Module 3

For the software design and engineering segment of my ePortfolio, I embarked on the creation of a comprehensive travel website. The initial phase involved gathering requirements and crafting preliminary wireframes to outline the site's layout. The current iteration, included in the attached zip file, encompasses both the website's redesign and the foundational API for adding countries to the MongoDB database. The preliminary project unfolded over the 8-week duration of Course 465 Full Stack 1.

The artifact, a full-stack application, serves as a platform for travel information and packages. It has a front end for displaying data and travel packages, coupled with a back end for updating these packages. The decision to include this artifact in my ePortfolio was driven by my aspiration to enhance my skills in both front-end and back-end development.

The current state of the artifact highlights my ability to navigate the design and requirements stages, reimagining the website from scratch to improve its overall design and functionality. Specifically, the redesigned layout is now in place, and the incorporation of data into the website will be facilitated through the backend. This enhancement ensures better data type checking and uniqueness within the MongoDB database. Notably, the front end has undergone significant improvement, transitioning from a template sourced from a free site template website to a more custom and polished design.

Reflecting on the course objectives, I have successfully addressed several key aspects in the design and requirements phase. The documentation, comprising user requirements gathering and user stories, attests to the thorough planning undertaken to align the project with

user and client goals. Emphasizing user-centric planning is crucial, particularly in client-dependent projects like this, as it ensures the product's success in meeting user needs.

During the refinement process, I realized the importance of thoughtful planning before delving into coding. Grid layout and considerations for responsive web design became focal points of my learning. While not all aspects of the site are responsive yet, strides have been made, such as implementing CSS styling for specific screen sizes, particularly on the contact page. This effort aims to enhance the overall user experience and responsiveness of the site, especially for mobile users.

Challenges encountered included positioning elements on the screen without affecting others, grappling with different position types like absolute and relative, and the initial difficulty of visualizing the design in a blank HTML document. These challenges underscored the significance of a meticulous planning phase and expanded my understanding beyond coding to encompass the broader realm of design principles.

USER STORIES

Product Backlog

Prioritized High-Level User Story List

User Story ID	Priority	Size	As a(n) <type of user>	I want to <perform some task>	So that I can <achieve some goal>.
1	1	Large	Travel site user	Sort by the trip price	see trips based on my travel budget.
2	2	Large	Travel site user	be able to see the top destinations	have the hottest locations to choose from
3	3	Large	Travel site user	I want to have filtering options available on the left side.	filter the large amount of destinations by my preferences
4	4	Large	Travel site user	I want to have FAQs on the Support page.	fix any easy related I questions with booking
5	5	Large	Travel site user	I want to view destination related stories	be sure about locations details
6	6	Medium	Travel site user	be able to customize my profile	have a more suitable choice of destinations for me.
7	7	Medium	Travel site user	be able to choose the type of trip I wish to go on	Save time searching for the type of trip I want
8	8	Medium	Travel site user	I want to use a search bar and sorting options on the Travel Packages page	search for in-mind destinations
9	9	Medium	Travel site user	I want to be able to return to the Travel Packages page if selected package is not to my liking	have no need to redo my filtering and/or restart the search
10	10	Medium	Travel site user	I want to add or remove packages per person on the Selected Package page.	book for multiple people on one account
11	11	Medium	Travel site user	I want to view all fees, prices, and total on the Checkout page.	ensure I can afford the trip
12	12	Medium	Travel site user	I want be able to submit inquiries.	get questions that are not answered on FAQs answered
13	13	Small	Travel site user	I want a favorites icon on the Selected Package page to save packages for later.	continue search for potential destinations and make a list of liked ones.
14	14	Small	Travel site user	I want to read about the company	feel secure in who I am booking with
15	15	Small	Travel site user	I want to see additional services	facilitate vacation/travel booking all-in-one
16	16	Small	Travel site user	Have trips based on my previous locations	have similar locations to what my previous trips were
17	17	Small	Travel site user	See deals	buy whenever there is a good deal.
18	18	Small	Travel site user	I want chat support options on the Contact page.	have support easily throughout the booking/search process

PERSONAS

Adventurous Explorer - Alex

Demographics:
- Age: 28
- Occupation: Software Engineer
- Income: Above-average

Personality and Preferences:
- Loves adventure travel and exploring new destinations.
- Enjoys outdoor activities like hiking, diving, and exploring local cuisines.
- Prefers flexible itineraries and unique, off-the-beaten-path experiences.

Travel Goals:
- Discover new cultures and landscapes.
- Experience adrenaline-pumping adventures…

Relaxation Seeker - Rachel

Demographics:
- Age: 35
- Occupation: Marketing Manager
- Income: Moderate

Personality and Preferences:
- Values relaxation and downtime during vacations.
- Enjoys spa treatments, beach resorts, and scenic views.
- Prefers all-inclusive packages for convenience.

Travel Goals:
- Unwind and recharge from a busy work life.
- Experience luxury and comfort.

Budget Explorer - Bailey

Demographics:
- Age: 23
- Occupation: College Student
- Income: Limited

Personality and Preferences:
- Thrifty and budget-conscious.
- Interested in backpacking, hostels, and low-cost activities.
- Enjoys meeting new people and immersing in local cultures.

Travel Goals:
- Explore the world on a tight budget.
- Embrace the adventure of budget travel.

Family Vacation Planner - Fiona:

Demographics:
- Age: 40
- Occupation: Stay-at-home Parent
- Income: Moderate

Personality and Preferences:
- Plans family-oriented vacations.
- Looks for family-friendly accommodations and activities.
- Interested in educational and cultural experiences for kids.

Travel Goals:
- Create lasting memories with family.
- Ensure a hassle-free and enjoyable trip for everyone.

Business Traveler - Benjamin:

Demographics:
- Age: 45
- Occupation: Business Executive
- Income: High

Personality and Preferences:
- Frequent traveler for business meetings and conferences.
- Values efficiency and convenience in travel arrangements.
- Prefers premium accommodations and services.

Travel Goals:
- Combine business and leisure when possible.
- Streamline travel logistics for work commitments.

Senior Explorer - Carl:

Demographics:
- Age: 70
- Occupation: Retired History Teacher
- Income: Pension

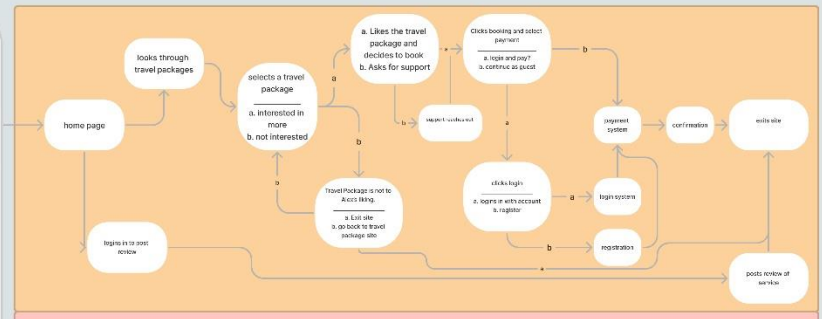
Personality and Preferences:
- Enthusiastic about lifelong learning and cultural experiences.
- Enjoys exploring historical sites, museums, and attending cultural performances.
- Prefers travel packages that offer comfortable accommodations, guided tours, and a relaxed pace.

Travel Goals:
- Embrace leisurely travel to fully absorb the history and culture of destinations.
- Share travel experiences with fellow seniors and create lasting memories.

