PoolCarz App - Node and Express

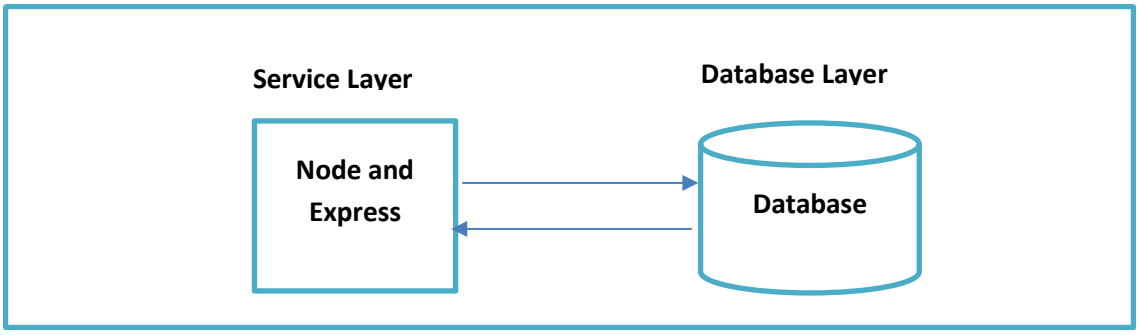
Problem Statement

PoolCarz is a web application for car-pooling. The application allows users to share ride with others. User can either book a ride or offer a ride. The application should contain the following features:

Use Case	Description
Login	Logs into the application to view ride details
Book a Ride	Allows rider to book the ride
Ride Details	It renders complete list of the rides available
Offer Ride	Allows user to register his details to offer ride to others
Logout	Logs out from the application and navigates to the login page

Application Architecture

PoolCarz application should be developed as a back end application which should have service layer and database layer.



- Node and Express are used at service layer to implement service functionality
- MongoDB is used at database layer to persist the data

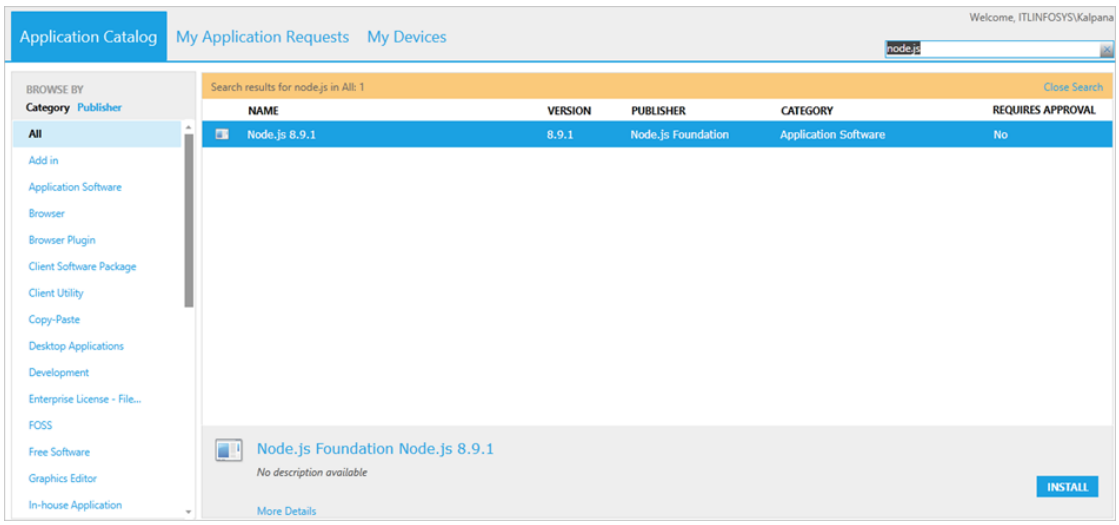
REST Client is used for interacting with HTTP APIs. It sends requests and get response from service layer.

Software & Project Setup

Software's required

- Node.js (min version required 8.x)
- Express
- Visual Studio Code
- MongoDB
- postman

1. **Node.js:** Install node.js from software house/software center as shown below or take help from CCD to get it installed



To check whether node.js is installed or not in your machine, go to **node command prompt** and check the node.js version by typing the following command. It will display the version of node.js installed.

```
D:\>node -v
v8.11.2
```

2. **Express:** Install Express using the below command:

```
D:\>npm install -g express
```

Once the installation process is complete, execute the **express** command with a version check.

```
D:\>express --version
4.14.0
```

Express provides a scaffolding tool called **express generator** which helps to quickly generate an Express application with typical support for routes. The express-generator tool helps in generating the application skeleton which can be later populated with site-specific routes, templates and database calls.

For installing the express-generator tool globally, use the following command.

