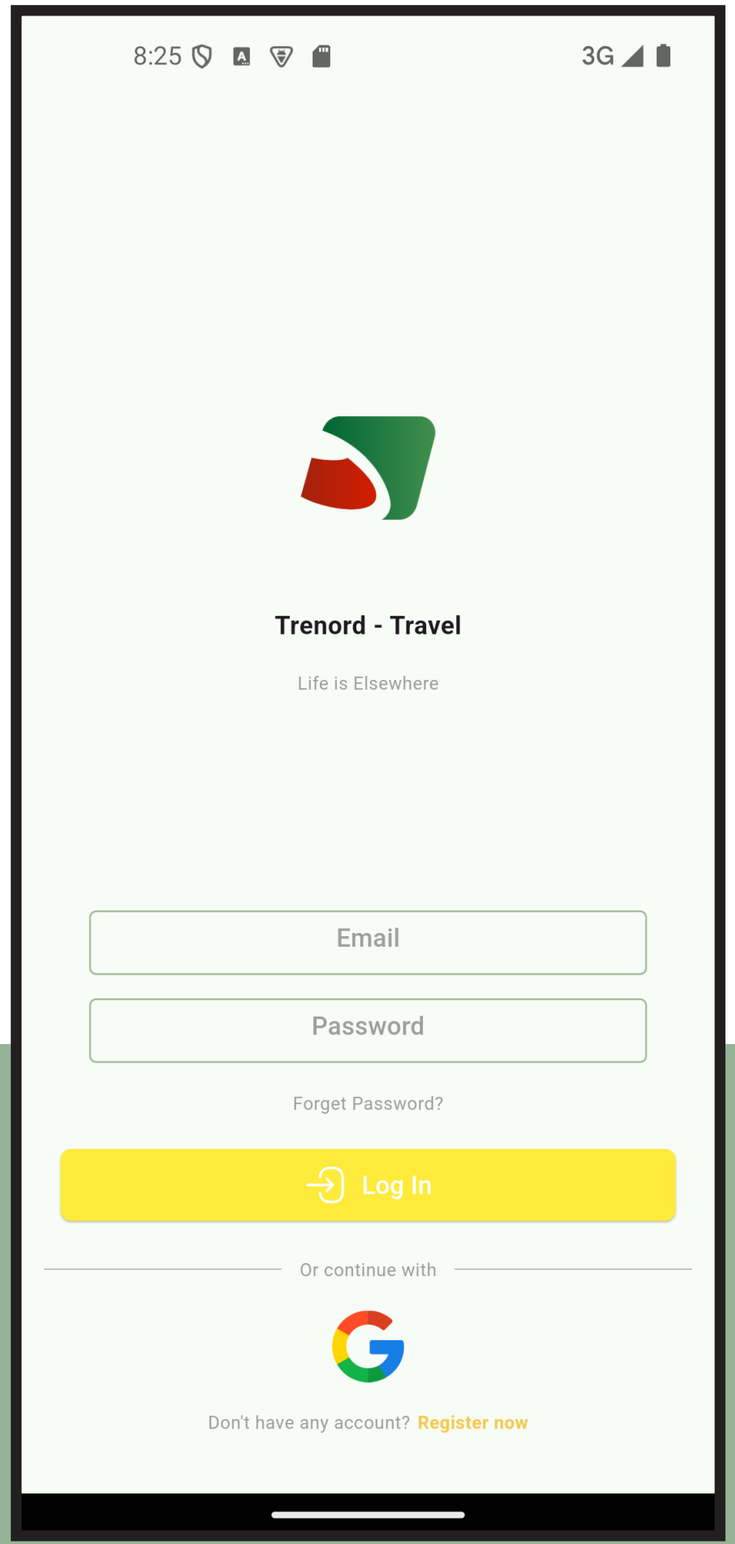


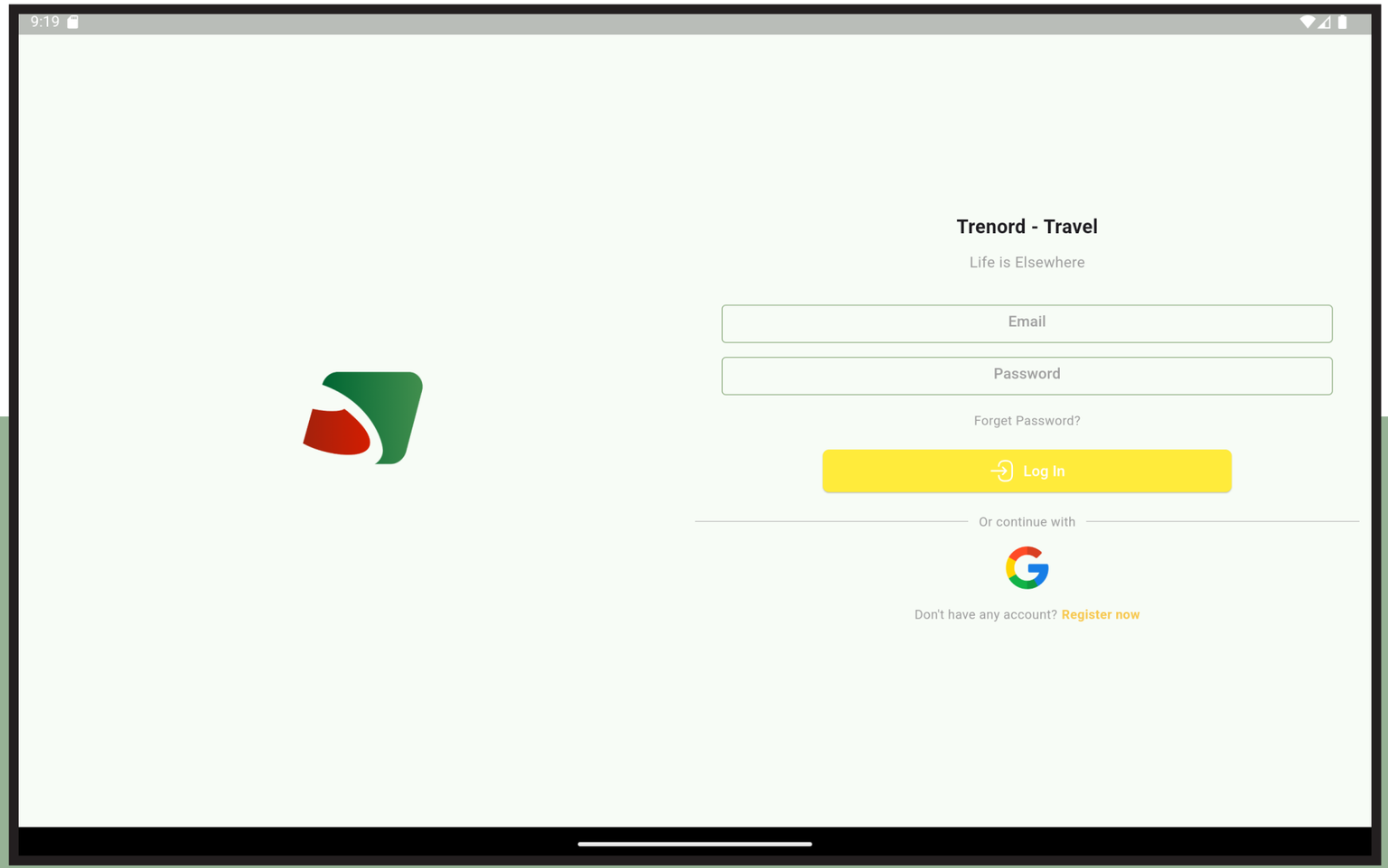