Touchpoints and possible flows

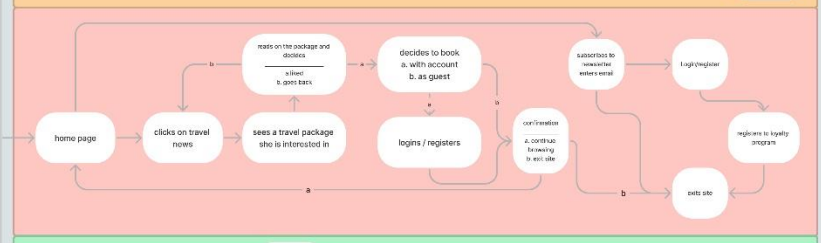
Adventurous Explorer - Alex

- Discovery:
  - Finds the travel site through online searches or recommendations.
- Exploration:
  - Explores various adventure travel packages, checking itineraries and activity details.
- Support:
  - Contacts customer support for additional information on adventure packages and destinations.
- Booking:
  - Completes the booking process for a customized adventure package.
- Post-Trip:
  - Shares feedback and reviews about the adventure experience on the site.



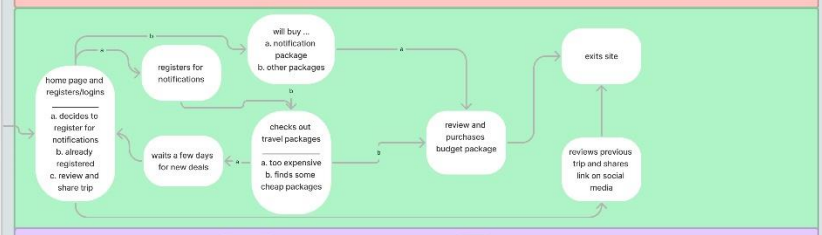
Relaxation Seeker - Rachel:

- Inspiration:
  - Engages with inspiring travel content showcasing relaxing destinations and luxury accommodations.
- Subscription:
  - Subscribes to newsletters for exclusive offers on spa retreats and beachfront resorts.
- Booking:
  - Books an all-inclusive package with spa treatments and premium accommodations.
- Loyalty:
  - Participates in loyalty programs for discounts on future relaxation getaways.



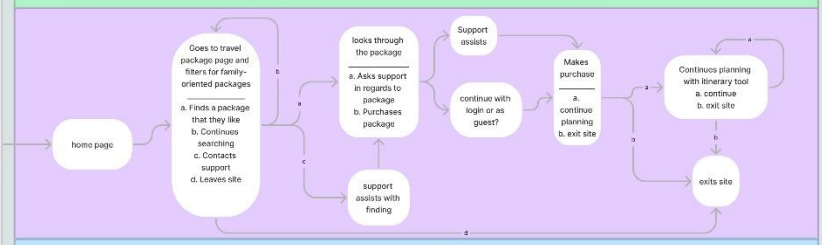
Budget Explorer - Bailey:

- Notifications:
  - Signs up for deal notifications and budget travel packages.
- Reviews:
  - Checks user reviews to ensure budget accommodations meet expectations.
- Booking:
  - Books budget-friendly packages with flexibility in travel dates.
- Social Sharing:
  - Shares travel experiences and tips on social media platforms.



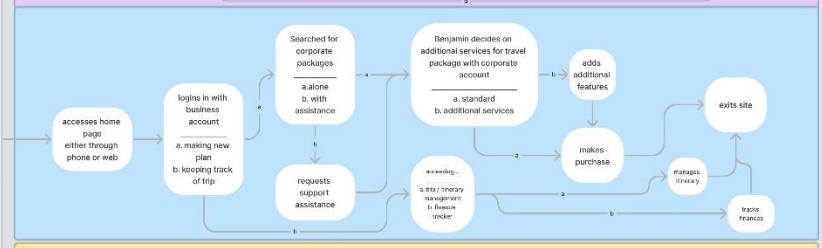
Family Vacation Planner - Fiona:

- Family Content:
  - Engages with family-oriented content showcasing kid-friendly destinations and activities.
- Planning:
  - Uses vacation planning tools to create a customized family itinerary.
- Support:
  - Contacts customer support for advice on family-friendly accommodations.
- Booking:
  - Books a family package with inclusive activities for children.



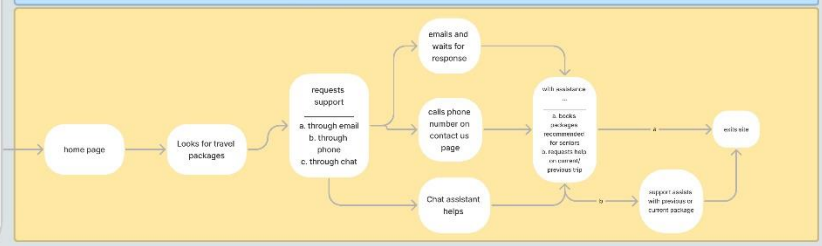
Business Traveler - Benjamin:

- Business Section:
  - Navigates to the business travel section of the site for corporate packages.
- Booking Tools:
  - Utilizes booking tools for seamless scheduling of flights, accommodations, and conference facilities.
- Mobile App:
  - Accesses the mobile app for real-time updates and easy communication during the trip.
- Expense Management:
  - Utilizes expense management features for business-related costs.



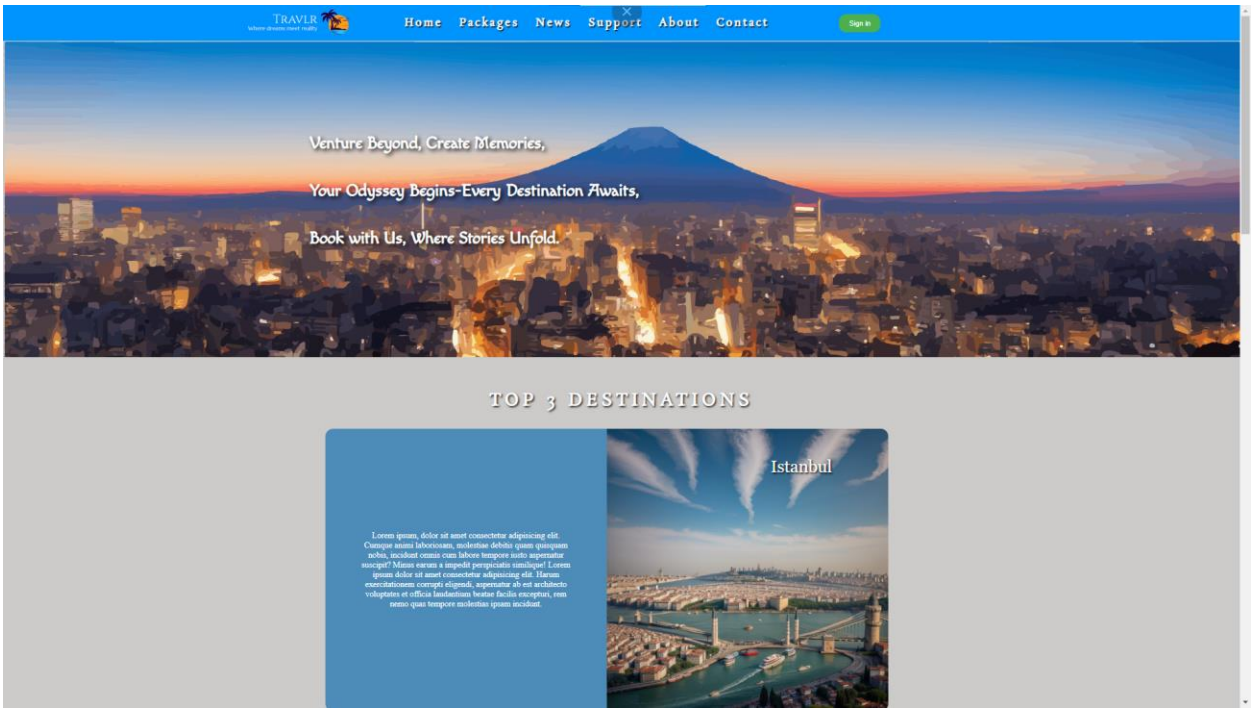
Senior Explorer - Carl:

- Comfortable Exploration:
  - Discovers travel options through online searches or recommendations, emphasizing comfortable and relaxed travel experiences.
- Cruise Preferences:
  - Explores cruise options with a focus on comfort and amenities.
- Support for Seniors:
  - Contacts customer support for advice on senior-friendly accommodations and cruise packages.
- Booking for Comfort:
  - Books cruise packages with a leisurely pace and onboard amenities.
- Post-Cruise Reflection:
  - Shares feedback and reviews about the cruise experience on the site.