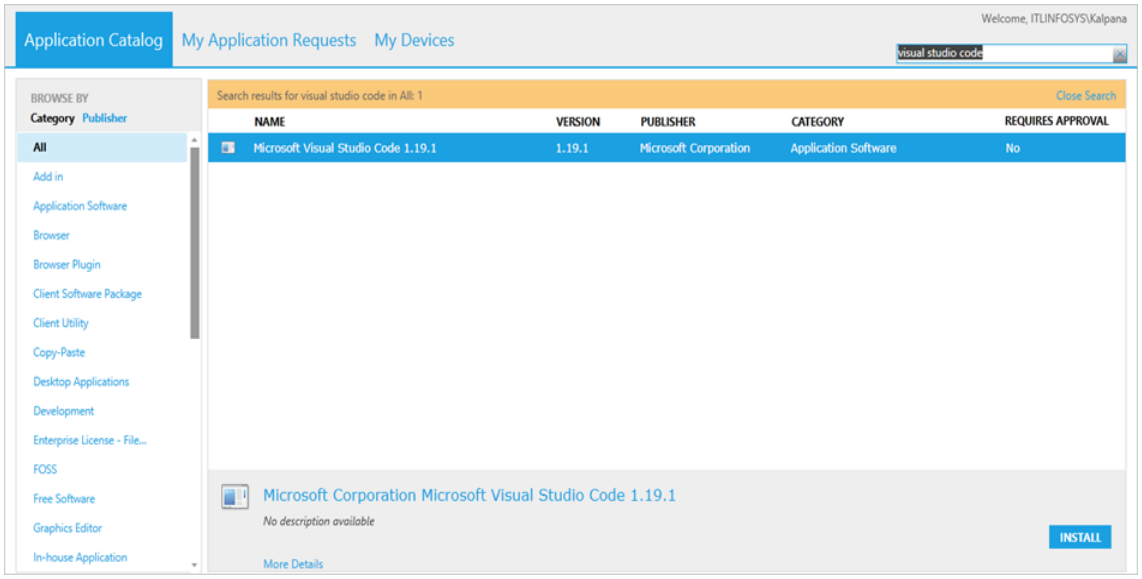
```
D:\Demos>npm install express-generator -g
```

The express-generator package installs the **express** command-line tool. Once the generator is installed, it is extremely simple to create the application using '**express**' command.

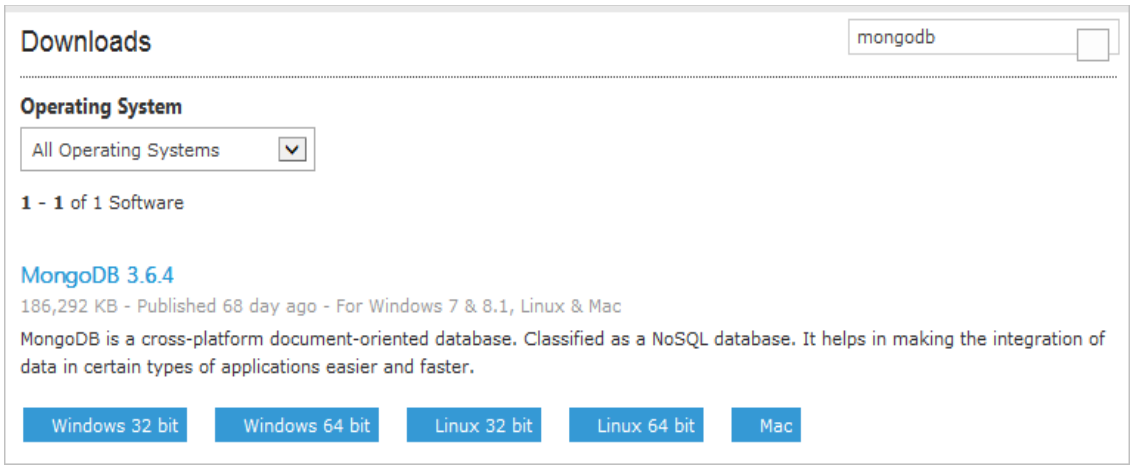
Invoke the generator on the command line with a new application name.

```
D:\Demos>express <application_name>
```

3. **Visual Studio Code:** Install Visual Studio code from software house/software center as shown below or take help from CCD to get it installed.



4. **MongoDB:** Install MongoDB from Sparsh - > downloads using the below link http://sparshv2/portals/CCD/Downloads/Pages/Downloads.aspx



Steps to configure MongoDB:

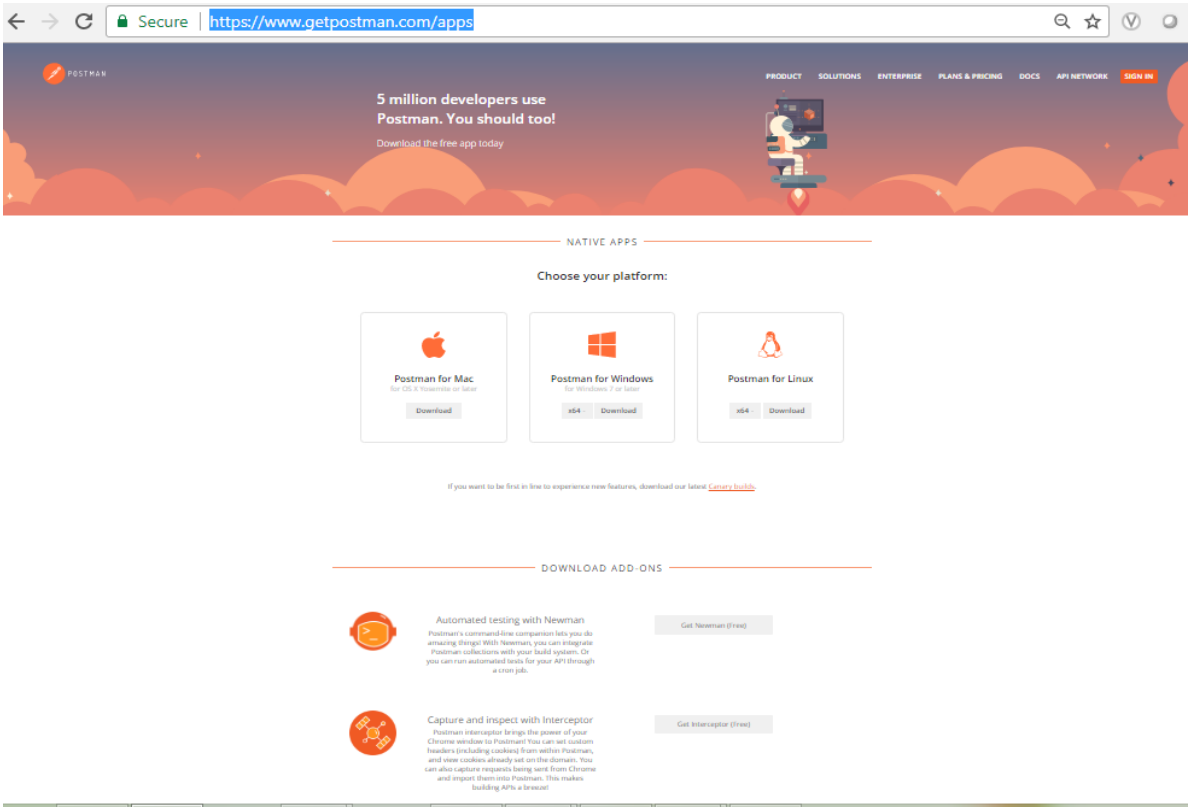
1. Create data\db folder in D drive, as mongodb requires a data folder to store its files

2. Open windows command prompt and go to mongodb\bin (C drive) path and give the command **mongod --dbpath "d:\data\db"** to start the mongo process

3. Open another windows command prompt and go to mongodb\bin path and give the command **mongo** to start the mongo shell

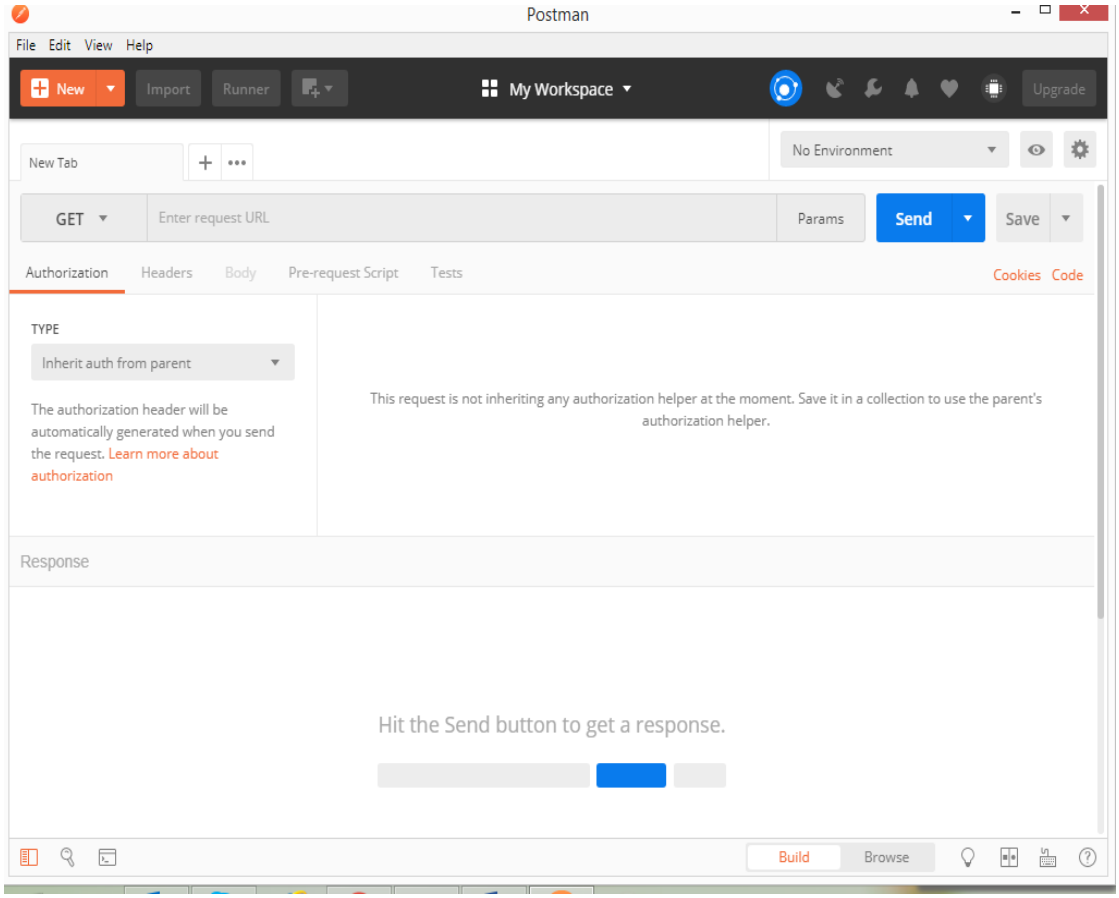
5. **Postman**:

Download the Postman app from https://www.getpostman.com/apps

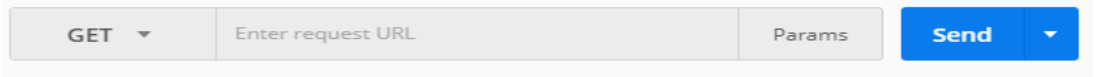


Working with the Postman REST Client

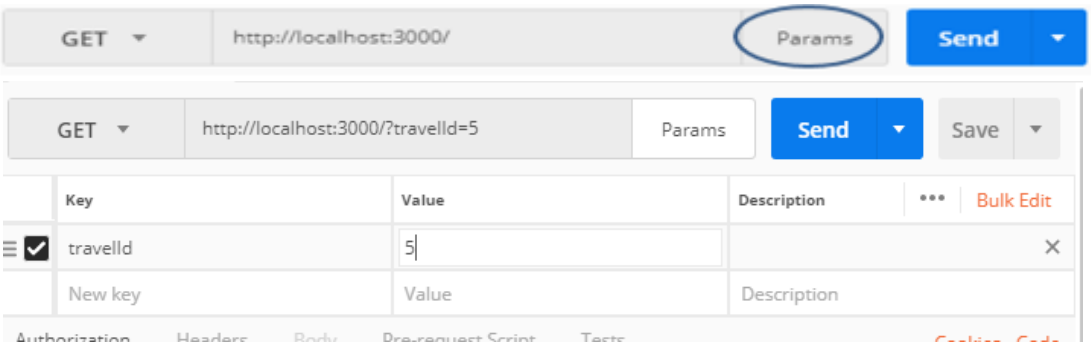
1. Screen looks as below on start of application



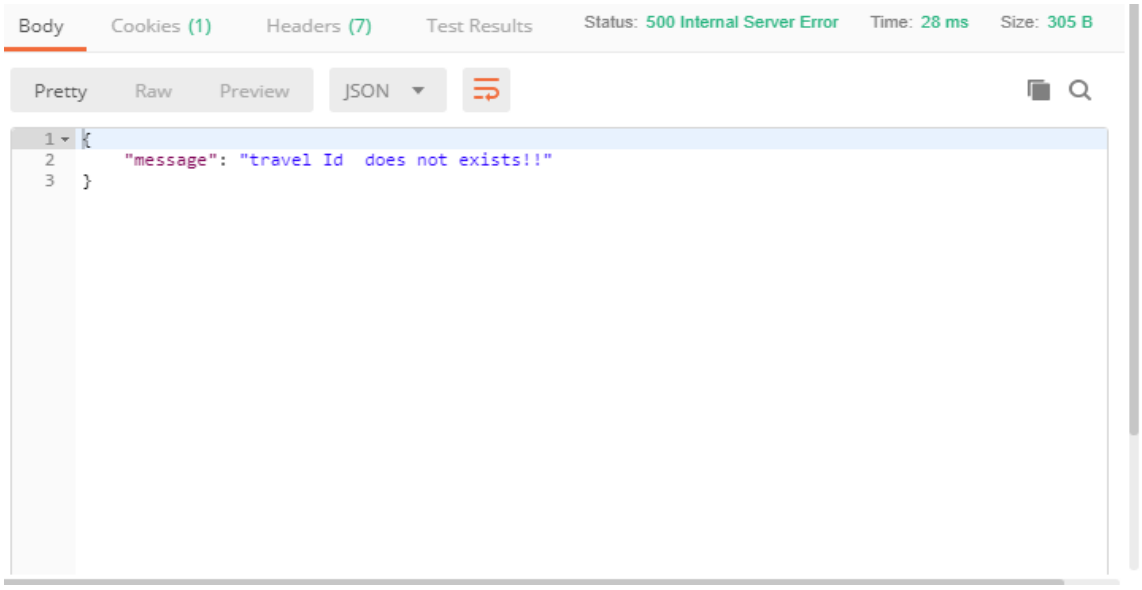
2. Enter the URL where it says 'Enter request URL' and select the method (the action type) on the left of that field. The default method is GET.



