



Middle East Technical University

Department of Statistics

# **STAT 295 - OOP JAVA FINAL PROJECT CITY TRAVEL PLANNER**

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# STAT295 Project Report

## *City Travel Planner*

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## 1. Introduction

The **City Travel Planner** is a Java application designed to assist users in planning personalized trips to various European cities such as Istanbul, Barcelona, Berlin, Paris and Rome. The application allows users to enter preferences such as **budget**, **date**, **season**, and **number of visitors**, and in return, they receive personal recommendations including activities, food recommendations, accommodations, and transportation options.

This project was developed as part of the STAT295 course to demonstrate core **Object-Oriented Programming (OOP)** principles: **Encapsulation**, **Inheritance**, **Polymorphism**, and **Abstraction**. It also includes **data-driven logic**, and **user interaction features** such as **trip reviews**.

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## 2. UML Design

The project consists of **over 15 interrelated classes**, structured based on a UML diagram (see below). Each class encapsulates relevant attributes and methods, and class hierarchies illustrate inheritance and specialization.

### ✓ **Main Classes and Their Roles:**

- **User:** Manages user login, review, and saved plans.
- **TripPlan:** Stores trip information, selected places, and itinerary.
- **City:** Holds city-specific details and provides access to attractions.
- **Place** (Superclass): Parent of all activity and location types.
  - **Adventure, Cultural, Nightlife, Relaxation:** Specialized subclasses with unique attributes like difficulty level, age restrictions, etc.
- **TransportOption, Accomodation, Review:** Complementary classes.

- [illegible]

The development followed the course's 5-phase guideline:

We selected the idea of a **city travel planner** after brainstorming potential OOP-focused apps. Our goal was to blend real-world usefulness with rich class interactions.

### ◆ **Phase 2: UML Design**

A detailed UML class diagram was created using Figma, defining over 10 classes with relationships including **inheritance**, **composition**, and **association**.

### ◆ **Phase 3: Class Skeleton**

Initial Java files were created with attributes and method headers. Variable types were chosen carefully to facilitate encapsulation and future method implementation.

### ◆ **Phase 4: OOP Implementation**

All classes were implemented in full, applying:

- **Encapsulation:** Use of private fields with getters/setters.
- **Inheritance:** Subclasses like `Adventure`, `Cultural`, etc. extend the `Place` class.
- **Polymorphism:** Overridden methods such as `getEventDetails()` in subclasses.
- **Abstraction:** Abstracted operations like `suggestPlaces()` in `AppController`.

### ◆ **Phase 5: Functional App**

The app was integrated into a working version, allowing login, trip plan creation, trip plan reviews, activity selection, and basic budget calculation.

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## 4. Results and Demonstration

### ☑ **Key Features Demonstrated:**

- **Trip customization:** User enters trip dates, activity priorities, and budget.
- **Activity suggestions:** Personalized by category and city.
- **Itinerary building:** Users can add/remove places and view a final summary.
- **Review system:** Users can view or leave reviews for shared trip plans.

- **Forum-like explore mode:** Public plans and their reviews can be browsed.

Let's look at our program step-by-step:

```
👋 Welcome to City Travel Planner!

Do you have an account?
1. Login
2. Register
Choose: 2
Enter username: Su Samurları 🇹🇷
Enter email: Su Samurları 🇹🇷
Enter password: 12345
✅ Registration complete.

Do you have an account?
1. Login
2. Register
Choose: 1
Enter email: Su Samurları 🇹🇷
Enter password: 12345
✅ Login successful!

Welcome, Su Samurları 🇹🇷!
Please choose an option:
1. Browse Cities and Explore (Read-only Mode)
2. Plan a Personalized Trip (Recommendation Mode)
3. View Trip Plans
4. Delete Trip Plan
5. Logout & Exit
█
```

Firstly, you start the program and then you are asked to have an account or not. After the registration process, you can enter the program. You can see that later, these users are saved in a json file. We are going to explain the application step-by-step. First look at Read-only Mode.

```

Welcome, Su Samurları 🌊!
Please choose an option:
1. Browse Cities and Explore (Read-only Mode)
2. Plan a Personalized Trip (Recommendation Mode)
3. View Trip Plans
4. Delete Trip Plan
5. Logout & Exit
1

Which city would you like to explore?
1. Istanbul
2. Paris
3. Rome
4. Berlin
5. Barcelona
1

📍 City: Istanbul, Turkey
📄 Description: A historical city that bridges Europe and Asia.

📅 Best Time(s) to Visit Istanbul:
- Season: Summer
  • Date Range: June–August
  • Temperature: 28–32°C
  • Popularity: High
  • Price Level: $$$
  • Recommended Stay: 5 days
  • Reason to Visit: Ideal for sightseeing and nightlife
  • Notable Events:
    - Istanbul Jazz Festival
    - Bosphorus Swim

🌤️ Climate:
- Spring: 17.0°C | Rainfall: 60.0mm | Recommended Clothes: Light jacket
- Summer: 28.0°C | Rainfall: 30.0mm | Recommended Clothes: T-shirt and sunscreen
- Autumn: 19.0°C | Rainfall: 50.0mm | Recommended Clothes: Sweater or light coat
- Winter: 8.0°C | Rainfall: 70.0mm | Recommended Clothes: Warm coat and umbrella

🚗 Transport:
- Metro | 06:00–00:00 | $0.6
- Tram | 06:00–00:00 | $0.5
- Bus | 24/7 on main lines | $0.6
- Ferry | 07:00–22:00 | $1.0
- Taxi | 24/7 | $3.5
- Dolmus | 06:00–01:00 | $0.7

🏠 Accommodations:
- Hotel | $90.0 | 📍 Taksim | 🔗 https://www.trivago.com.tr/tr/lm/otel-titanic-city-taksim-istanbul?search=100-912965;500-1314535;dr-20250601-20250602-s;rteracted=true
- Hostel | $35.0 | 📍 Kadıköy | 🔗 https://www.tripadvisor.com.tr/Hotel\_Review-g293974-d16805903-Reviews-Moda\_Drei\_Concept\_Hostel-Istanbul.html
- Airbnb | $65.0 | 📍 Beşiktaş | 🔗 https://www.airbnb.com.tr/rooms/845680469667232115?adults=1&check\_in=2025-05-29&check\_out=2025-05-30&search\_mode=regular&rce\_impression\_id=p3\_1747655002\_P34LkVu-pbK4YRqn&previous\_page\_section\_name=1000&federated\_search\_id=ab4d075d-66cb-4d6d-b9f3-39574ba3cce6