PAGE WIREFRAMES

HOMEPAGE


TRAVLR
Where dreams meet reality
Home
Packages
News
Support
About
Contact
Sign in
Venture Beyond, Create Memories,
Your Odyssey Begins-Every Destination Awaits,
Book with Us, Where Stories Unfold.
TOP 3 DESTINATIONS
Istanbul
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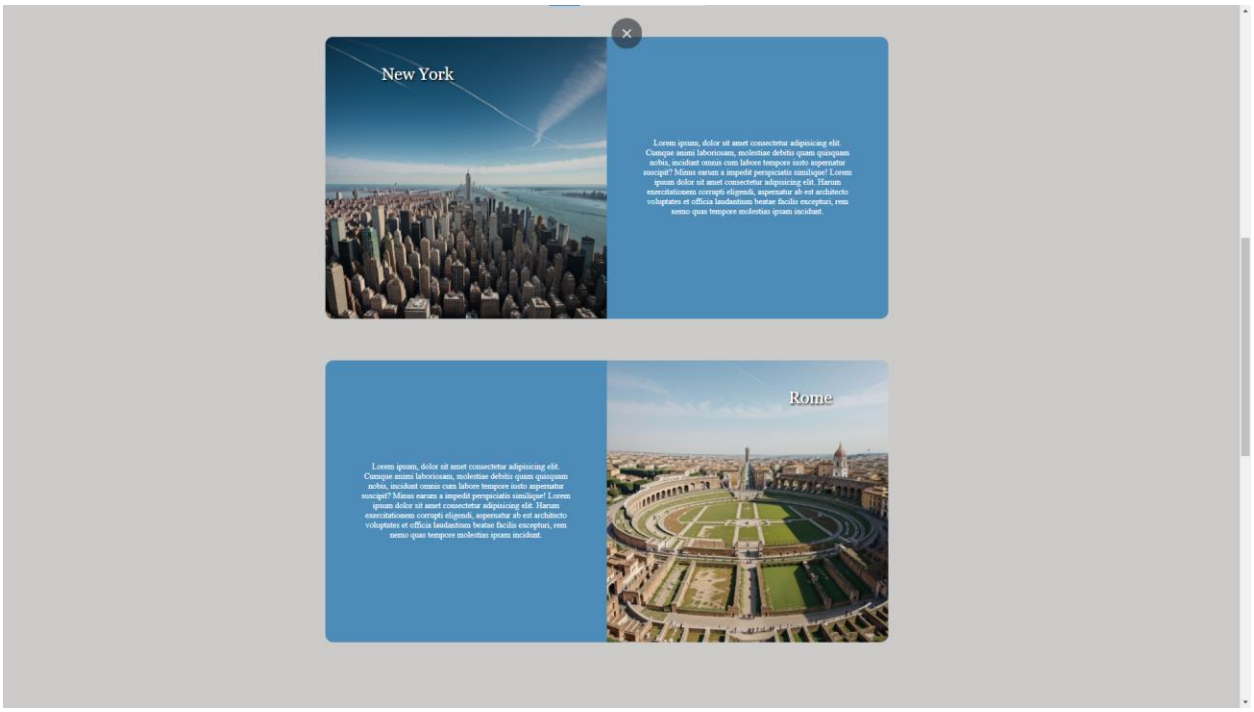
New York
Lorem ipsum, dolor sit amet consectetur adipisicing elit. Cumque animi laboriosam, molestiae debitis quam quisquam nobis, incidunt omnis cum labore tempore iusto aspernatur suscipit? Minus earum a impedit perspiciatis similique! Lorem ipsum dolor sit amet consectetur adipisicing elit. Harum exercitationem corrupti eligendi, aspernatur ab est architecto voluptates et officia laudantium beatae facilis excepturi, rem nemo quas tempore molestias ipsam incidunt.
Rome
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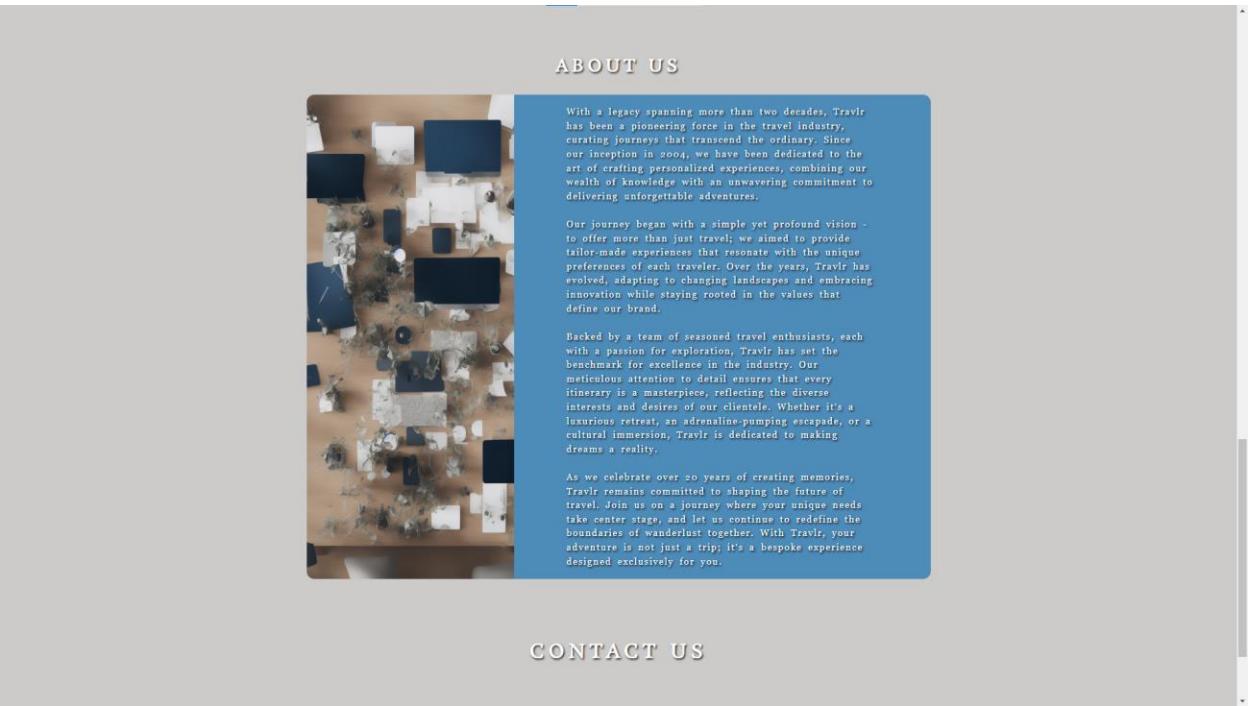
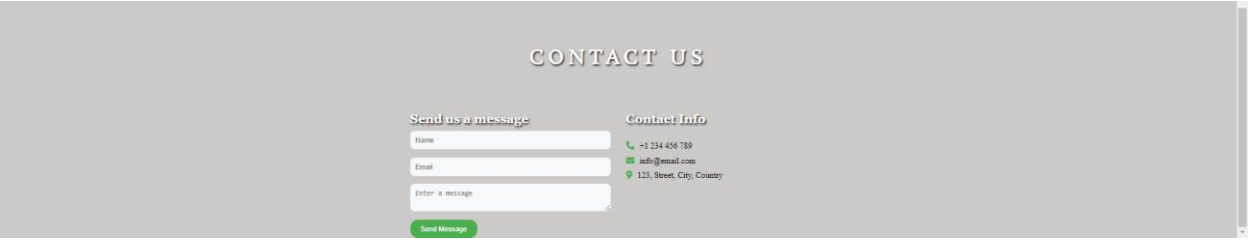
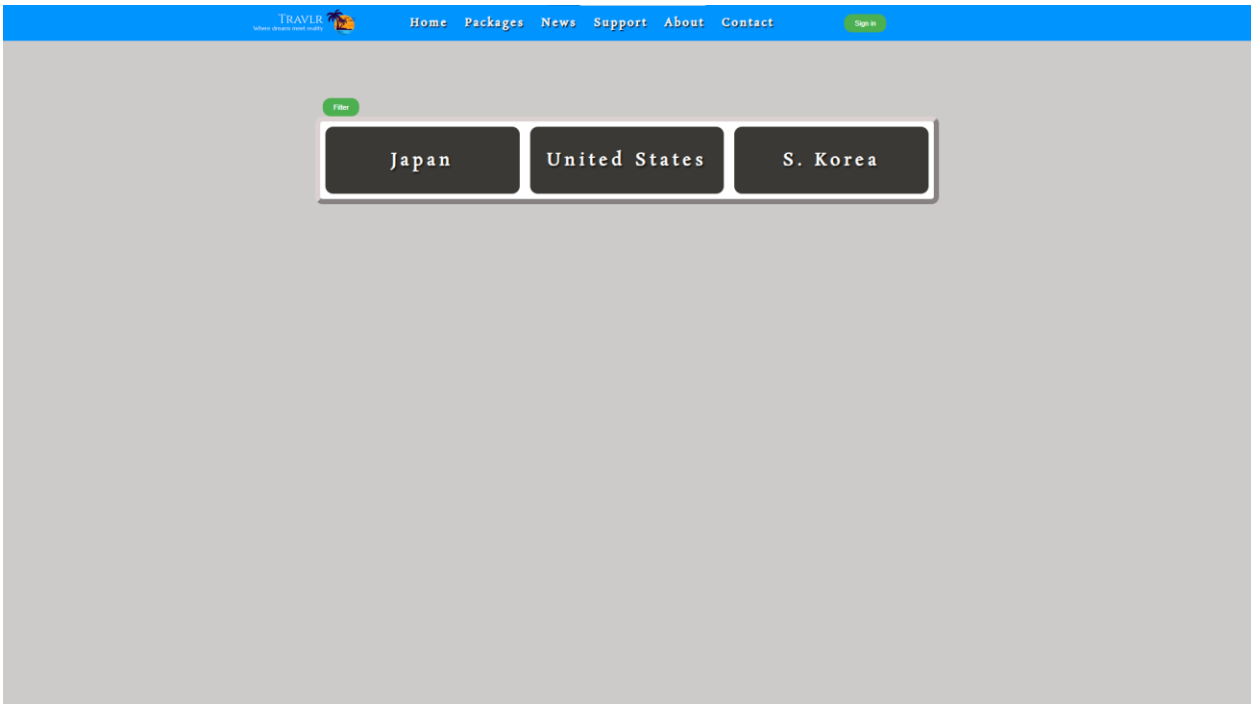