Widget Architecture

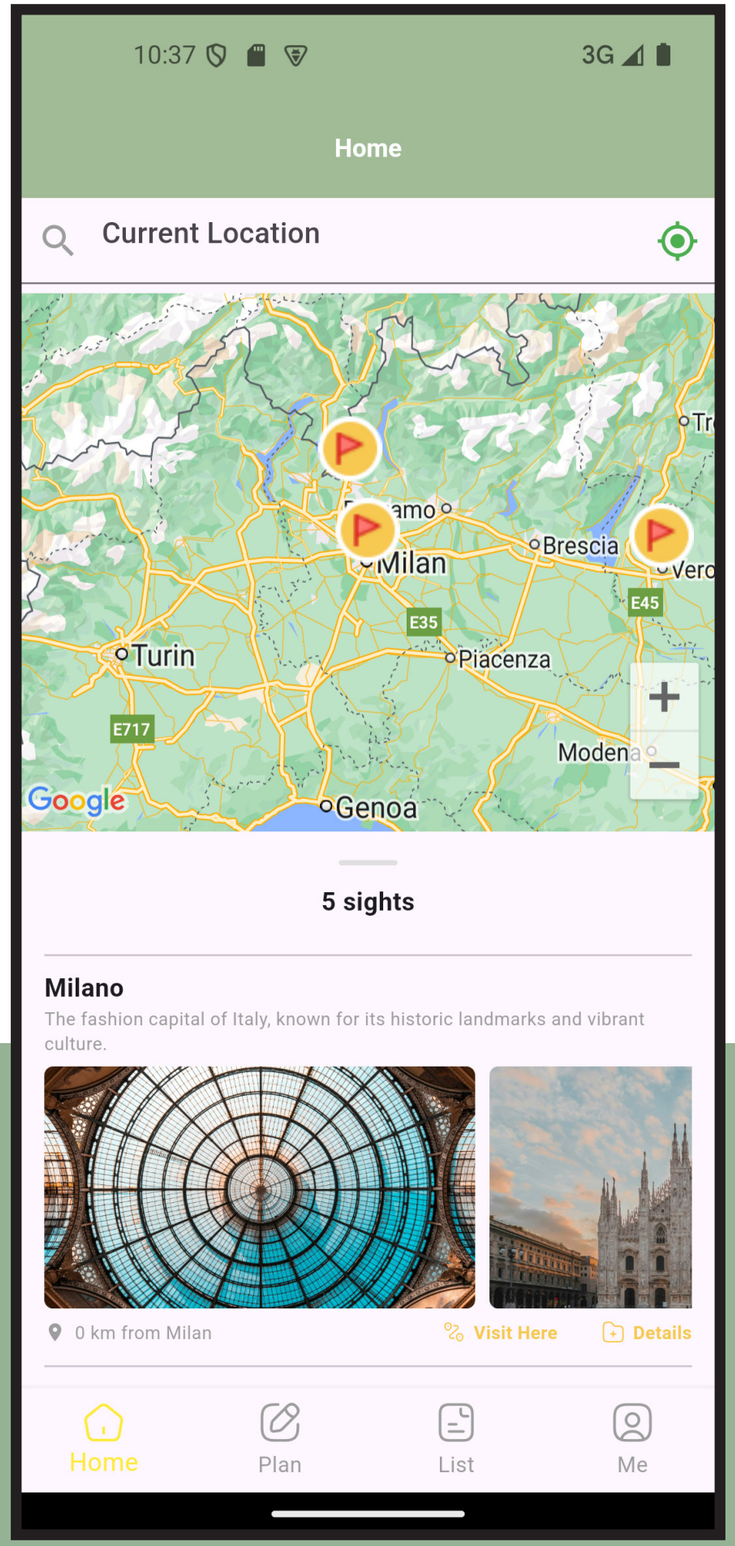
- 2 Different layouts
- LayoutBuilder implementation for dynamic layout switch