```

After entering 1 for that question, (there is also an error system to be sure that the user has to enter a number between 1-5) they are asked another question to decide which city s/he wants to explore. Then let's say Istanbul for instance. After that, they are shown a short description about that city, best time to visit that city, climate, transportation, accommodation and (you can see from next screenshot) food options.

Notice the best time to visit the section, for the price level we have no data for that part, so we leave it like that. Actually for pricing data values generally we used estimated values but for calculations we calculate the total cost for total number of visitors.

- 🍴 Food Options:
  - Kebab at Zübeyir Ocakbaşı (Istanbul) - \$15.0
  - Balık Ekmek at Eminönü Sahil (Istanbul) - \$5.0
  - Lahmacun at Borsam Taşırın (Istanbul) - \$4.0
  - Kumpir at Ortaköy Meydanı (Istanbul) - \$7.0
  - Künefe at Hatay Medeniyetler Sofrası (Istanbul) - \$9.0
  - Baklava at Karaköy Güllüoğlu (Istanbul) - \$10.0
- 🔥 Activities:
  - 🏛️ Hagia Sophia Tour
    - Description: Discover the magnificent architecture and history of this former cathedral and mosque.
    - Venue: Sultanahmet, Guide: Yes
  - 🏰 Topkapi Palace Visit
    - Description: Explore the palace of Ottoman sultans with artifacts, weapons, and stunning views.
    - Venue: Topkapi Palace, Guide: No
  - 🕌 Blue Mosque Tour
    - Description: Visit the iconic blue-tiled mosque and experience its spiritual atmosphere.
    - Venue: Sultanahmet, Guide: Yes
  - 🚶 Sultanahmet Walking Tour
    - Description: Take a guided walk through the historical Sultanahmet district full of monuments.
    - Venue: Sultanahmet District, Guide: Yes
  - 🏰 Basilica Cistern Tour
    - Description: Visit the mysterious underground cistern with its iconic Medusa head columns.
    - Venue: Sultanahmet, Guide: No
  - 🗼 Galata Tower Visit
    - Description: Enjoy panoramic views of Istanbul from this medieval stone tower.
    - Venue: Galata, Guide: No
  - 🏰 Dolmabahçe Palace Tour
    - Description: Explore the opulent halls of the palace that once housed Ottoman sultans and Atatürk.
    - Venue: Beşiktaş, Guide: Yes
  - 🛍️ Grand Bazaar Exploration
    - Description: Wander through one of the world's oldest covered markets with thousands of shops.
    - Venue: Beyazıt, Guide: No
  - 🕌 Süleymaniye Mosque Visit
    - Description: Admire the grandeur of this iconic mosque designed by architect Mimar Sinan.
    - Venue: Fatih, Guide: Yes
  - 🗼 Maiden's Tower Tour
    - Description: Visit the legendary tower on a small islet, offering scenic views and tales of ancient love.
    - Venue: Salacak, Guide: No
  - 🏛️ Pera Museum Visit
    - Description: Explore exhibits of Orientalist art, Anatolian weights, and modern Turkish works.
    - Venue: Beyoğlu, Guide: No

After having this information, users can see some activities about that city and there are four categories: Cultural, Adventure, Nightlife, Relaxation. (That process we use inheritance for our project.) Also, each activity has a different description for their different types.

- 🏛️ Tomb of Mehmed the Magnificent
  - Description: Pay respects at the tomb of the Ottoman Sultan who conquered Constantinople.
  - Venue: Fatih, Guide: No
- 🏛️ Istanbul Archaeological Museums Visit
  - Description: Explore ancient artifacts and archaeological treasures from across the former Ottoman Empire.
  - Venue: Fatih, Guide: No
- 🚣 Bosphorus Kayaking
  - Description: Paddle through the Bosphorus while enjoying city views and a light breeze.
  - Difficulty: 🟡 Medium
  - Equipment: Life jacket, Water shoes, Dry bag
- 🥾 Hiking in Belgrad Forest
  - Description: A peaceful hike in Istanbul's largest forest, suitable for all levels.
  - Difficulty: 🟢 Easy
  - Equipment: None needed
- 🚴 Prince Islands Cycling Tour
  - Description: Explore the scenic Prince Islands by bike with sea views and quiet roads.
  - Difficulty: 🟢 Easy
  - Equipment: Bicycle, Helmet, Water bottle
- 🤿 Scuba Diving in Tuzla
  - Description: Dive into the Marmara Sea to explore marine life near the Tuzla coast.
  - Difficulty: 🔴 Hard
  - Equipment: Scuba gear, Wetsuit, Oxygen tank
- 🍸 Reina Club
  - Type: Nightclub
  - Opens at: 22:00 | Age: 18+
  - Vibe: Upscale clubbing experience with Bosphorus views and live DJs.
- 🍷 Supperclub Istanbul
  - Type: Lounge & Club
  - Opens at: 23:00 | Age: 21+
  - Vibe: Chic lounge with gourmet food and electronic beats.
- 🎸 Babylon Bomonti
  - Type: Live Music Venue
  - Opens at: 21:00 | Age: 18+
  - Vibe: Popular venue for live alternative and indie music.
- 🍹 360 Istanbul
  - Type: Bar & Club
  - Opens at: 20:00 | Age: 18+
  - Vibe: Trendy rooftop bar with cocktails and panoramic city views.

```

👤 Cağaloğlu Hamam
- Location: Fatih (Historical Bath)
- Description: Historic Turkish bath offering steam rooms and massage packages.
- Massage Included: Yes

👤 Gülhane Park
- Location: Sirkeci (Park)
- Description: Peaceful park for picnics and walks among centuries-old trees.
- Massage Included: No

👤 Moda Coastal Walk
- Location: Kadıköy (Seaside Walk)
- Description: Seaside walking path perfect for sunset views and relaxation.
- Massage Included: No

👤 Polonezköy Nature Park
- Location: Beykoz (Forest Park)
- Description: Lush forest escape near the city for outdoor leisure.
- Massage Included: No

👤 Princes' Islands Tour
- Location: Büyükdada (Islands)
- Description: Enjoy a peaceful escape with horse-drawn carriages, seaside views, and charming streets.
- Massage Included: No

👤 Would you like to browse trip plans from other users?
Type 'yes' to view, or press Enter to skip:

```

After that, they are asked to show or not other users' trip plans to the user.

```

👤 Would you like to browse trip plans from other users?
Type 'yes' to view, or press Enter to skip: yes

👤 Shared by: Su Samurları 👤
- City: Istanbul
- Dates: 2025-06-06 to 2025-06-25
- Budget: $25000.0
- Visitors: 3
- Activities:
  • Bosphorus Kayaking ($40.0)
  • Hiking in Beigrad Forest ($0.0)
  • Prince Islands Cycling Tour ($25.0)
  • Scuba Diving in Tuzla ($90.0)
  • Hagia Sophia Tour ($15.0)
  • Topkapi Palace Visit ($20.0)
  • Blue Mosque Tour ($10.0)
  • Sultanahmet Walking Tour ($10.0)
  • Basilica Cistern Tour ($15.0)
  • Galata Tower Visit ($30.0)
  • Dolmabahçe Palace Tour ($40.0)
  • Grand Bazaar Exploration ($0.0)
  • Süleymaniye Mosque Visit ($0.0)
  • Maiden's Tower Tour ($30.0)
  • Pera Museum Visit ($10.0)
  • Tomb of Mehmed the Magnificent ($0.0)
  • Istanbul Archaeological Museums Visit ($15.0)
  • Cağaloğlu Hamam ($40.0)
  • Gülhane Park ($0.0)
  • Moda Coastal Walk ($0.0)
  • Polonezköy Nature Park ($5.0)
  • Princes' Islands Tour ($25.0)
★ Reviews:
👤 Kemal (5/5): Excellent!
👤 Dilara (4/5): Good
👤 Yusuf (5/5): Perfecto :)

```

If a user wants to see other trip plans in order to be inspired, then here s/he can see other plans and reviews.



```

Welcome, Su Samurları! 🌟
Please choose an option:
1. Browse Cities and Explore (Read-only Mode)
2. Plan a Personalized Trip (Recommendation Mode)
3. View Trip Plans
4. Delete Trip Plan
5. Logout & Exit
2

Select a city you'd like to visit:
1. Istanbul
2. Paris
3. Rome
4. Berlin
5. Barcelona
1

■ Best Time(s) to Visit Istanbul:
- Season: Summer
  • Date Range: June-August
  • Temperatures: 28-32°C
  • Popularity: High
  • Price Level: $$$
  • Recommended Stay: 5 days
  • Reason to Visit: Ideal for sightseeing and nightlife
  • Notable Events:
    - Istanbul Jazz Festival
    - Bosphorus Swim

Start date (YYYY-MM-DD): 2025-06-06
End date (YYYY-MM-DD): 2025-06-25
Number of visitors: 3
Enter your total budget in USD: 25000
Would you like to see recommendations? (yes/no): yes

✔ Please list your activity preferences in priority order.
Enter the activity types you prefer by number (1: Cultural, 2: Adventure, 3: Nightlife, 4: Relaxation) separated by commas.
For example: 1, 2, 4: 2,1,4

■ Accommodation cost estimates for your trip:
1. Hostel: $1995.0
2. Hotel: $5130.0
3. Airbnb: $3705.0

Please select your preferred accommodation (1: Hostel, 2: Hotel, 3: Airbnb): 2

■ Recommended Activities based on your preferences:
- Bosphorus Kayaking | Type: Adventure | Price per person: $40.0 | Total price for 3 visitors: $120.0
- Hiking in Belgrad Forest | Type: Adventure | Price per person: $0.0 | Total price for 3 visitors: $0.0
- Prince Islands Cycling Tour | Type: Adventure | Price per person: $25.0 | Total price for 3 visitors: $75.0
- Scuba Diving in Tuzla | Type: Adventure | Price per person: $90.0 | Total price for 3 visitors: $270.0
- Hagia Sophia Tour | Type: Cultural | Price per person: $15.0 | Total price for 3 visitors: $45.0
- Topkapı Palace Visit | Type: Cultural | Price per person: $20.0 | Total price for 3 visitors: $60.0
- Blue Mosque Tour | Type: Cultural | Price per person: $10.0 | Total price for 3 visitors: $30.0
- Sultanahmet Walking Tour | Type: Cultural | Price per person: $10.0 | Total price for 3 visitors: $30.0
- Basilica Cistern Tour | Type: Cultural | Price per person: $15.0 | Total price for 3 visitors: $45.0
- Galata Tower Visit | Type: Cultural | Price per person: $30.0 | Total price for 3 visitors: $90.0
- Dolmabahçe Palace Tour | Type: Cultural | Price per person: $40.0 | Total price for 3 visitors: $120.0