This is the current layout of the home page as is currently.

All pages in the nav bar link to their own route except for about and contact as they are rerouted to the home page and href using # id tag.



Current news page is only partially made as implementation of this page will be receiving from the database the list of countries that news is available for.

DATABASE

```
[nodemon] starting `node server.js`
Server is running on port 3000
Mongoose connected to mongodb://127.0.0.1/travlr_db
```

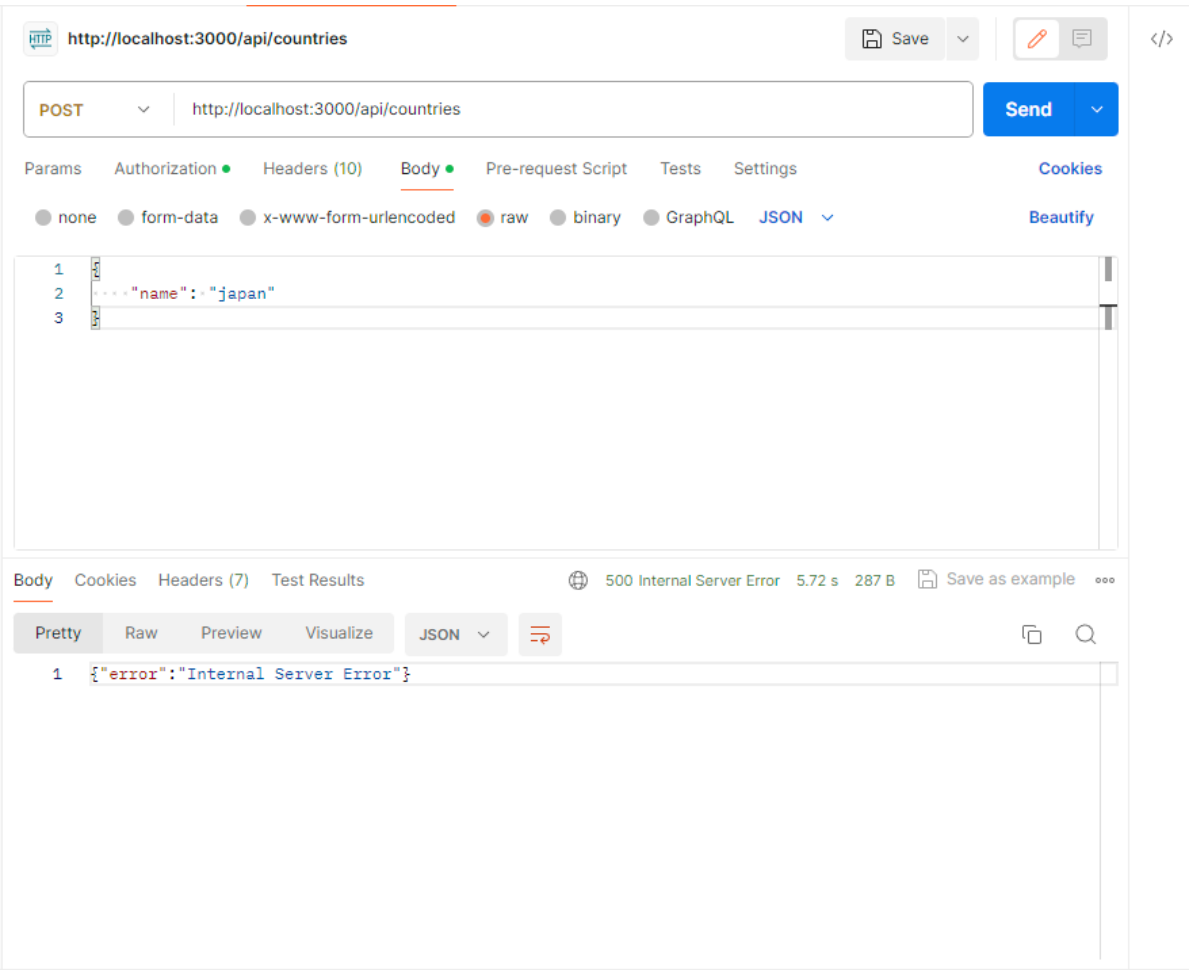
As can be seen the mongoose database connection was re used from the old artifact however deprecated options in the connection of the MongoDB database were removed as well as adding checking for uniqueness of the current countries that are in the db.