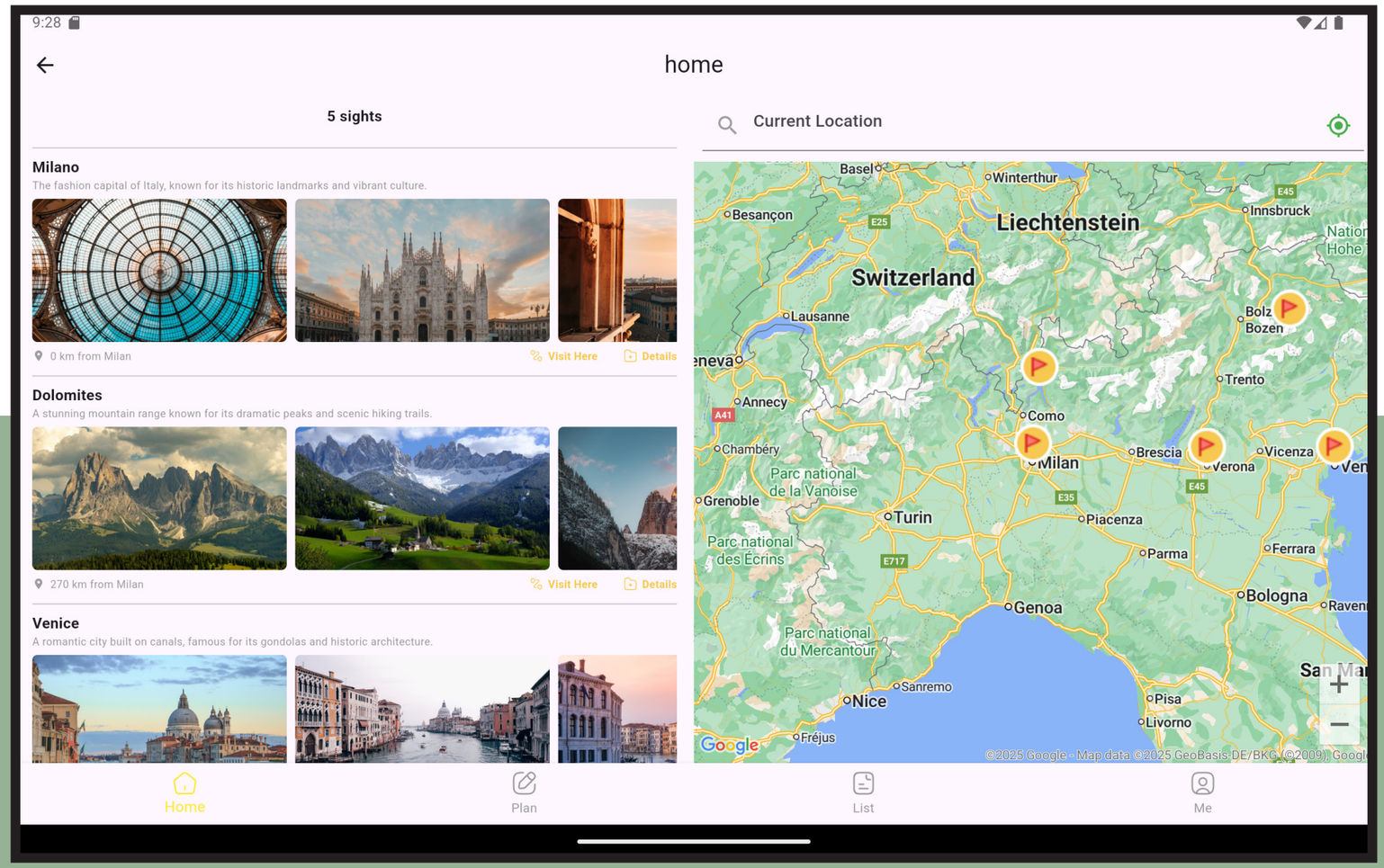
UI Design


8:25
3G
Trenord - Travel
Life is Elsewhere
Email
Password
Forget Password?
Log In
Or continue with
Don't have any account? Register now


9:19
Trenord - Travel
Life is Elsewhere
Email
Password
Forget Password?
Log In
Or continue with
Don't have any account? Register now

UI Design

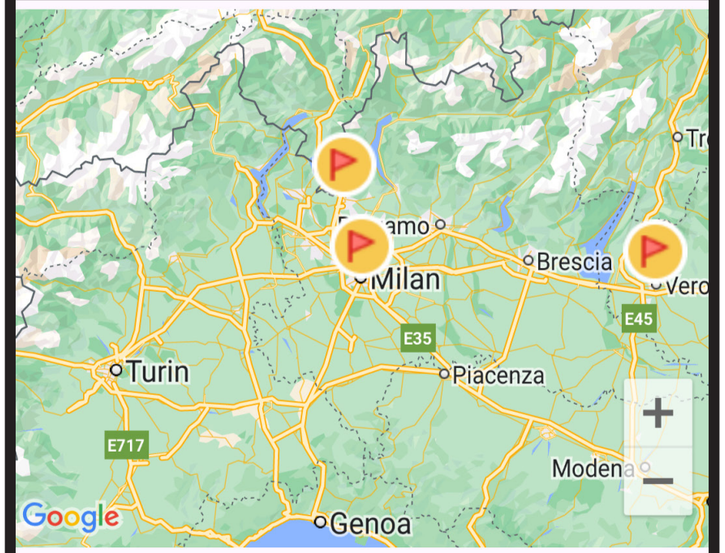

10:37
3G
Home
Current Location
Milan
Brescia
Turin
Piacenza
Genoa
Modena
E35
E45
E717
Google
5 sights
Milano
The fashion capital of Italy, known for its historic landmarks and vibrant culture.
0 km from Milan
Visit Here
Details
Home
Plan
List
Me