```

Then, for the 2nd option in the main menu, users can create personalized trips. Firstly, s/he has to select a city. Let's say Istanbul. Then the user can see the best time to visit that city in order to think about the date. After entering start and end dates, number of visitors, total budget, they are asked if s/he wants to see a recommended trip plan based on that informations. If the answer is **yes**, then s/he has to prioritize activity type and preferred accommodation. After that the application shows the recommended activities based on preferences.

```

Please select your preferred accommodation (1: Hostel, 2: Hotel, 3: Airbnb): 2

■ Recommended Activities based on your preferences:
- Bosphorus Kayaking | Type: Adventure | Price per person: $40.0 | Total price for 3 visitors: $120.0
- Hiking in Belgrad Forest | Type: Adventure | Price per person: $0.0 | Total price for 3 visitors: $0.0
- Prince Islands Cycling Tour | Type: Adventure | Price per person: $25.0 | Total price for 3 visitors: $75.0
- Scuba Diving in Tuzla | Type: Adventure | Price per person: $90.0 | Total price for 3 visitors: $270.0
- Hagia Sophia Tour | Type: Cultural | Price per person: $15.0 | Total price for 3 visitors: $45.0
- Topkapı Palace Visit | Type: Cultural | Price per person: $20.0 | Total price for 3 visitors: $60.0
- Blue Mosque Tour | Type: Cultural | Price per person: $10.0 | Total price for 3 visitors: $30.0
- Sultanahmet Walking Tour | Type: Cultural | Price per person: $10.0 | Total price for 3 visitors: $30.0
- Basilica Cistern Tour | Type: Cultural | Price per person: $15.0 | Total price for 3 visitors: $45.0
- Galata Tower Visit | Type: Cultural | Price per person: $30.0 | Total price for 3 visitors: $90.0
- Dolmabahçe Palace Tour | Type: Cultural | Price per person: $40.0 | Total price for 3 visitors: $120.0
- Grand Bazaar Exploration | Type: Cultural | Price per person: $0.0 | Total price for 3 visitors: $0.0
- Süleymaniye Mosque Visit | Type: Cultural | Price per person: $0.0 | Total price for 3 visitors: $0.0
- Maiden's Tower Tour | Type: Cultural | Price per person: $30.0 | Total price for 3 visitors: $90.0
- Pera Museum Visit | Type: Cultural | Price per person: $10.0 | Total price for 3 visitors: $30.0
- Tomb of Mehmed the Magnificent | Type: Cultural | Price per person: $0.0 | Total price for 3 visitors: $0.0
- Istanbul Archaeological Museums Visit | Type: Cultural | Price per person: $15.0 | Total price for 3 visitors: $45.0
- Cağaloğlu Hammam | Type: Relaxation | Price per person: $40.0 | Total price for 3 visitors: $120.0
- Gülhane Park | Type: Relaxation | Price per person: $0.0 | Total price for 3 visitors: $0.0
- Moda Coastal Walk | Type: Relaxation | Price per person: $0.0 | Total price for 3 visitors: $0.0
- Polonezköy Nature Park | Type: Relaxation | Price per person: $5.0 | Total price for 3 visitors: $15.0
- Princes' Islands Tour | Type: Relaxation | Price per person: $25.0 | Total price for 3 visitors: $75.0

■ Accommodation Recommendations:
- Hotel | Price per Night: $90.0 | Location: Taksim

■ Give a name to your trip plan (e.g., 'Rome Adventure'): "Istanbul Recommended Trip"

■ Trip Summary:
- City: Istanbul
- Total Budget: $25000.0
- Duration: 19 days
- Number of Visitors: 3
- Activities: 22 activities

■ Estimated Trip Cost Breakdown:
- Accommodation: $5130.00
- Transport: $1710.00
- Food (approx.): $855.00
- Activities: $1260.00
- Total Estimated Cost: $8955.00
✔ Your plan fits within your budget.
Do you want to share this trip publicly? (yes/no): yes
✔ Your trip is now shared with others.
Do you want to save this trip to your profile? (yes/no): yes
✔ Trip saved to your profile.