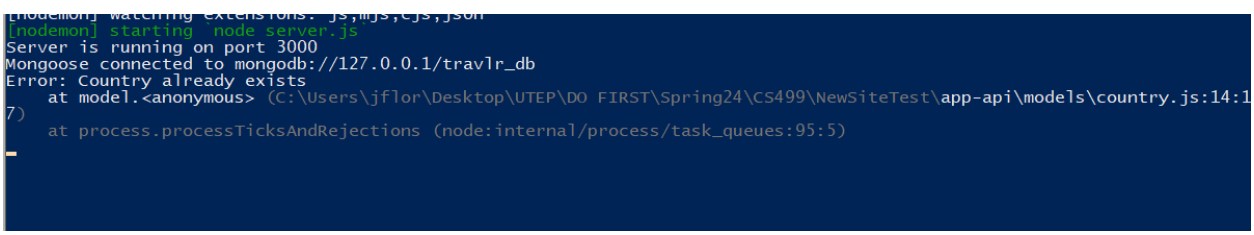
As can be seen here there is one country listed in the db

```
test> use travlr_db
switched to db travlr_db
travlr_db> show collections
countries
travlr_db> db.countries.find({})
[
  { _id: ObjectId("65bfe3f626840af9299d2c66"), name: 'japan', __v: 0 }
]
```

API DATABASE CONNECTION

Using postman, we can see that data is able to be added as well as ensuring no duplicate country names are added.





However, adding a country not on the list is allowed

http://localhost:3000/api/countries

Save

POST http://localhost:3000/api/countries Send

Params Authorization Headers (10) Body Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
1 {
2     "name": "United States"
3 }
```

Body Cookies Headers (7) Test Results 201 Created 11 ms 305 B Save as example

Pretty Raw Preview Visualize JSON

```
1 {
2     "name": "United States",
3     "_id": "65bfed0cd25f8b3d0c1ce702",
4     "__v": 0
5 }
```

