



SS. CYRIL AND METHODIUS UNIVERSITY – SKOPJE
FACULTY OF COMPUTER SCIENCE AND ENGINEERING



Project Report

Travel Master

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Source code on GitLab:

<https://gitlab.finki.ukim.mk/bojana.marojevikj/travel-master>

Source code on GitHub:

<https://github.com/BojanaMarojevikj/travel-master>

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Introduction

Project Overview

Travel Master is a web application designed to help users plan their vacations by generating detailed itineraries based on selected destinations and dates. Users can choose a country and city, set travel dates, and receive a daily itinerary with suggested activities.

Technologies used

- **Next.js:** Framework for server-side rendering and static site generation.
- **React:** JavaScript library for building user interfaces.
- **TypeScript:** Superset of JavaScript that adds static types.
- **MUI (Material-UI):** React components library for building user interfaces.
- **Tailwind CSS:** Utility-first CSS framework for styling.
- **OpenAI API:** Used for generating personalized travel itineraries.
- **REST Countries API:** Fetches a comprehensive list of countries.
- **CountriesNow API:** Provides city data for selected countries.
- **CSS:** For custom styling and animations.

Features Implemented

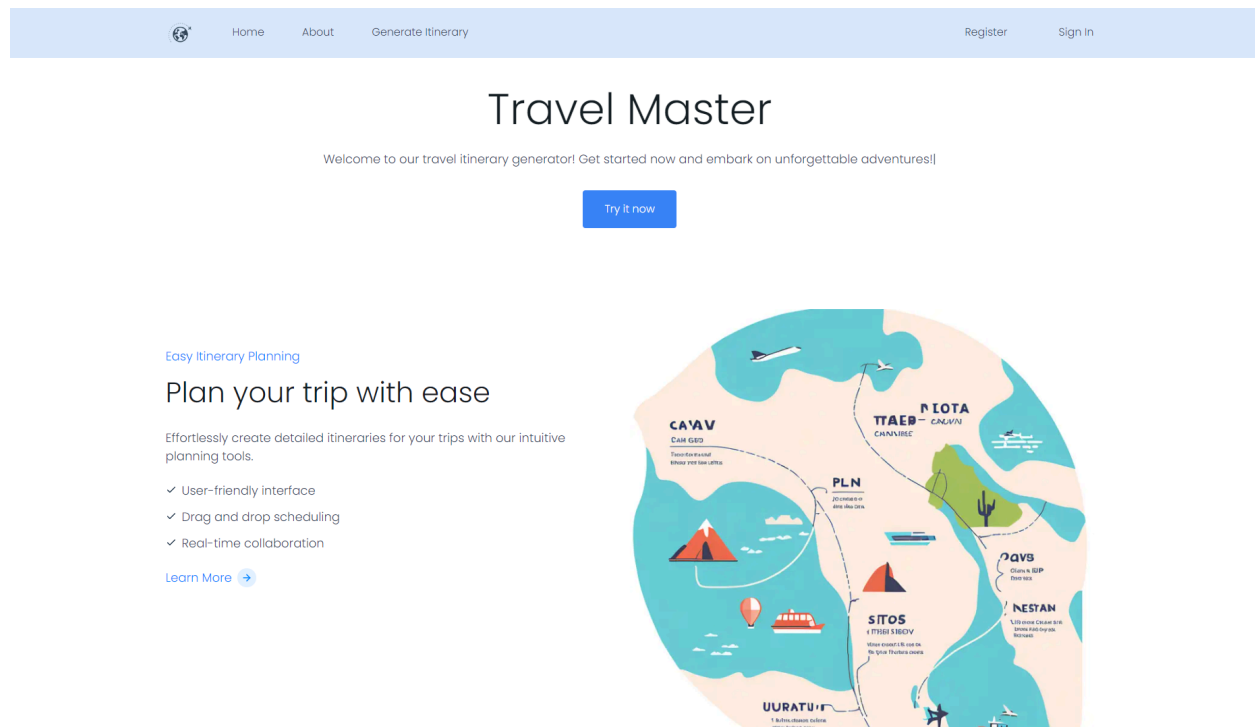
- **Location Selection:** Users can select their travel destination by choosing from a list of countries and cities.
- **Itinerary Generation:** Personalized travel itineraries are created using the OpenAI API, providing tailored daily plans based on user input.
- **Form Handling:** Robust form validation and error handling ensure a smooth user experience.
- **Responsive Design:** The app is designed to be mobile-friendly and visually appealing across various devices.