```

After having recommendations about activity and accommodation, user can give a name for that trip and after that s/he can see the summary of the trip plan that s/he created. Afterwards, user can see cost breakdown and save that plan into his/her profile. Also, s/he can share that trip with the public. We are going to explain that as well.

```
Welcome, Su Samurları !
Please choose an option:
1. Browse Cities and Explore (Read-only Mode)
2. Plan a Personalized Trip (Recommendation Mode)
3. View Trip Plans
4. Delete Trip Plan
5. Logout & Exit
2

Select a city you'd like to visit:
1. Istanbul
2. Paris
3. Rome
4. Berlin
5. Barcelona
1

■ Best Time(s) to Visit Istanbul:
- Season: Summer
  • Date Range: June-August
  • Temperature: 28-32°C
  • Popularity: High
  • Price Level: $$$
  • Recommended Stay: 5 days
  • Reason to Visit: Ideal for sightseeing and nightlife
  • Notable Events:
    - Istanbul Jazz Festival
    - Bosphorus Swim

Start date (YYYY-MM-DD): 2025-06-24
End date (YYYY-MM-DD): 2025-07-29
Number of visitors: 3
Enter your total budget in USD: 30000
Would you like to see recommendations? (yes/no): no

📍 City: Istanbul, Turkey
■ Description: A historical city that bridges Europe and Asia.

🌤️ Climate:
- Summer: 28.0°C | Rainfall: 30.0mm | Clothes: T-shirt and sunscreen

🚗 Transport:
- Metro | 06:00-00:00 | $0.6
- Tram | 06:00-00:00 | $0.5
- Bus | 24/7 on main lines | $0.6
- Ferry | 07:00-22:00 | $1.0
- Taxi | 24/7 | $3.5
- Dolmus | 06:00-01:00 | $0.7

🏠 Choose your accommodation:
1. Hotel | $90.0 | 📍 Taksim | 🔗 https://www.trivago.com.tr/tr/lm/otel-titanic-city-taksim-istanbul?search=100-912965;500-1314535;dr-20250601-20250602-s;rc-1-1#:hasI
nteracted=true
2. Hostel | $35.0 | 📍 Kadıköy | 🔗 https://www.tripadvisor.com.tr/Hotel_Review-g293974-d16805903-Reviews-Moda_Drei_Concept_Hostel-Istanbul.html
3. Airbnb | $65.0 | 📍 Beşiktaş | 🔗 https://www.airbnb.com.tr/rooms/845680469667232115?adults=1&check_in=2025-05-29&check_out=2025-05-30&search_mode=regular_search&so
urce_impression_id=p3_1747655002_P34LKvu-pbK4YRqn&previous_page_section_name=1000&federated_search_id=ab4d075d-66cb-4d6d-b9f3-39574ba3cce6
1

🍽️ Food Recommendations:
- Kebap at Zübeyir Ocakbaşı (Istanbul) - $15.0
- Balık Ekmek at Eminönü Sahil (Istanbul) - $5.0
- Lahmacun at Borsam Taşkın (Istanbul) - $4.0
- Kumpir at Ortaköy Meydanı (Istanbul) - $7.0
- Künefe at Hatay Medeniyetler Sofrası (Istanbul) - $9.0
- Baklava at Karaköy Güllüoğlu (Istanbul) - $10.0

■ Here are all available activities by category:

🏆 Category: Cultural
1. Hagia Sophia Tour
2. Topkapi Palace Visit
3. Blue Mosque Tour
4. Sultanahmet Walking Tour
5. Basilica Cistern Tour
6. Galata Tower Visit
7. Dolmabahçe Palace Tour
8. Grand Bazaar Exploration
9. Süleymaniye Mosque Visit
10. Maiden's Tower Tour
11. Pera Museum Visit
12. Tomb of Mehmed the Magnificent
13. Istanbul Archaeological Museums Visit

🏆 Category: Adventure
1. Bosphorus Kayaking
2. Hiking in Belgrad Forest
3. Prince Islands Cycling Tour
4. Scuba Diving in Tuzla

🏆 Category: Nightlife
1. Reina Club
2. Supperclub Istanbul
3. Babylon Bomonti
4. 360 Istanbul

🏆 Category: Relaxation
1. Çarşıoğlu Hamam
2. Gülhane Park
3. Moda Coastal Walk
4. Polonezköy Nature Park
5. Princes' Islands Tour
```

If the user does not want to see recommendation mode, then s/he starts to choose accommodation after taking information about description about that city, climate and transport options. Also here s/he can look at the website links for that hotel, hostel or airbnb.

```
1. Hotel | $90.0 | 📍 Taksim | 🔗 https://www.trivago.com.tr/tr/lm/otel-titanic-city-taksim-istanbul?search=100-912965;500-1314535;dr-20250601-20250602-s;rc-1-1#:hasI
nteracted=true
2. Hostel | $35.0 | 📍 Kadıköy | 🔗 https://www.tripadvisor.com.tr/Hotel_Review-g293974-d16805903-Reviews-Moda_Drei_Concept_Hostel-Istanbul.html
3. Airbnb | $65.0 | 📍 Beşiktaş | 🔗 https://www.airbnb.com.tr/rooms/845680469667232115?adults=1&check_in=2025-05-29&check_out=2025-05-30&search_mode=regular_search&so
urce_impression_id=p3_1747655002_P34LKvu-pbK4YRqn&previous_page_section_name=1000&federated_search_id=ab4d075d-66cb-4d6d-b9f3-39574ba3cce6
1

🍽️ Food Recommendations:
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- Lahmacun at Borsam Taşkın (Istanbul) - $4.0
- Kumpir at Ortaköy Meydanı (Istanbul) - $7.0
- Künefe at Hatay Medeniyetler Sofrası (Istanbul) - $9.0
- Baklava at Karaköy Güllüoğlu (Istanbul) - $10.0

■ Here are all available activities by category:

🏆 Category: Cultural
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5. Basilica Cistern Tour
6. Galata Tower Visit
7. Dolmabahçe Palace Tour
8. Grand Bazaar Exploration
9. Süleymaniye Mosque Visit
10. Maiden's Tower Tour
11. Pera Museum Visit
12. Tomb of Mehmed the Magnificent
13. Istanbul Archaeological Museums Visit

🏆 Category: Adventure
1. Bosphorus Kayaking
2. Hiking in Belgrad Forest
3. Prince Islands Cycling Tour
4. Scuba Diving in Tuzla

🏆 Category: Nightlife
1. Reina Club
2. Supperclub Istanbul
3. Babylon Bomonti
4. 360 Istanbul

🏆 Category: Relaxation
1. Çarşıoğlu Hamam
2. Gülhane Park
3. Moda Coastal Walk
4. Polonezköy Nature Park
5. Princes' Islands Tour
```