```
]
travlr_db> db.countries.find({})
[
  { _id: ObjectId("65bfe3f626840af9299d2c66"), name: 'japan', __v: 0 },
  {
    _id: ObjectId("65bfed0cd25f8b3d0c1ce702"),
    name: 'United States',
    __v: 0
  }
]
travlr_db>
```

Review of the Artifact

The artifact under review is a travel site, which serves as a platform for exploring enhancement opportunities in algorithms and data structures. The following enhancement plans were self-created to improve the artifact:

Category 2: Algorithms and Data Structures:

Enhancement for the artifact in category 2 can be done through

1. restructuring of the data structures that make up users, creating different versions of users, as well as allowing for access of an admin user for the back end for maintaining of the website. Access to back end will only be allowed to main IP (mine, however credentials will be given to you(professor)) as well as those who have credentials of the admin.
2. Sorting algorithms for sorting of Travel packages available for different locations sorted by alphabetical order, most popular, highest price and lowest price. Filtering options can be made available for use of filtering between travel destinations such as Asia, Europe, North America, South America, etc.
3. Encryption algorithms to be researched and applied to make a payment system(simulated) that are PCI compliant as best as can be done under the time constraint.

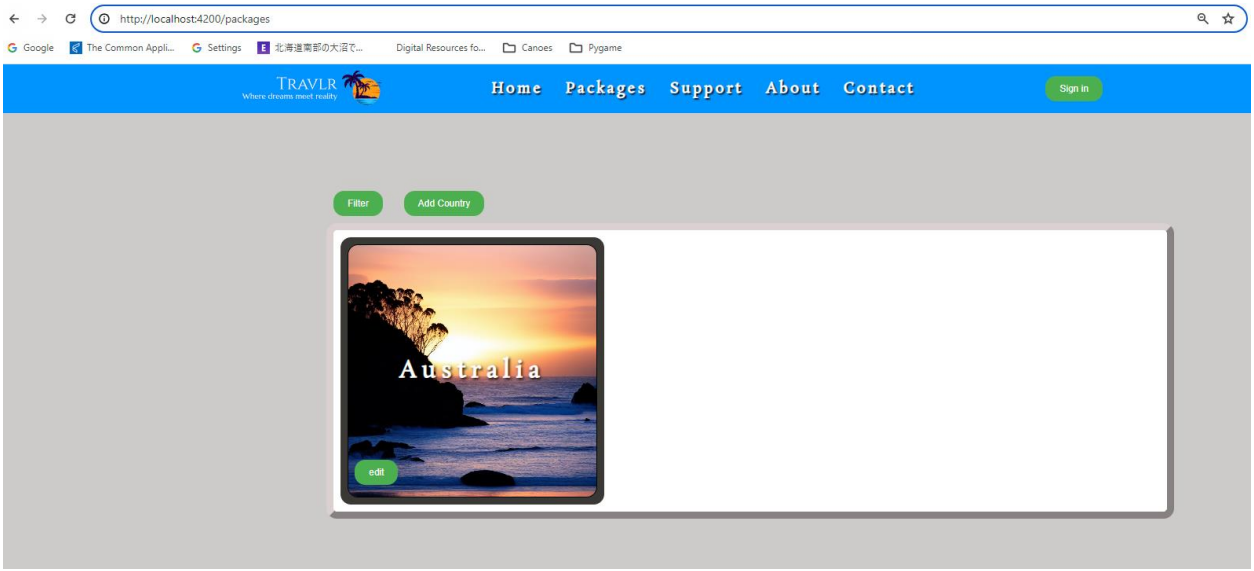
The primary goal is to demonstrate the correct application of algorithms in relevant scenarios and the manipulation of data structures to achieve desired outcomes. The inclusion of the travel site

in this category aims to showcase the flexibility and updatability of data, which are core principles of data structures and algorithms.

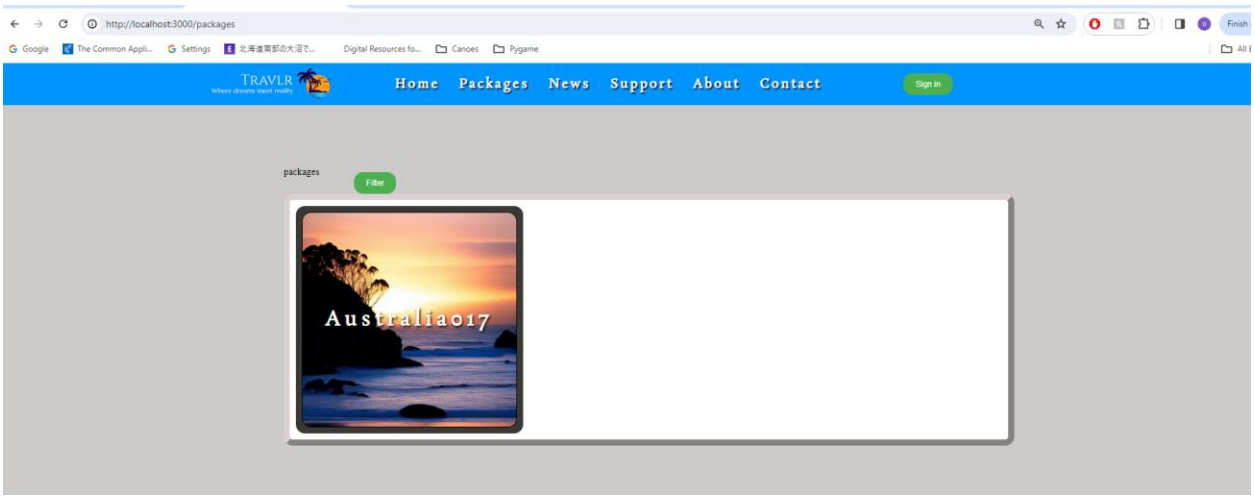
Significant progress has been made on the API side, including the addition of an update feature for travel packages and name restrictions based on a sorted CSV file for country selection.

While the original enhancement goals were not fully met, considerable improvements were made, particularly in the restructuring of user authentication and the refinement of the API for better data management and synchronization between the frontend and backend.

The site now successfully loads data from MongoDB to the frontend, ensuring that the displayed data is up-to-date with backend modifications. The frontend currently displays numerical data for development purposes.



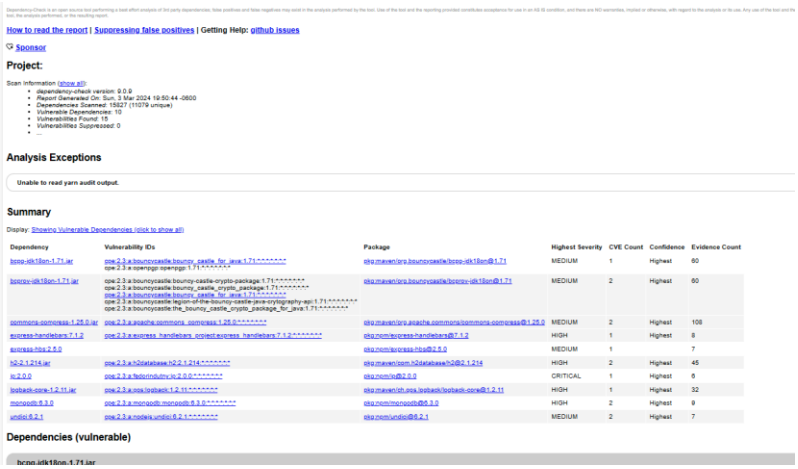
admin site



client front end

This enhancement demonstrates the implementation of a skill, specifically the creation of APIs, which is crucial for the project.

It also highlights the importance of maintaining up-to-date code and dependencies to reduce software vulnerabilities. The dependency report shows a reduction in significant vulnerabilities, indicating progress in addressing security concerns. Overall, the manipulation of the Country data structure and the effective communication between APIs demonstrate a thorough understanding of data structure management and algorithmic principles.



How to read the report | Suppressing false positives | Getting Help: github issues

Sponsor

Project:

Scan Information (show all):

- *dependency-check version:* 9.0.9
- *Report Generated On:* Sun, 3 Mar 2024 19:50:44 -0600
- *Dependencies Scanned:* 15827 (11079 unique)
- *Vulnerable Dependencies:* 10
- *Vulnerabilities Found:* 15
- *Vulnerabilities Suppressed:* 0
- ...

Analysis Exceptions

Unable to read yarn audit output.

Summary

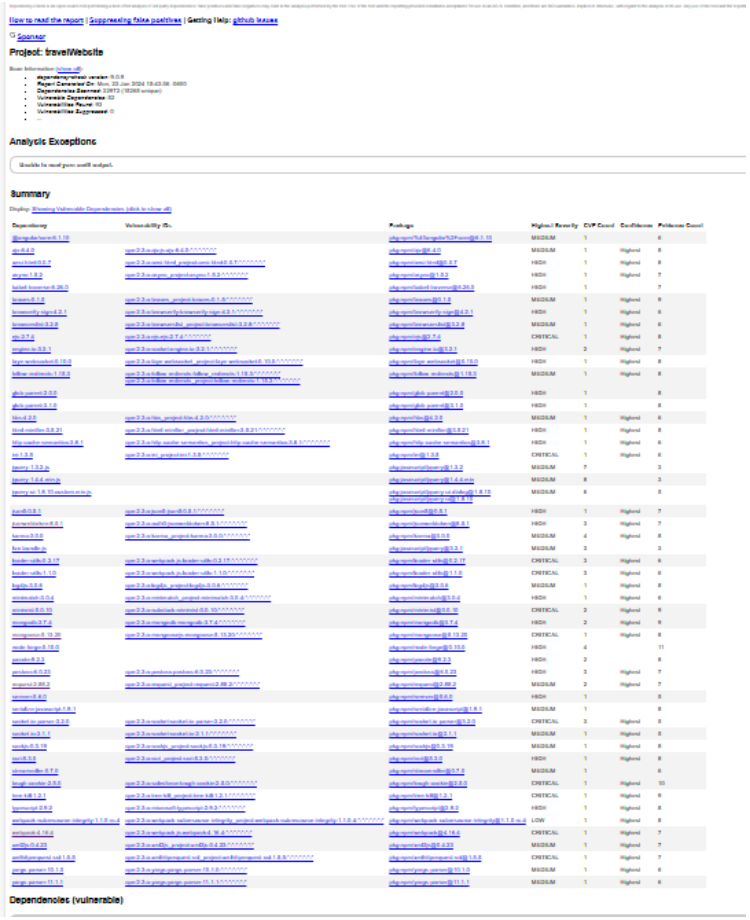
Display: Showing Vulnerable Dependencies (click to show all)

Dependency	Vulnerability IDs	Package	Highest Severity	CVE Count	Confidence	Evidence Count
bcpg-jdk18on-1.71.jar	cpe:2.3:a:bouncycastle:bouncy_castle_for_java:1.71:*:*:*:*:*:*:*	pkg:maven/org.bouncycastle/bcpg-jdk18on@1.71	MEDIUM	1	Highest	60
	cpe:2.3:a:openpgp:openpgp:1.71:*:*:*:*:*:*:*					
bcprov-jdk18on-1.71.jar	cpe:2.3:a:bouncycastle:bouncy-castle-crypto-package:1.71:*:*:*:*:*:*:*	pkg:maven/org.bouncycastle/bcprov-jdk18on@1.71	MEDIUM	2	Highest	60
	cpe:2.3:a:bouncycastle:bouncy_castle_crypto_package:1.71:*:*:*:*:*:*:*					
	cpe:2.3:a:bouncycastle:bouncy_castle_for_java:1.71:*:*:*:*:*:*:*					
	cpe:2.3:a:bouncycastle:legion-of-the-bouncy-castle-java-cryptography-api:1.71:*:*:*:*:*:*:*					
	cpe:2.3:a:bouncycastle:the_bouncy_castle_crypto_package_for_java:1.71:*:*:*:*:*:*:*					
commons-compress-1.25.0.jar	cpe:2.3:a:apache:commons_compress:1.25.0:*:*:*:*:*:*:*	pkg:maven/org.apache.commons/commons-compress@1.25.0	MEDIUM	2	Highest	108
express-handlebars:7.1.2	cpe:2.3:a:express_handlebars_project:express_handlebars:7.1.2:*:*:*:*:*:*:*	pkg:npm/express-handlebars@7.1.2	HIGH	1	Highest	8
express-hbs:2.5.0		pkg:npm/express-hbs@2.5.0	MEDIUM	1		7
h2-2.1.214.jar	cpe:2.3:a:h2database:h2:2.1.214:*:*:*:*:*:*:*	pkg:maven/com.h2database/h2@2.1.214	HIGH	2	Highest	45
ip:2.0.0	cpe:2.3:a:fedorinduny:ip:2.0.0:*:*:*:*:*:*:*	pkg:npm/ip@2.0.0	CRITICAL	1	Highest	6
logback-core-1.2.11.jar	cpe:2.3:a:qos:logback:1.2.11:*:*:*:*:*:*:*	pkg:maven/ch.qos.logback/logback-core@1.2.11	HIGH	1	Highest	32
mongodb:6.3.0	cpe:2.3:a:mongodb:mongodb:6.3.0:*:*:*:*:*:*:*	pkg:npm/mongodb@6.3.0	HIGH	2	Highest	9
undici:6.2.1	cpe:2.3:a:nodejs:undici:6.2.1:*:*:*:*:*:*:*	pkg:npm/undici@6.2.1	MEDIUM	2	Highest	7

Dependencies (vulnerable)

bcpg-jdk18on-1.71.jar

New dependency report Above shows less significant vulnerabilities whereas below is a different story altogether



Conclusion

Overall, the manipulation of the created data structures, particularly the **Country** object, as well as the communication between APIs, was executed thoroughly. However, significant challenges were encountered during the code update process. Many of the issues experienced throughout the project's development were primarily due to code dependencies, which were significant perpetrators of errors.

Artifact Review: Database for Travel Site

The artifact under review is the database component of a travel site developed during the CS 465 Full Stack I course. This review focuses on the implementation, restructuring, and maintenance of the database, highlighting my skills in handling database functionalities.

One of the key enhancements is the restructuring of schemas and the implementation of pre-validation processes to ensure uniqueness constraints for the fields name and email. The following code snippet demonstrates the use of a pre-validation hook to prevent the creation of a user with an existing email or name:

```
userSchema.pre("validate", async function (next) {
  const existingUser = await this.constructor.findOne({
    $or: [{ email: this.email }, { name: this.name }],
  });

  if (existingUser) {
    const conflictingField =
      existingUser.email === this.email ? "email" : "name";
    return next(new Error(`${conflictingField} already exists`));
  }
});
```

The above code ensures that when a new user is registered through the /register API route, the system checks for existing users with the same email or name. If a conflict is found, the registration is rejected, as demonstrated in the following scenarios:

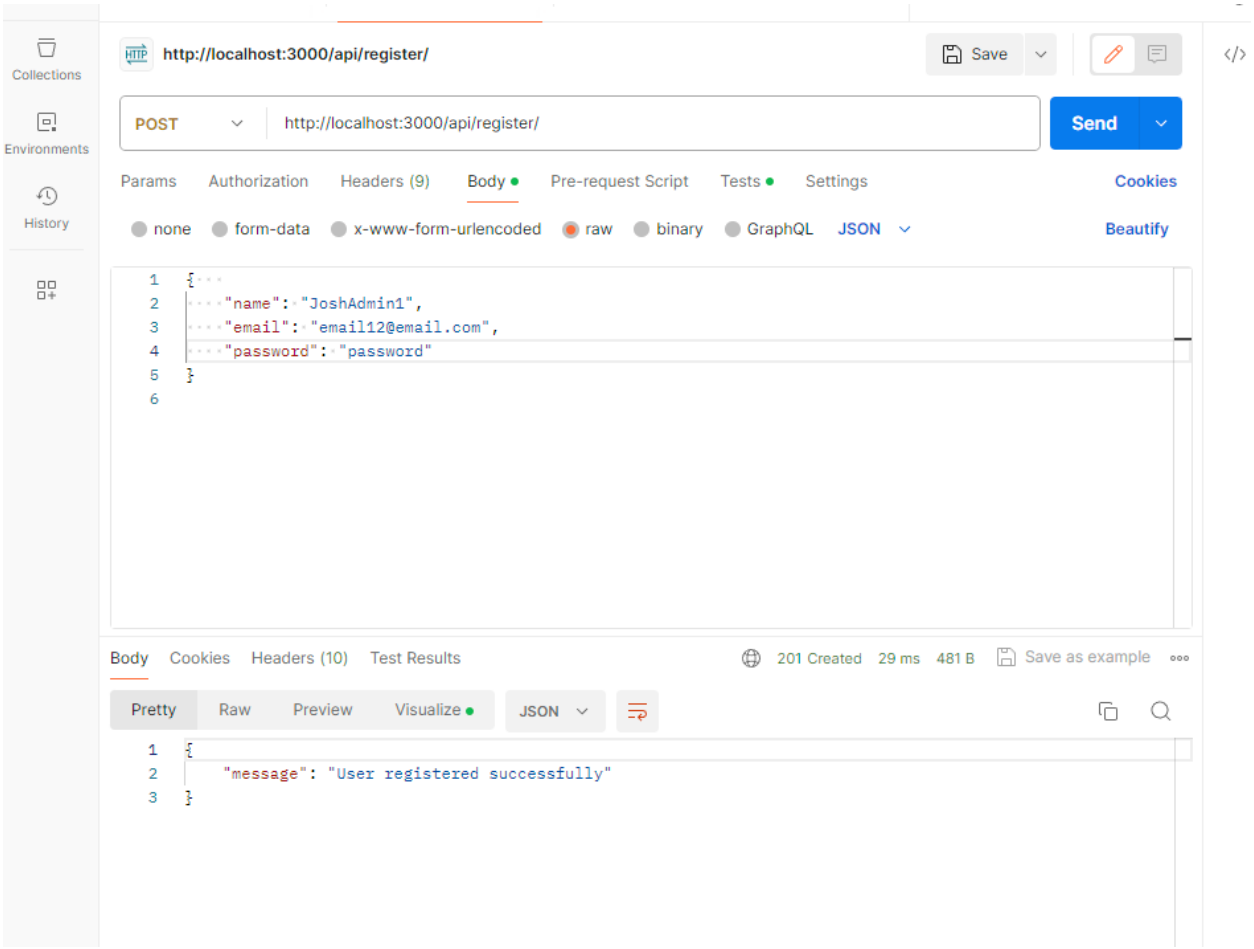


Figure 1 Register Success

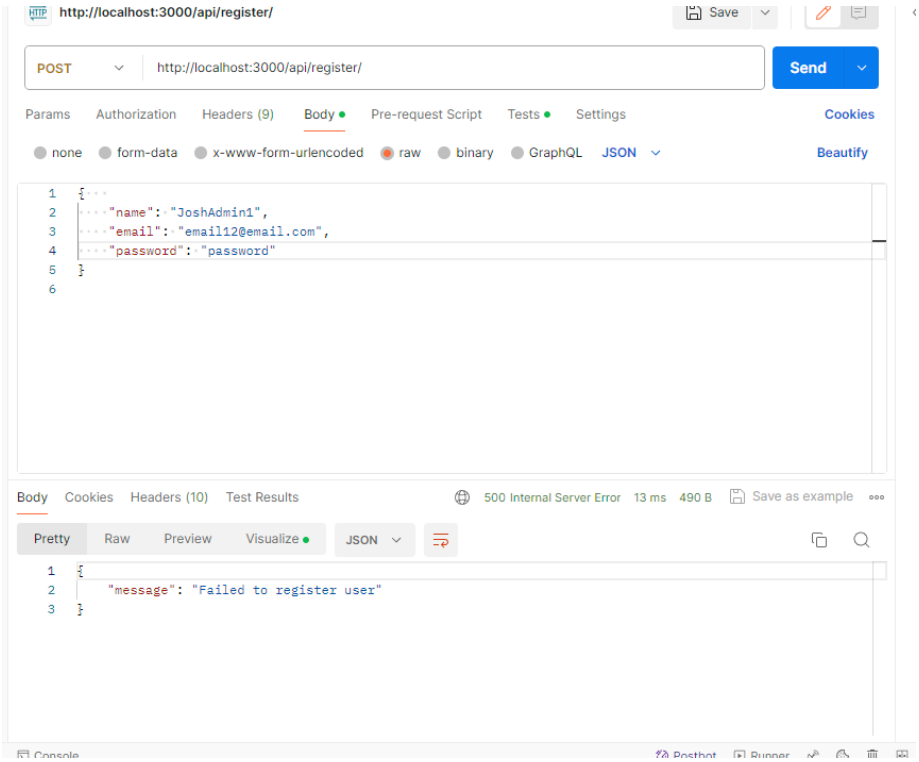


Figure 2 Same name and email (Failed)

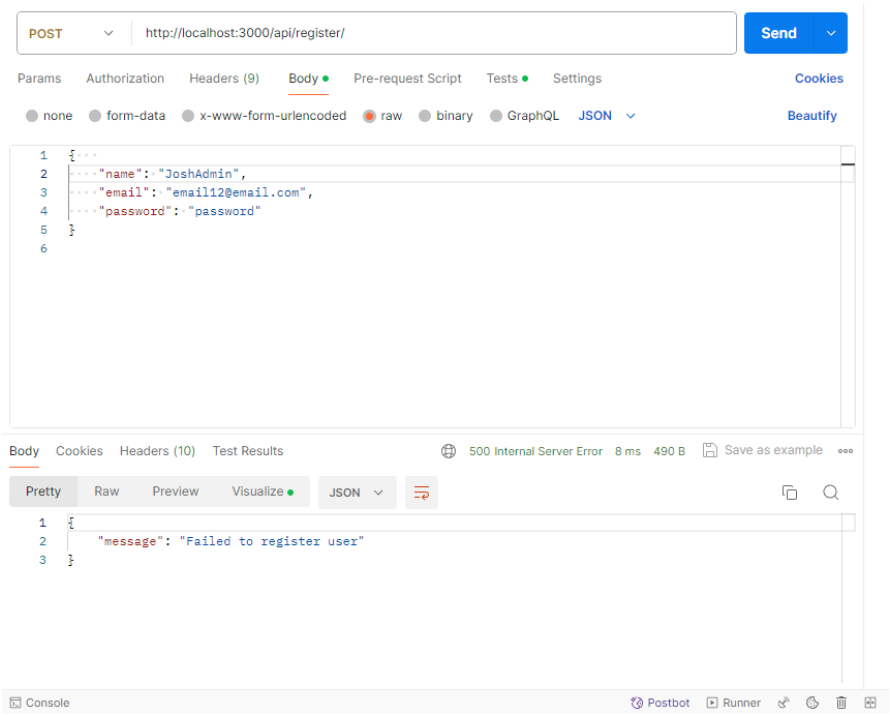


Figure 3 Same email different name (Failed)

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
{
    "name": "JoshAdmin1",
    "email": "email1@email.com",
    "password": "password"
}
```