9:28
home
5 sights
Milano
The fashion capital of Italy, known for its historic landmarks and vibrant culture.
0 km from Milan
Visit Here
Details
Dolomites
A stunning mountain range known for its dramatic peaks and scenic hiking trails.
270 km from Milan
Visit Here
Details
Venice
A romantic city built on canals, famous for its gondolas and historic architecture.
Current Location
Switzerland
Liechtenstein
Milan
Brescia
Verona
Vicenza
Turin
Piacenza
Parma
Genoa
Bologna
Como
Trento
Bolz
Bozen
Innsbruck
Lausanne
Besançon
Winterthur
Basel
Annecy
Chambéry
Grenoble
Nice
Sanremo
Pisa
Livorno
Ferrara
Parc national de la Vanoise
Parc national des Écrins
Parc national du Mercantour
©2025 Google - Map data ©2025 GeoBasis-DE/BKG (©2009), Google
Home
Plan
List
Me

10:37 3G

Home

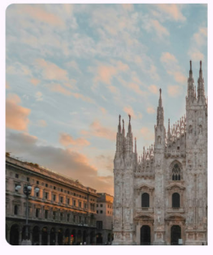
Current Location



5 sights

Milano

The fashion capital of Italy, known for its historic landmarks and vibrant culture.



0 km from Milan Visit Here Details

Home Plan List Me

10:38 3G

Milano

Milano

Milan is home to iconic landmarks such as the Duomo di Milano, Sforza Castle, and the world-renowned La Scala opera house. It is also a global center for fashion and design.

0 km from Milan All Day

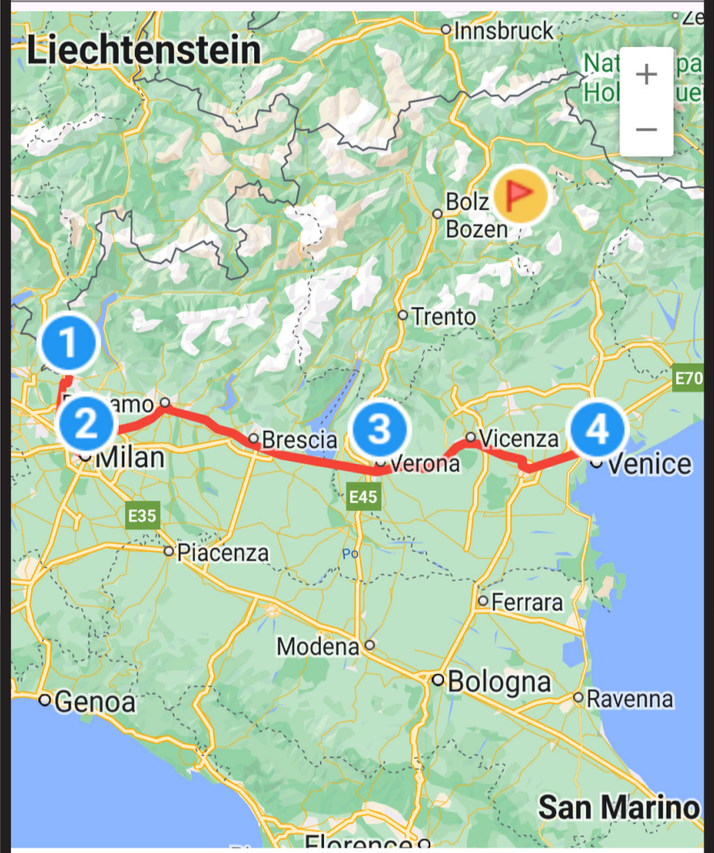
Varies by attraction Partly Cloudy, 15°C