After choosing liked accommodation, users can see food recommendations. Afterwards, we thought that for better deciding users should be able to see firstly all of the activities for all categories in that city then;

```
How many activities do you want to choose from Cultural? 5
Select activity #1: 1
Select activity #2: 2
Select activity #3: 3
Select activity #4: 7
Select activity #5: 10

How many activities do you want to choose from Adventure? 3
Select activity #1: 1
Select activity #2: 2
You've selected 7 activities. Do you want to continue? (yes/no): yes
Select activity #3: 3

How many activities do you want to choose from Nightlife? 3
Select activity #1: 1
Select activity #2: 2
You've selected 10 activities. Do you want to continue? (yes/no): ye
! Please type only 'yes' or 'no'.
You've selected 10 activities. Do you want to continue? (yes/no): yes
Select activity #3: 5
! Invalid selection.
Select activity #3: 4

How many activities do you want to choose from Relaxation? 3
Select activity #1: 1
Select activity #2: 2
You've selected 13 activities. Do you want to continue? (yes/no): yes
Select activity #3: 3
```

The application asks which activities for which categories user wants to add his or her plan. Also as you can see, there are error systems to check that input is valid or not.

```
🍷 Your Selected Activities:
- Hagia Sophia Tour
  📍 Hagia Sophia Tour
  - Description: Discover the magnificent architecture and history of this former cathedral and mosque.
  - Venue: Sultanahmet, Guide: Yes

- Topkapi Palace Visit
  📍 Topkapi Palace Visit
  - Description: Explore the palace of Ottoman sultans with artifacts, weapons, and stunning views.
  - Venue: Topkapi Palace, Guide: No

- Blue Mosque Tour
  📍 Blue Mosque Tour
  - Description: Visit the iconic blue-tiled mosque and experience its spiritual atmosphere.
  - Venue: Sultanahmet, Guide: Yes

- Dolmabahçe Palace Tour
  📍 Dolmabahçe Palace Tour
  - Description: Explore the opulent halls of the palace that once housed Ottoman sultans and Atatürk.
  - Venue: Beşiktaş, Guide: Yes

- Maiden's Tower Tour
  📍 Maiden's Tower Tour
  - Description: Visit the legendary tower on a small islet, offering scenic views and tales of ancient love.
  - Venue: Salacak, Guide: No

- Bosphorus Kayaking
  📍 Bosphorus Kayaking
  - Description: Paddle through the Bosphorus while enjoying city views and a light breeze.
  - Difficulty: 🟡 Medium
  - Equipment: Life jacket, Water shoes, Dry bag

- Hiking in Belgrad Forest
  📍 Hiking in Belgrad Forest
  - Description: A peaceful hike in Istanbul's largest forest, suitable for all levels.
  - Difficulty: 🟢 Easy
  - Equipment: None needed

- Prince Islands Cycling Tour
  📍 Prince Islands Cycling Tour
  - Description: Explore the scenic Prince Islands by bike with sea views and quiet roads.
  - Difficulty: 🟢 Easy
  - Equipment: Bicycle, Helmet, Water bottle

- Reina Club
  📍 Reina Club
  - Type: Nightclub
  - Opens at: 22:00 | Age: 18+
  - Vibe: Upscale clubbing experience with Bosphorus views and live DJs.

- Supperclub Istanbul
  📍 Supperclub Istanbul
  - Type: Lounge & Club
  - Opens at: 23:00 | Age: 21+
  - Vibe: Chic lounge with gourmet food and electronic beats.
```

```

- 360 Istanbul
  📍 360 Istanbul
  - Type: Bar & Club
  - Opens at: 20:00 | Age: 18+
  - Vibe: Trendy rooftop bar with cocktails and panoramic city views.

- Cağaloğlu Hamam
  📍 Cağaloğlu Hamam
  - Location: Fatih (Historical Bath)
  - Description: Historic Turkish bath offering steam rooms and massage packages.
  - Massage Included: Yes

- Gülhane Park
  📍 Gülhane Park
  - Location: Sirkeci (Park)
  - Description: Peaceful park for picnics and walks among centuries-old trees.
  - Massage Included: No

- Moda Coastal Walk
  📍 Moda Coastal Walk
  - Location: Kadıköy (Seaside Walk)
  - Description: Seaside walking path perfect for sunset views and relaxation.
  - Massage Included: No

■ Trip Summary:
- City: Istanbul
- Climate Season: Summer | Recommended Clothes: T-shirt and sunscreen
- Accommodation: Hotel | $90.0
- Activities:
  • Hagia Sophia Tour ($15.0)
  • Topkapi Palace Visit ($20.0)
  • Blue Mosque Tour ($10.0)
  • Dolmabahçe Palace Tour ($40.0)
  • Maiden's Tower Tour ($30.0)
  • Bosphorus Kayaking ($40.0)
  • Hiking in Belgrad Forest ($0.0)
  • Prince Islands Cycling Tour ($25.0)
  • Reina Club ($10.0)
  • Supperclub Istanbul ($20.0)
  • 360 Istanbul ($15.0)
  • Cağaloğlu Hamam ($40.0)
  • Gülhane Park ($0.0)
  • Moda Coastal Walk ($0.0)
- Total Activity Cost: $795.00
- Budget: $30000.0
- Days: 35
- Visitors: 3

■ Estimated Trip Cost Breakdown:
- Accommodation: $9450.00
- Transport: $3150.00
- Food (approx.): $1575.00
- Total Activity Cost: $795.00
  📌 Total Estimated Cost: $14970.00

■ Now, please give a name to your trip plan (e.g., 'Rome Adventure'): 

```

And the application gives activity informations that user chooses, then it gives a summary and estimated cost breakdown. Afterwards, user can give a name for that plan and;

```

■ Now, please give a name to your trip plan (e.g., 'Rome Adventure'): "Istanbul Trip w/Su Samurları 8."
✔ Your plan fits within your budget.
Do you want to share this trip publicly? (yes/no): yes
🌐 Your trip is now shared with others.
Do you want to save this trip to your profile? (yes/no): yes
✔ Trip saved to your profile.