Body Cookies Headers (10) Test Results 500 Internal Server Error 8 ms 490 B Save as example

Pretty Raw Preview Visualize JSON

```
{
    "message": "Failed to register user"
}
```

Figure 4 Same name different Email (Failed)

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
{
    "name": "JoshAdmin2",
    "email": "email3@email.com",
    "password": "password"
}
```

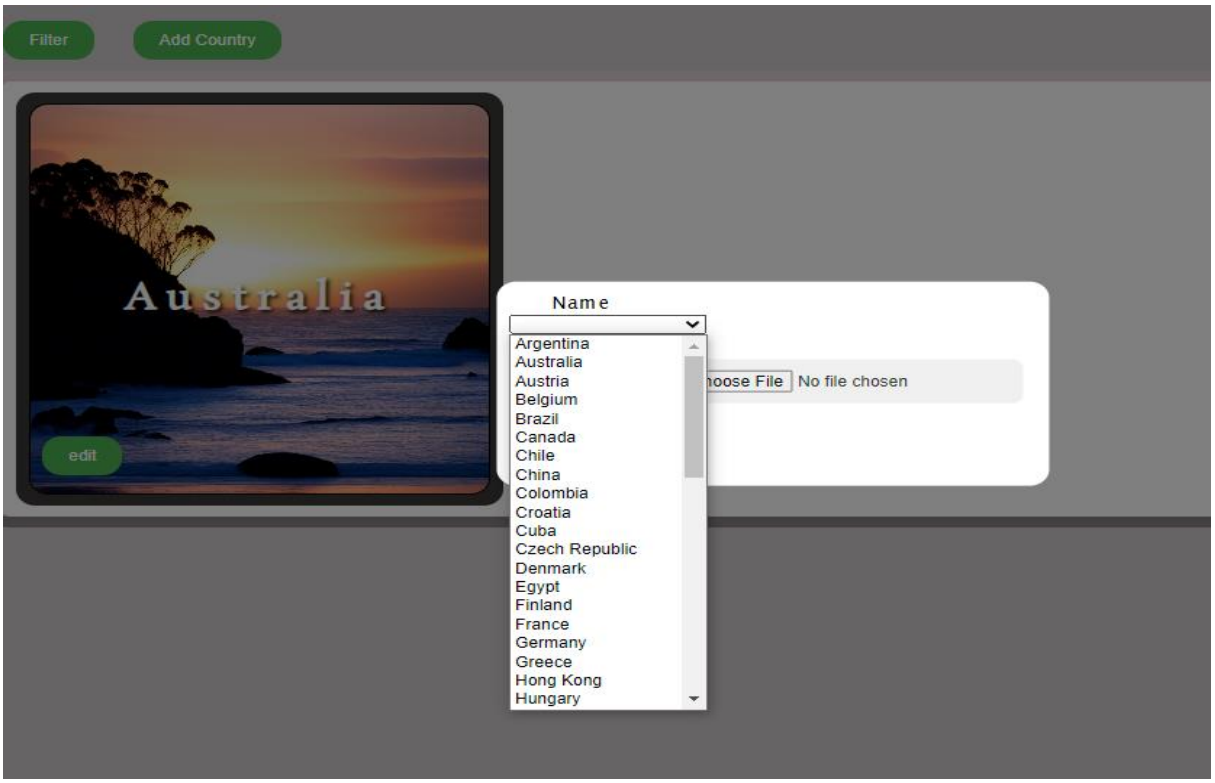
Body Cookies Headers (10) Test Results 201 Created 7 ms 481 B Save as example

Pretty Raw Preview Visualize JSON

```
{
    "message": "User registered successfully"
}
```

Figure 5 Different name different email (Pass)

Attempting to register multiple users with the same email and name fails due to database checks that prevent duplicates. Registering a user with a unique combination of email and name succeeds, while attempts with either a duplicate email or name fail. The planned enhancement to prevent duplicate data in the database addresses a significant challenge faced during data editing and addition. Previously, the complexity of updating data and determining the correct endpoints for updates led to difficulties in ensuring data integrity. With the improved database structure and validation checks, data can now be edited more systematically, and the database ensures the accuracy of the data being passed by checking for errors in the code. The database for the addition of the data is also validated when it comes to adding additional new countries. As can be seen from the following enhancement the drop-down selection now has a list that can manually be edited to allow for a selection of countries based on name. The list is currently sorted



Reflection on the Portfolio Project

Through the process of reviewing and enhancing three distinct portions of computer science within my portfolio project, I gained valuable insights into the application of skills acquired from previous coursework. This experience underscored the importance of accurately assessing one's abilities, recognizing strengths, and addressing weaknesses without being overly critical.

My e-portfolio demonstrates my proficiency in analyzing a system, enhancing code, and adhering to planned enhancement guidelines. However, it also highlighted my challenges with estimating the scope of work achievable within the span of four sprints. Despite this, I achieved significant milestones, such as completely rewriting the site's skeleton, including HTML code and images, and ensuring that all sourced images were copyright-free.

The focus of this portfolio enhancement project was on what could be accomplished within the given time frame, how to prioritize different aspects of the project, and how to execute steps toward success. Through this process, I gained confidence in my ability to independently create and improve a project, alleviating some of the feelings associated with imposter syndrome that I had experienced before the course. Overall, I feel a sense of accomplishment in having completed this course to the best of my abilities.