- **Download Itinerary as PDF:** Users can download their generated itinerary with a PDF format.

Application Pages

Home Page

The landing page of the app where users can view the app's features.





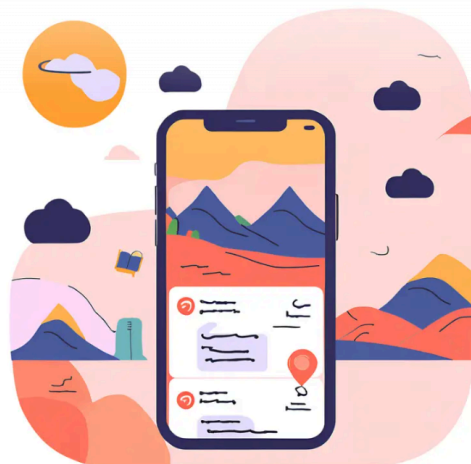
Receive personalized recommendations for activities, restaurants, and accommodations based on your preferences.

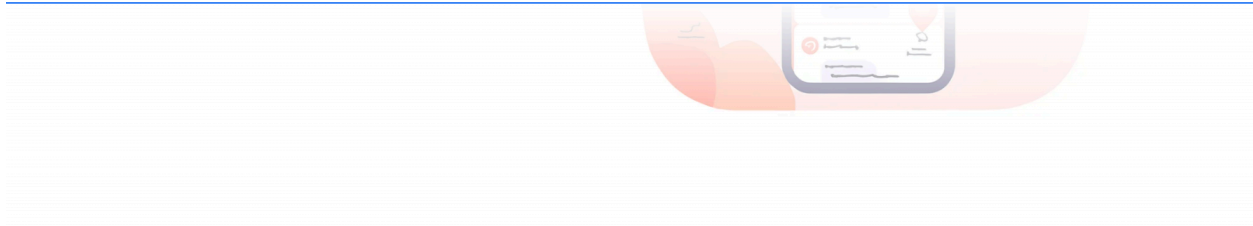
- [Learn More](#)



Keep track of changes and updates to your itinerary with real-time notifications and alerts.

- Learn More





Frequently Asked Questions

Let's clarify some of your questions

Here are some common questions and answers to help you get the most out of our travel itinerary service.

How does the travel itinerary generation work?



Simply enter your departure and arrival dates along with your desired location. Our system will use OpenAI to generate a detailed travel itinerary for you, including activities, places to eat, and visit, as well as weather information.

Can I customize my itinerary?



Is the weather information accurate?



Can I save and share my itinerary?

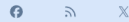


Do I need to create an account to use the service?



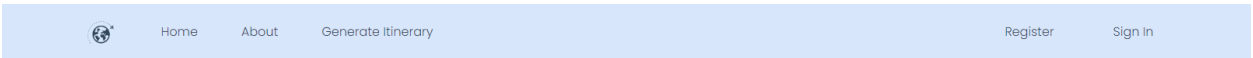
Travel Master 

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About Page

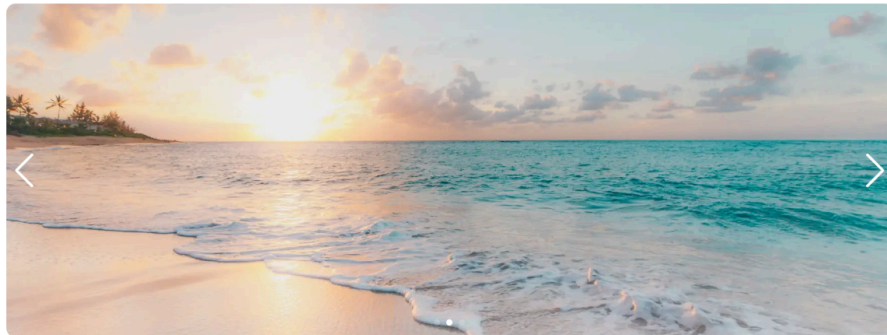
Provides information about the Travel Master app, its features, and purpose.



Travel Master

Plan your dream vacation effortlessly by simply entering your departure and arrival dates, along with your desired location. Our innovative service powered by OpenAI creates personalized itineraries that include must-visit attractions, delicious dining options, and real-time weather updates. Whether you're exploring new destinations or revisiting favorites, let us help you make the most of your travel experience. Get started now and embark on unforgettable adventures!