```

We saved this plan into our profile and published it to the public.

And for 3rd option:

```
Welcome, Su Samurları !
Please choose an option:
1. Browse Cities and Explore (Read-only Mode)
2. Plan a Personalized Trip (Recommendation Mode)
3. View Trip Plans
4. Delete Trip Plan
5. Logout & Exit
3

👤 Your Saved Plans:

✖ "Istanbul Recommended Trip"
- City: Istanbul
- Dates: 2025-06-06 to 2025-06-25
- Budget: $25000.0
- Visitors: 3
👤 Shared with others
♥ Activities:
  • Bosphorus Kayaking ($40.0)
  • Hiking in Belgrad Forest ($0.0)
  • Prince Islands Cycling Tour ($25.0)
  • Scuba Diving in Tuzla ($90.0)
  • Hagia Sophia Tour ($15.0)
  • Topkapi Palace Visit ($20.0)
  • Blue Mosque Tour ($10.0)
  • Sultanahmet Walking Tour ($10.0)
  • Basilica Cistern Tour ($15.0)
  • Galata Tower Visit ($30.0)
  • Dolmabahçe Palace Tour ($40.0)
  • Grand Bazaar Exploration ($0.0)
  • Süleymaniye Mosque Visit ($0.0)
  • Maiden's Tower Tour ($30.0)
  • Pera Museum Visit ($10.0)
  • Tomb of Mehmed the Magnificent ($0.0)
  • Istanbul Archaeological Museums Visit ($15.0)
  • Çagaloglu Hamam ($40.0)
  • Gülhane Park ($0.0)
  • Moda Coastal Walk ($0.0)
  • Polonezköy Nature Park ($5.0)
  • Princes' Islands Tour ($25.0)

✖ "Istanbul Trip w/Su Samurları !"
- City: Istanbul
- Dates: 2025-06-24 to 2025-07-29
- Budget: $30000.0
- Visitors: 3
👤 Shared with others
♥ Activities:
  • Hagia Sophia Tour ($15.0)
  • Topkapi Palace Visit ($20.0)
  • Blue Mosque Tour ($10.0)
  • Dolmabahçe Palace Tour ($40.0)
  • Maiden's Tower Tour ($30.0)
  • Bosphorus Kayaking ($40.0)
  • Hiking in Belgrad Forest ($0.0)
  • Prince Islands Cycling Tour ($25.0)
  • Reina Club ($10.0)
  • Supperclub Istanbul ($20.0)
```

Here firstly, user can access his or her personal plans even if s/he does not publish it to the public. Then;

```
👤 Shared by: Su Samurları !
- City: Istanbul
- Dates: 2025-06-06 to 2025-06-25
- Budget: $25000.0
- Visitors: 3
♥ Activities:
  • Bosphorus Kayaking ($40.0)
  • Hiking in Belgrad Forest ($0.0)
  • Prince Islands Cycling Tour ($25.0)
  • Scuba Diving in Tuzla ($90.0)
  • Hagia Sophia Tour ($15.0)
  • Topkapi Palace Visit ($20.0)
  • Blue Mosque Tour ($10.0)
  • Sultanahmet Walking Tour ($10.0)
  • Basilica Cistern Tour ($15.0)
  • Galata Tower Visit ($30.0)
  • Dolmabahçe Palace Tour ($40.0)
  • Grand Bazaar Exploration ($0.0)
  • Süleymaniye Mosque Visit ($0.0)
  • Maiden's Tower Tour ($30.0)
  • Pera Museum Visit ($10.0)
  • Tomb of Mehmed the Magnificent ($0.0)
  • Istanbul Archaeological Museums Visit ($15.0)
  • Çagaloglu Hamam ($40.0)
  • Gülhane Park ($0.0)
  • Moda Coastal Walk ($0.0)
  • Polonezköy Nature Park ($5.0)
  • Princes' Islands Tour ($25.0)
★ Reviews:
👤 Kemal (5/5): Excellent!
👤 Dilara (4/5): Good
👤 Yusuf (5/5): Perfecto :))

👤 Shared by: Su Samurları !
- City: Istanbul
- Dates: 2025-06-24 to 2025-07-29
- Budget: $30000.0
- Visitors: 3
♥ Activities:
  • Hagia Sophia Tour ($15.0)
  • Topkapi Palace Visit ($20.0)
  • Blue Mosque Tour ($10.0)
  • Dolmabahçe Palace Tour ($40.0)
  • Maiden's Tower Tour ($30.0)
  • Bosphorus Kayaking ($40.0)
  • Hiking in Belgrad Forest ($0.0)
  • Prince Islands Cycling Tour ($25.0)
  • Reina Club ($10.0)
  • Supperclub Istanbul ($20.0)
  • 360 Istanbul ($15.0)
  • Çagaloglu Hamam ($40.0)
  • Gülhane Park ($0.0)
  • Moda Coastal Walk ($0.0)
★ Reviews:
👤 Kemal (5/5): Is it real or recommended plan???
👤 Dilara (3/5): nice
```