10:30 3G

Plan

Current Location

Where do you want to visit



Here you can choose to link or adjust you routes

Link Route

Adjust Route

Home Plan List Me

8:43 3G

link

1 Lake Como

Walking 1.7 km | 6 mins

Bus - C10 33.5 km | 2 hours 19 mins

Menaggio - Hotel Menaggio → Como - Stazione S.Giovanni

Walking 0.1 km | 2 mins

Train - RE80 46.6 km | 2 hours 19 mins

Como San Giovanni → Milano Centrale Railway Station

Walking 0.3 km | 5 mins

Subway - 3 2.6 km | 2 hours 19 mins

Centrale FS → Duomo

Walking 0.1 km | 2 mins

2 Milano

Walking 0.1 km | 2 mins

Subway - 3 2.6 km | 2 hours 31 mins

Duomo → Centrale FS

Walking 0.3 km | 4 mins

Train - RE6 156 km | 2 hours 31 mins

Milano Centrale Railway Station → Verona Porta Nuova Train Station

Walking 1.4 km | 20 mins

3 Verona

Save Plan

Buy Tickets

10:36 3G

Train Booking

Como Lago → Milano Cadorna

Date: 2025-02-06 Time: 22:35

Trenord	5.20 €
05:16:00	01:02:00 → 06:18:00
Como Lago	Milano Cadorna
0 Changes	

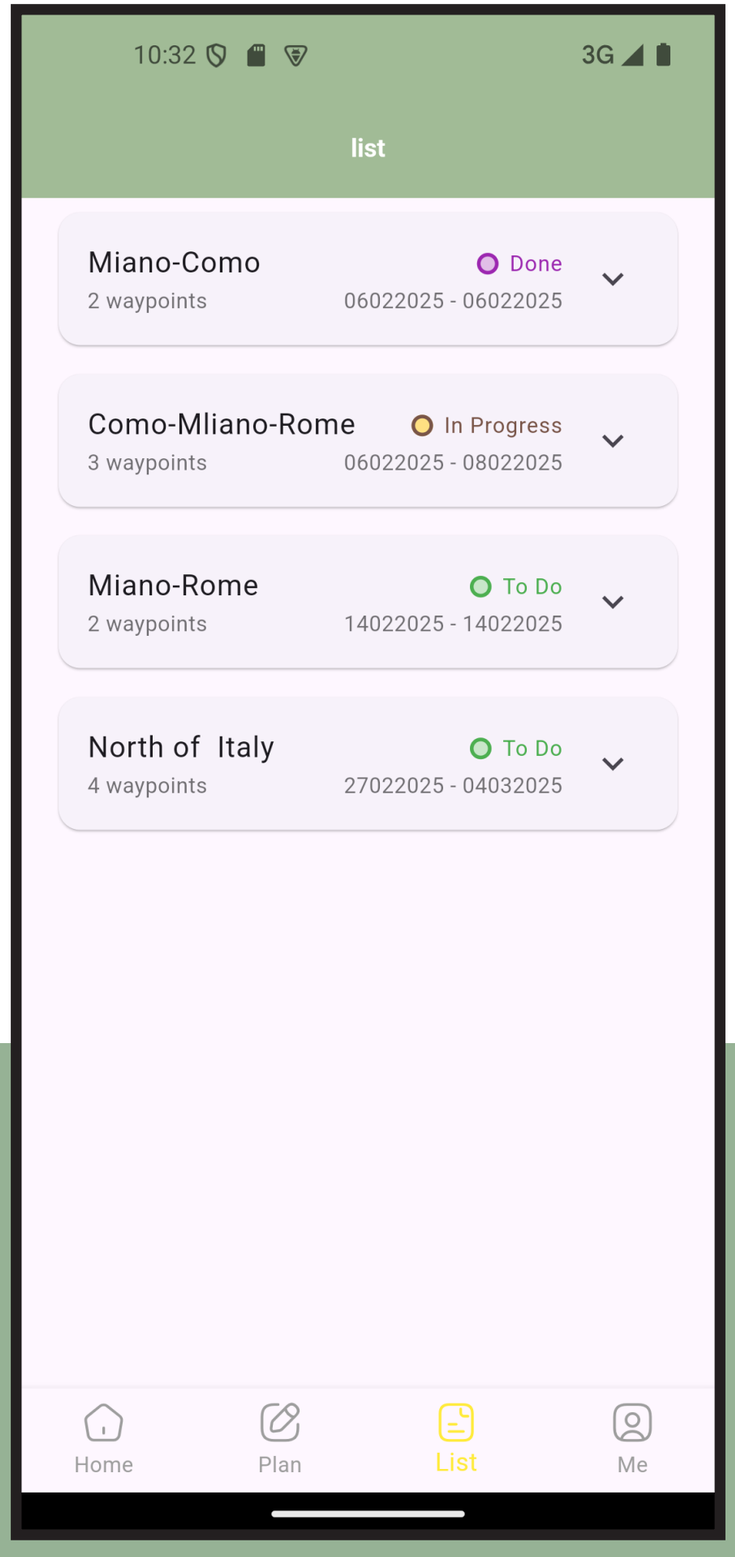
Trenord	5.20 €
05:46:00	01:02:00 → 06:48:00
Como Lago	Milano Cadorna
0 Changes	