[Try It now](#)




Travel Master 

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Generate Itinerary Page


Users can enter travel details to generate a personalized itinerary. It includes date selection and destination inputs, leveraging APIs for suggestions.

HomeAboutGenerate ItineraryRegisterSign In

Enter Your Travel Information


Start Date

MM/DD/YYYY




End Date

MM/DD/YYYY




Country

Select Country



City

Select City



Generate Itinerary

Today

Tomorrow

Next Weekend

Christmas


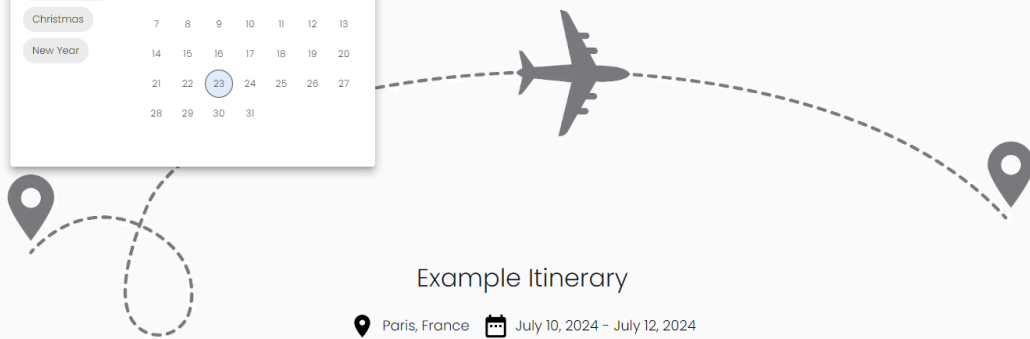
New Year

July 2024


<


>

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			




Example Itinerary

Paris, France


July 10, 2024 – July 12, 2024

Day 1 – July 10, 2024

 Temperature: 25°C


- Visit the Eiffel Tower
- Lunch at a Parisian café
- Evening Seine River Cruise

Day 2 – July 11, 2024

 Temperature: 22°C

- Louvre Museum tour
- Walk through the Tuileries Garden
- Dinner in Montmartre

Day 3 – July 12, 2024

 Temperature: 15°C

- Explore Versailles Palace
- Shopping in Champs-Élysées
- Enjoy a French pastry

Register Page

This page contains a form which would allow new users to create an account by filling out necessary information with real-time validation. This feature is not yet fully implemented.

Travel Master

Register

First Name

Middle Name (Optional)

Last Name

Email

Password

✗ At least 8 characters

✗ Includes numbers

✗ Includes special characters

Repeat Password

Register

Sign In Page

Existing users can log in to access their saved itineraries and preferences. This feature is not yet fully implemented.

Travel Master

Sign In

Email

damjan@iwmnetwork.com

Password

Sign In

Travel Master

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Implementation Details

Location Data

To enhance the user experience, Travel Master integrates multiple APIs for location data. I used the REST Countries API to fetch an extensive list of countries, ensuring that users can select from a comprehensive database. For city data, the CountriesNow API provided a reliable source of information. These integrations allow users to easily specify their travel destinations, laying the groundwork for accurate itinerary generation.

```
useEffect(() => {  
  if (selectedCountry) {  
    const fetchCities = async () => {
```

```

    try {
      const response = await
fetch('https://countriesnow.space/api/v0.1/countries/cities', {
  method: 'POST',
  headers: {
    'Content-Type': 'application/json',
  },
  body: JSON.stringify({ country: selectedCountry }),
});
const data = await response.json();
if (data.data && data.data.length > 0) {
  setCities(data.data);
} else {
  setCities([]);
  setShowModal(true);
}
} catch (error) {
  console.error('Error fetching cities:', error);
}
};

fetchCities();
} else {
  setCities([]);
}
}, [selectedCountry]);

```

Fetching cities code snippet

Itinerary Generation

The core feature of Travel Master is its ability to generate personalized itineraries. This is achieved through the OpenAI API, which crafts detailed daily plans tailored to the user's selected location and dates. By leveraging AI, Travel Master offers unique and engaging suggestions for activities and attractions, ensuring each itinerary is fresh and exciting.

```

const handleSubmit = async (e) => {
  e.preventDefault();