The application shows other user's reviews. Also we gave writing review permission only for rather than the trip plan owner. In order to write a comment, firstly you should enter the application by different username in other words you can only make comment for other users plans;

```
Welcome, Su Samur!
Please choose an option:
1. Browse Cities and Explore (Read-only Mode)
2. Plan a Personalized Trip (Recommendation Mode)
3. View Trip Plans
4. Delete Trip Plan
5. Logout & Exit
3

📁 Viewing Shared Trip Plans...

👤 You have no saved plans.

👤 Shared by: Su Samurları 🌟
- City: Istanbul
- Dates: 2025-06-06 to 2025-06-25
- Budget: $25000.0
- Visitors: 3
- Activities:
  • Bosphorus Kayaking ($40.0)
  • Hiking in Belgrad Forest ($0.0)
  • Prince Islands Cycling Tour ($25.0)
  • Scuba Diving in Tuzla ($90.0)
  • Hagia Sophia Tour ($15.0)
  • Topkapi Palace Visit ($20.0)
  • Blue Mosque Tour ($10.0)
  • Sultanahmet Walking Tour ($10.0)
  • Basilica Cistern Tour ($15.0)
  • Galata Tower Visit ($30.0)
  • Dolmabahçe Palace Tour ($40.0)
  • Grand Bazaar Exploration ($0.0)
  • Süleymaniye Mosque Visit ($0.0)
  • Maiden's Tower Tour ($30.0)
  • Pera Museum Visit ($10.0)
  • Tomb of Mehmed the Magnificent ($0.0)
  • Istanbul Archaeological Museums Visit ($15.0)
  • Cağaloğlu Hamam ($40.0)
  • Gülhane Park ($0.0)
  • Moda Coastal Walk ($0.0)
  • Polonezköy Nature Park ($5.0)
  • Princes' Islands Tour ($25.0)
★ Reviews:
  🌟 Kamal (5/5): Excellent!
  🌟 Dilara (4/5): Good
  🌟 Yusuf (5/5): Perfecto :))
Would you like to leave a review for this trip? (yes/no): yes
Leave a short comment: Nice plan :)
Give a rating (1-5): 5
🎉 Thanks for your feedback!
```

```
Welcome, Su Samurları 🌟!
Please choose an option:
1. Browse Cities and Explore (Read-only Mode)
2. Plan a Personalized Trip (Recommendation Mode)
3. View Trip Plans
4. Delete Trip Plan
5. Logout & Exit
4

📁 Your Trip Plans:
- ID: 02e551e9-e6c8-48c0-bfb6-f16d438cc371 | Title: "Istanbul Recommended Trip" | City: Istanbul | Dates: 2025-06-06 → 2025-06-25 | 🌟 Shared
- ID: 294eec99-99d2-4e9f-9cbf-a8b271e5003d | Title: "Istanbul Trip w/Su Samurları 🌟" | City: Istanbul | Dates: 2025-06-24 → 2025-07-29 | 🌟 Shared
- ID: f20ab5d1-b0a3-47b9-b0aa-cd5635ca1395 | Title: "Silinecek" | City: Barcelona | Dates: 2025-07-01 → 2025-08-30 | 🌟 Shared
- ID: 8f8f6e14-6410-4472-8609-152cb5694185 | Title: "Silinecek1" | City: Rome | Dates: 2025-07-01 → 2025-07-07

Enter the ID of the trip plan you want to delete: 8f8f6e14-6410-4472-8609-152cb5694185
Are you sure you want to delete this trip? (yes/no): yes
🎉 Trip plan deleted.
```

For the 4th option, here users can delete the trip plan that was already created. Also here, users are able to see their plans as well.

```
Welcome, Su Samurları 🌟!
Please choose an option:
1. Browse Cities and Explore (Read-only Mode)
2. Plan a Personalized Trip (Recommendation Mode)
3. View Trip Plans
4. Delete Trip Plan
5. Logout & Exit
5

👋 Goodbye!
```

For the 5th option, users can exit from the application.

## 5. Challenges and Solutions

Challenge	Solution
Complex class relationships	Used UML to structure classes early and kept inheritance trees shallow; utilized abstract base classes to avoid redundancy.
Handling multiple user inputs	Implemented robust input validation and interactive menu loops to handle incorrect or unexpected user behavior smoothly.
Cost calculations per visitor	Refactored <code>AppController</code> to dynamically multiply accommodation, activity, and transport costs by number of visitors before trip summary.
Displaying itinerary activities in shared plans	Adjusted logic in <code>getItinerary()</code> and ensured <code>ItineraryItem</code> objects are correctly saved and retrieved across all public plans.
Cross-platform date parsing issues (macOS)	Replaced system-dependent <code>DateFormat</code> parsing with custom date handlers compatible across operating systems.
Gson serialization and deserialization errors	Used consistent field naming, avoided transient fields, and ensured proper <code>TypeToken</code> usage to handle generic lists like <code>List&lt;TripPlan&gt;</code> . (See note below)
Redundant plan visibility logic	Simplified conditional structures for plan visibility and review eligibility to reduce bugs and improve code readability.
Synchronization of user review permissions	Added checks to ensure reviews can only be added to public plans and only if the plan owner allows it.

*Note: The Gson errors only occur 2 of our group friends who are using macOS but another friend who uses Windows did not face such an error. After consulting with our assistant Pelin Hoca, we decided to bypass the issue.*

---

## **6. Conclusion**

This project allowed us to practically apply and deepen our understanding of object-oriented programming in a meaningful, real-world application. Each class and method was designed with intent and utility, helping us reinforce core concepts such as abstraction, encapsulation, and polymorphism through active implementation.

Beyond programming, we enhanced our collaborative problem-solving, gained experience about teamwork, learned how to interpret and resolve cross-platform issues, and practiced modular design using UML diagrams. We also worked with exception handling, user interaction, and dynamic data structures—all essential elements of modern software development.

By the end of the project, we had not only created a functional and user-friendly travel planner but also gained experience that closely mirrors professional development workflows.