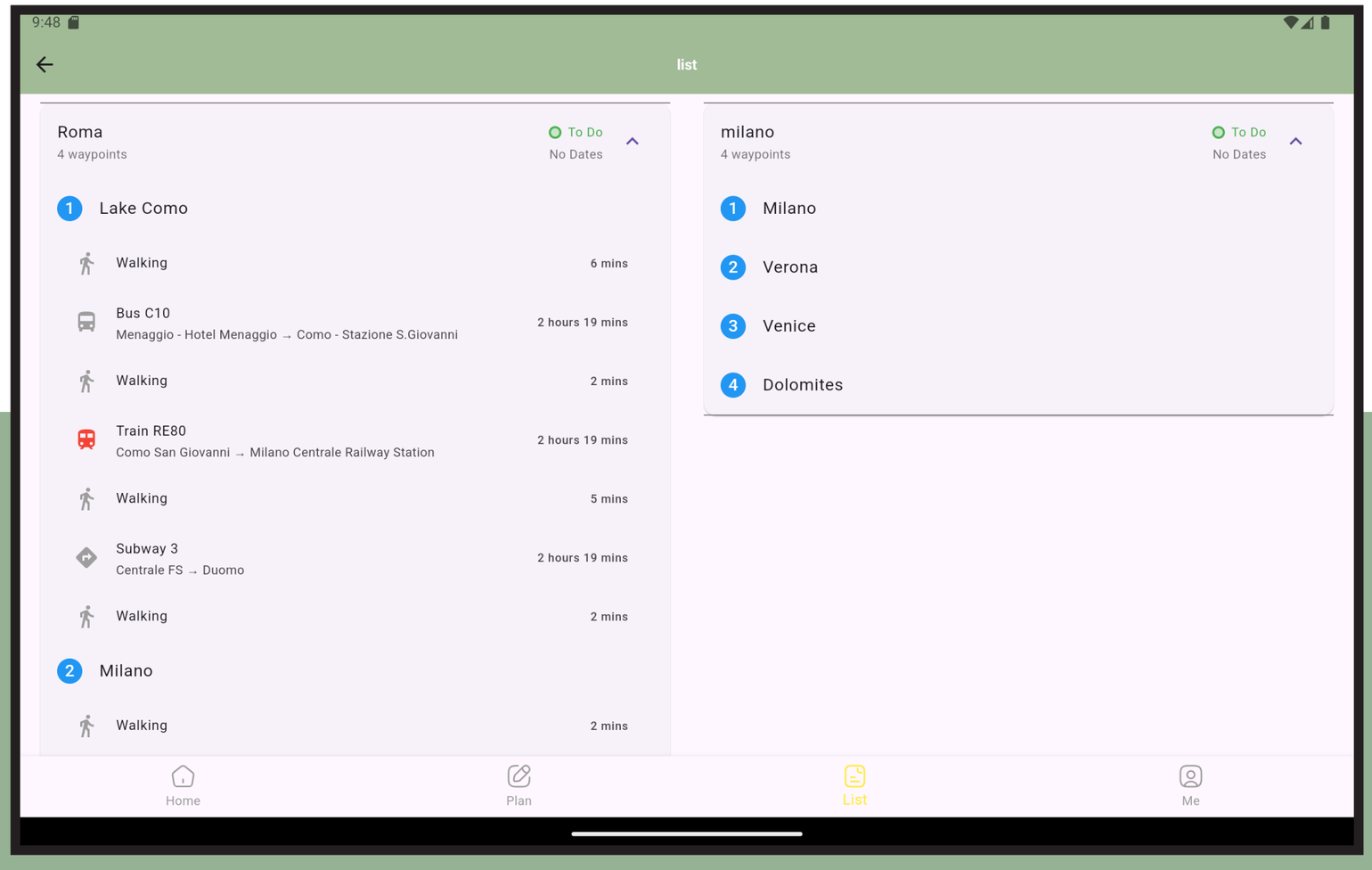
Trenord	5.20 €
06:16:00	01:02:00 → 07:18:00
Como Lago	Milano Cadorna
0 Changes	