```

```

if (!startDate || !endDate || !selectedCountry || !selectedCity) {
  setFormError('Please fill out all fields.');
```

```

  return;
}
setFetchingItinerary(true);
const requestBody = {
  model: "gpt-4",
  messages: [
    {
      role: "user",
      content: `I am planning a vacation from
${startDate.format('MM/DD/YYYY')} to ${endDate.format('MM/DD/YYYY')} in
${selectedCity}, ${selectedCountry}.
Please generate a travel itinerary with activities and suggestions
for each day.`
    }
  ]
};
try {
  const response = await
fetch('https://api.openai.com/v1/chat/completions', {
  method: 'POST',
  headers: {
    'Content-Type': 'application/json',
    'Authorization': `Bearer {api-key}`
  },
  body: JSON.stringify(requestBody)
});
const data = await response.json();
const itineraryData = JSON.parse(data.choices[0].message.content);
setItinerary(itineraryData);
} catch (error) {
  console.error('Error generating itinerary:', error);
} finally {
  setFetchingItinerary(false);
}
};

```

Generating itinerary code snippet

Form Validation

Robust form handling is crucial for collecting accurate user input. I implemented comprehensive validation checks to ensure that all required fields, such as country, city, and travel dates, are completed before submission. This reduces errors and enhances the overall user experience by guiding users through the necessary steps.

```
if (!startDate || !endDate || !selectedCountry || !selectedCity) {  
  setFormError('Please fill out all fields.');
```

```
  return;  
}
```

Form validation code snippet

Password Validation

In the registration process, password validation is implemented to ensure strong security standards. The password must meet the following criteria:

- At least 8 characters
- Includes numbers
- Includes special characters

The validation is performed using regular expressions:

```
const validatePassword = (password: string) => {  
  const lengthValid = password.length >= 8;  
  const numbersValid = /[0-9]/.test(password);  
  const specialCharsValid = /[!@#$$%^&*(),.?"':{}|<>]/.test(password);  
  
  setPasswordValidations({  
    length: lengthValid,  
    numbers: numbersValid,  
    specialChars: specialCharsValid  
  });  
};
```

The form captures user details including name, surname, email, password, and repeat password. It includes real-time validation and provides immediate feedback with visual indicators.

```
const handleChange = (e: { target: { name: any; value: any; }; }) => {
  const { name, value } = e.target;
  setFormData({ ...formData, [name]: value });

  if (name === 'password') {
    validatePassword(value);
  }
};
```

Download Itinerary as PDF

Users can download their generated itinerary in PDF format, providing a convenient way to save and share travel plans.

```
const downloadPDF = () => {
  const doc = new jsPDF();
  let yOffset = 20;

  doc.setFontSize(16);
  doc.text('Your Generated Itinerary', 10, 10);
  doc.setFontSize(12);
  doc.text(`Destination: ${destination}`, 10, yOffset);
  yOffset += 10;

  itinerary.forEach((itineraryItem, index) => {
    if (yOffset > 270) {
      doc.addPage();
      yOffset = 20;
    }
    doc.text(`Day ${index + 1} - ${formatDate(itineraryItem.date)}`, 10,
yOffset);
    yOffset += 10;
    doc.text(`Temperature: ${itineraryItem.temperature}`, 10, yOffset);
    yOffset += 10;
    itineraryItem.activities.forEach((activity, idx) => {
```

```
    if (yOffset > 270) {  
        doc.addPage();  
        yOffset = 20;  
    }  
    doc.text(`- ${activity}`, 20, yOffset);  
    yOffset += 10;  
});  
yOffset += 10;  
});  
  
doc.save('itinerary.pdf');  
};
```

Generate PDF code snippet

Conclusion

Project Outcomes

The project successfully created a functional travel itinerary generator that enables users to easily plan trips and receive comprehensive itineraries. The application provides a smooth user experience with visually appealing design and efficient functionality.

Future Improvements

Enhanced Recommendations

To further enrich the user experience, the plan is to integrate additional APIs that offer a wider range of activity suggestions. By tapping into more specialized data sources, Travel Master can provide users with diverse options tailored to various interests, such as local events, culinary experiences, and hidden gems unique to each destination. This enhancement will ensure that Travel Master remains a go-to resource for personalized travel planning, offering something new and exciting every time.

User Accounts

Implementing user accounts is a key improvement I aim to introduce. By allowing users to create and manage their profiles, I can enable features such as itinerary saving and revisiting. This will not only provide convenience but also foster a sense of personalization and ownership over their travel plans. Users will be able to save multiple itineraries, access past plans, and even share their adventures with friends. Additionally, accounts can support preferences and past activities, further tailoring recommendations to individual tastes.