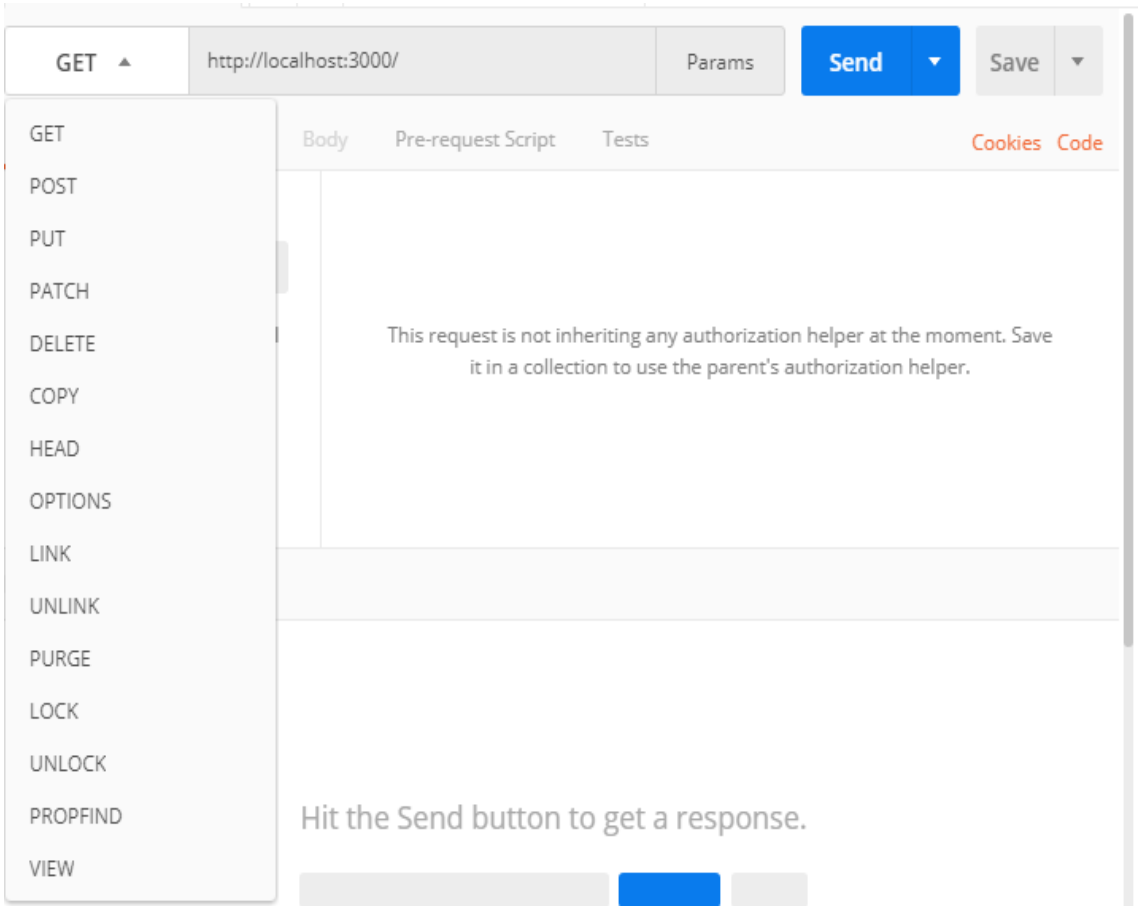
a. Click on Params button to pass parameters to the URL



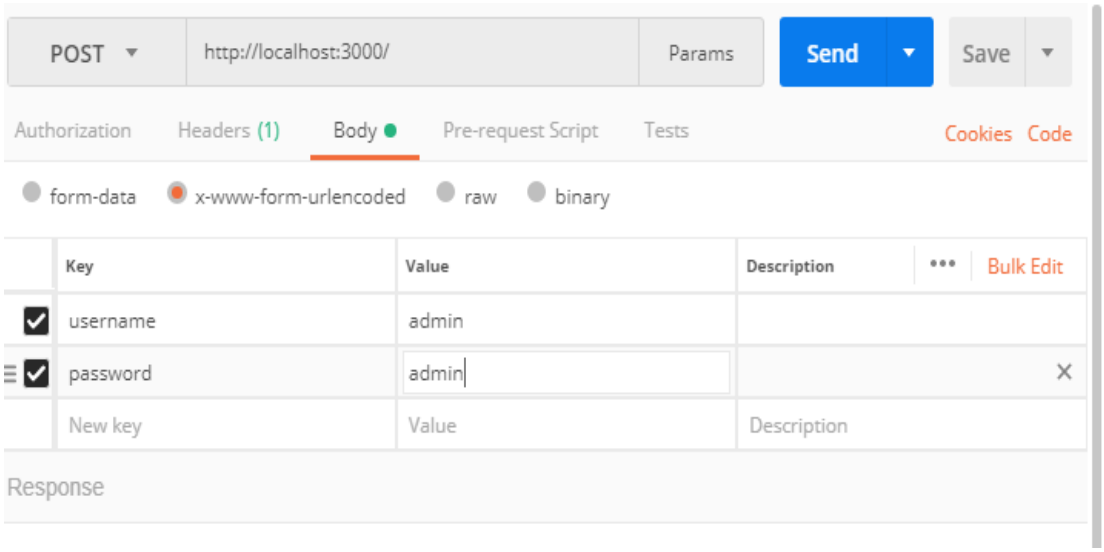
b. To execute, click Send button, which is located to the right of the API request field and observe the output



3. To change to POST request, click on GET icon and select POST from the list



a. Now select 'Body' and then 'x-www-form-urlencoded' and pass the data



b. To execute this click Send button, which is located to the right of the API request field and observe the response in the response window

Project Reference

Database Design

Following is the list of collections to be created in MongoDB

- Users
- Offers
- Rides

a) Collection Name: Users This collection contains the details of users

Properties:

Property Name	Data Type	Description
userName	String	Name of the user
password	String	Password of the user

Sample Data:

{userName:" admin", password:" admin"}

b) Collection Name: Offers This collection contains the details of the riders

Properties:

Property Name	Data Type	Description
offerId	Number	Id for the rider
name	String	Name of the rider
car	String	Name of the car offering the ride

seatsLeft	Number	Number of seats available in the car
pickUp	String	Starting point for pickup
destination	string	Destination point for dropping

Sample Data:

{offerId: 1000, name: “admin”, car: “Innova”, seatsLeft:4, pickUp:”Uppal”, destination: “Infosys”}

c) **Collection Name: Rides** This collection contains the details of the booked or cancelled rides