Trenord	5.20 €
06:46:00	01:02:00 → 07:48:00
Como Lago	Milano Cadorna
0 Changes	

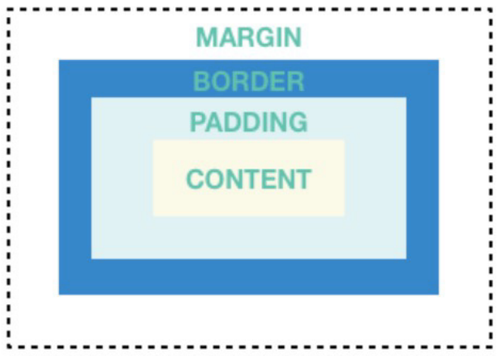
Trenord	5.20 €
07:16:00	01:02:00 → 08:18:00
Como Lago	Milano C
0 Changes	

UI Design

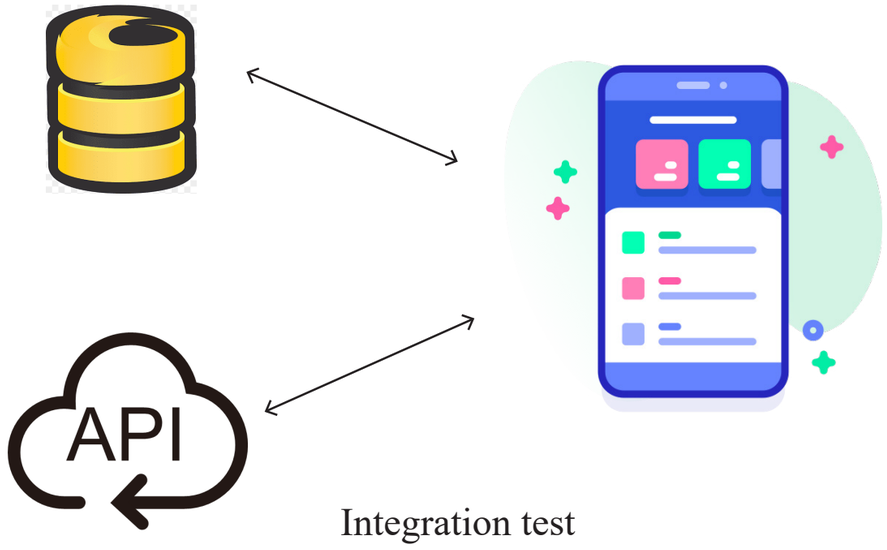

10:32
3G
list
Miano-Como
Done
2 waypoints
06022025 - 06022025
Como-Mliano-Rome
In Progress
3 waypoints
06022025 - 08022025
Miano-Rome
To Do
2 waypoints
14022025 - 14022025
North of Italy
To Do
4 waypoints
27022025 - 04032025
Home
Plan
List
Me


9:48
list
Roma
4 waypoints
To Do
No Dates
1 Lake Como
Walking
6 mins
Bus C10
Menaggio - Hotel Menaggio → Como - Stazione S.Giovanni
2 hours 19 mins
Walking
2 mins
Train RE80
Como San Giovanni → Milano Centrale Railway Station
2 hours 19 mins
Walking
5 mins
Subway 3
Centrale FS → Duomo
2 hours 19 mins
Walking
2 mins
2 Milano
Walking
2 mins
milano
4 waypoints
To Do
No Dates
1 Milano
2 Verona
3 Venice
4 Dolomites
Home
Plan
List
Me

Testing environments



Widget test



Integration test

Testing campaign*

Testing environments

-Android Studio

-Real Device

Widget test

-Ensure UI components render correctly

Integration test

-All app components work together as expected

User test