Properties:

Property Name	Data Type	Description
rideId	Number	Id for the ride
riderName	String	Name of the rider
rideeName	String	Name of the ridee who booked the car
pickUp	String	Starting point for pickup
destination	String	Destination point for dropping
status	string	Status of the ride which should be either ‘Booked’ or ‘Cancelled’

Sample Data:

{rideId: 1001, riderName: “admin”, rideeName:”user1”, pickUp:”Uppal”, destination: “Infosys”, status: “Booked”}

Data Access Layer

Following table lists all the requests handled in RestService along with their description

Service Url	Request Type	Request Data	Response Data	Description
/	get	{}	{ "message": "Welcome to Carpoolz application"}	Service Class should be able to display the message
/login	post	Valid Credentials: { userName: 'admin', password: 'admin' }	{ message: "Login successful", status: 200}	Service class should contain functionality to fetch user's data from Users collection and should validate the credentials sent along with the request. It should return status as success or failure based on the validity check
		Invalid Credentials: { userName: 'ram', password: 'ram' }	{ message: "Login Unsuccessful", status: 401 }	
/show_rides	get	{}	returns array of all the available rides	Service class should fetch all rides details from Offers collection and should return it
/book_ride	post	{ "rider": {"name":"Preethi", "car":"Huidai i10", "seatsLeft": 2, "pickUp":"Hampankatta", "destination":"MNG SEZ", "offerId":1002}, "ridee":"admin" }	{ "rideId": 1001, "seatsLeft": 1, "message": "Ride booked successfully", "status": 200 }	Service class should update seatsLeft property in Offers collection and should insert the ride details in Rides collection.
/cancel_ride	post	{rideId:1001}	{message: "Ride cancelled successfully", status: 200}	Service class should update seatsLeft property in Offers collection and change the status property to 'Cancelled' in rides collection
/offer_ride	post	{ name: 'divi', pickUp:' Hampankatta', destination:'MNG SEZ', car: 'Swift', seatsLeft: 3 }	{ message:"Offer added successfully", status:200 }	Service class should insert the new ride details in Offers collection and should return the status
/logout	get	{}	{ "message": "Welcome to Carpoolz application"}	Service class should destroy the session and should redirected to the base URL '/'
*	get, post, update, delete	{}	{"message": "Requested URL is not available!", "status": 404 }	Service class should return custom message by using error handling middleware for URL' s that are not handled.

Project Guidelines

The coding standards to be followed in PoolCarz application are as follows:

Object Type	Guide Lines	Examples
Variables	Camel casing	userName
Methods	Pascal casing	ShowAllRides
Properties	Camel casing	status

Project Implementation

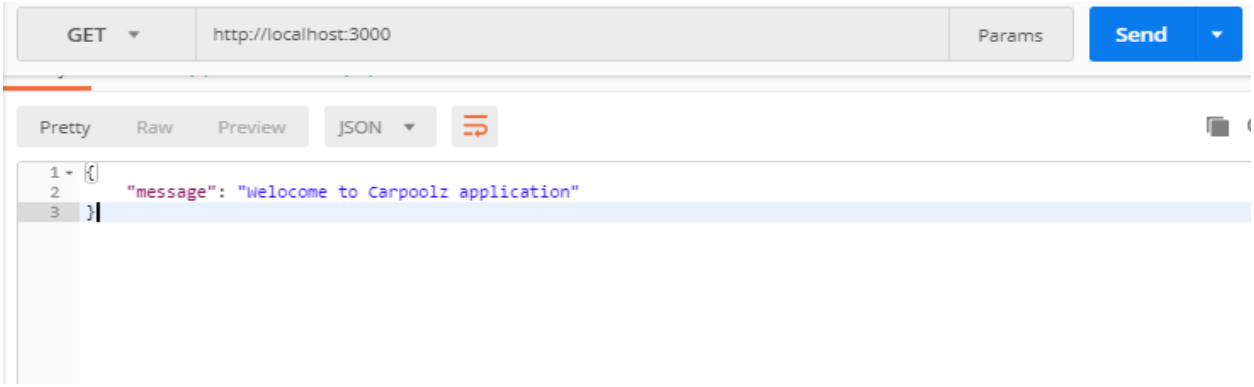
From Postman, use the below URLs for the corresponding functionalities

1. Home: http://localhost:3000
2. Login: http://localhost:3000/login
3. Show All Rides: http://localhost:3000/show_rides
4. Book Ride: http://localhost:3000/book_ride
5. Cancel Ride: http://localhost:3000/cancel_ride
6. Offer Ride: http://localhost:3000/offer_ride
7. Logout: http://localhost:3000/logout
8. Error handling: http://localhost:3000/invalid_URL

1. Home: http://localhost:3000

   Response Data: {"message": "Welcome to Carpoolz application"}

   Output:



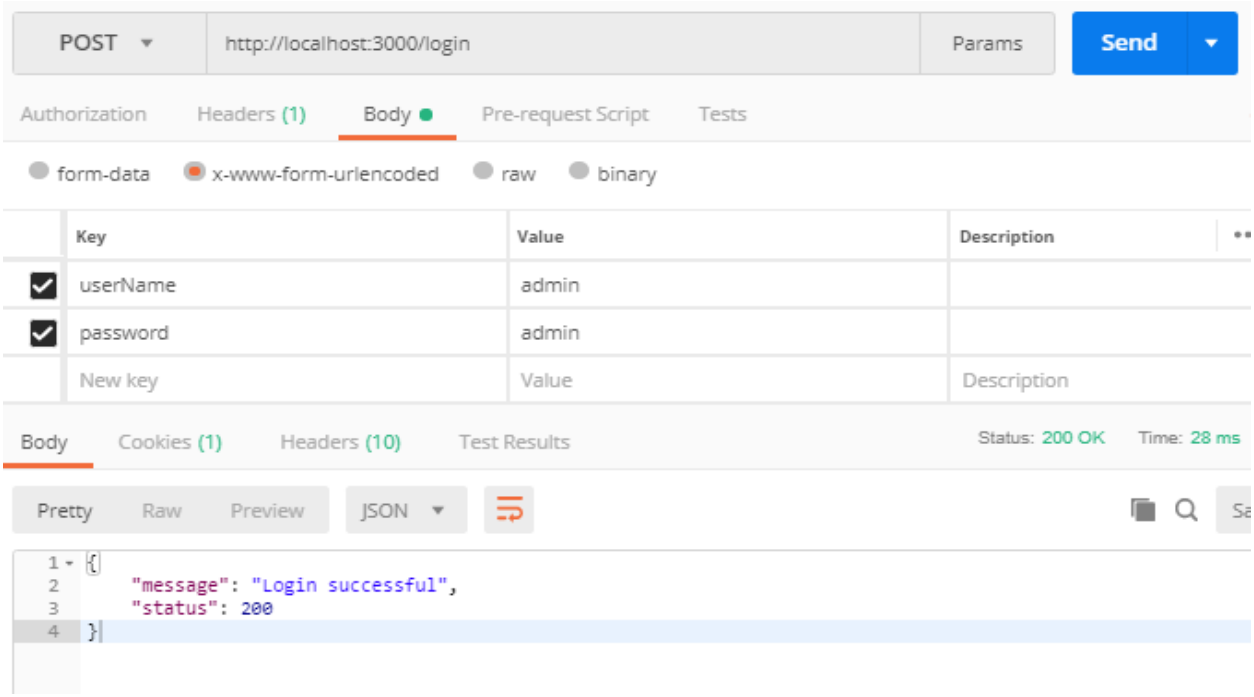
2. Login: http://localhost:3000/login

a) Valid Credentials:

Request Data: {userName: 'admin', password: 'admin'}

Response Data: {message: "Login successful", status: 200}

Output:

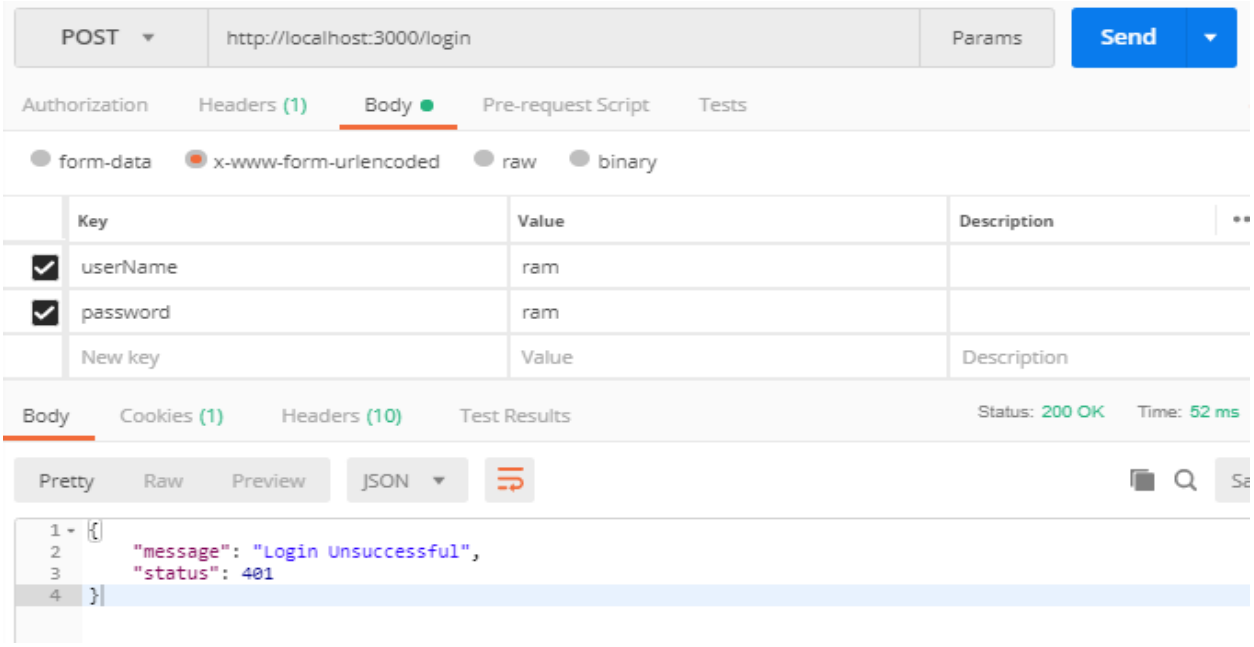


b) Invalid Credentials:

Request Data: {userName: 'ram', password: 'ram' }

Response Data: {message: "Login Unsuccessful", status: 401}

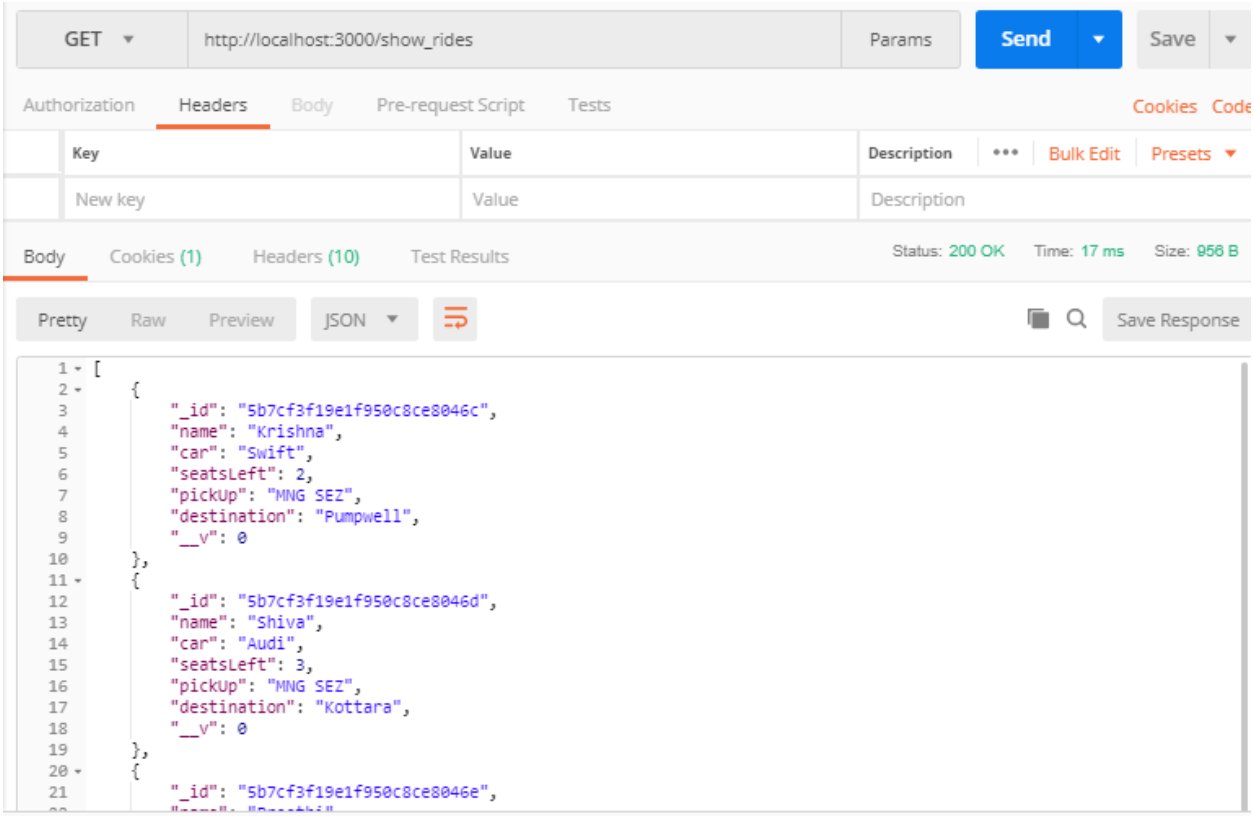
Output:



3. Show All Rides: http://localhost:3000/show_rides

Response Data: Returns array of all the available rides

Output:



4. Book Ride: http://localhost:3000/book_ride

Request Data:

{ "rider”: {"name":"Preethi",
"car":"Huidai i10",
"seatsLeft": 2,
"pickUp":"Hampankatta",
"destination":"MNG SEZ",
"offerId":1002},
"ridee":"admin" }

Response Data:

{
"rideId": 1001,
"seatsLeft": 1,
"message": "Ride booked successfully",
"status": 200
}

Output:

POST http://localhost:3000/book_ride Params Send Save

Authorization Headers (1) Body Pre-request Script Tests Cookies Code

form-data x-www-form-urlencoded raw binary JSON (application/json)

```
{
    "rider":{"name": "Preethi","car":"Huidai i10","seatsLeft": 2,"pickUp":"Hampankatta","destination":"MNG SEZ"
        ,"offerId":1002},"ridee":"admin"
}
```

Body Cookies (1) Headers (11) Test Results Status: 200 OK Time: 1300 ms Size: 620 B

Pretty Raw Preview JSON Save Response

```
{
    "rideId": 1001,
    "seatsLeft": 1,
    "message": "Ride booked successfully",
    "status": 200
}
```

5. Cancel Ride: http://localhost:3000/cancel_ride

Request Data: {rideId:1001}
Response Data: {message: "Ride cancelled successfully", status: 200}
Output:

POST http://localhost:3000/cancel_ride Params Send

Key	Value	Description
New key	Value	Description

Authorization Headers (1) Body Pre-request Script Tests

form-data x-www-form-urlencoded raw binary

Key	Value	Description
rideId	1001	
New key	Value	Description

Body Cookies (1) Headers (10) Test Results Status: 200 OK Time: 2054 ms

Pretty Raw Preview JSON

```
{
    "message": "Ride cancelled successfully",
    "status": 200
}
```

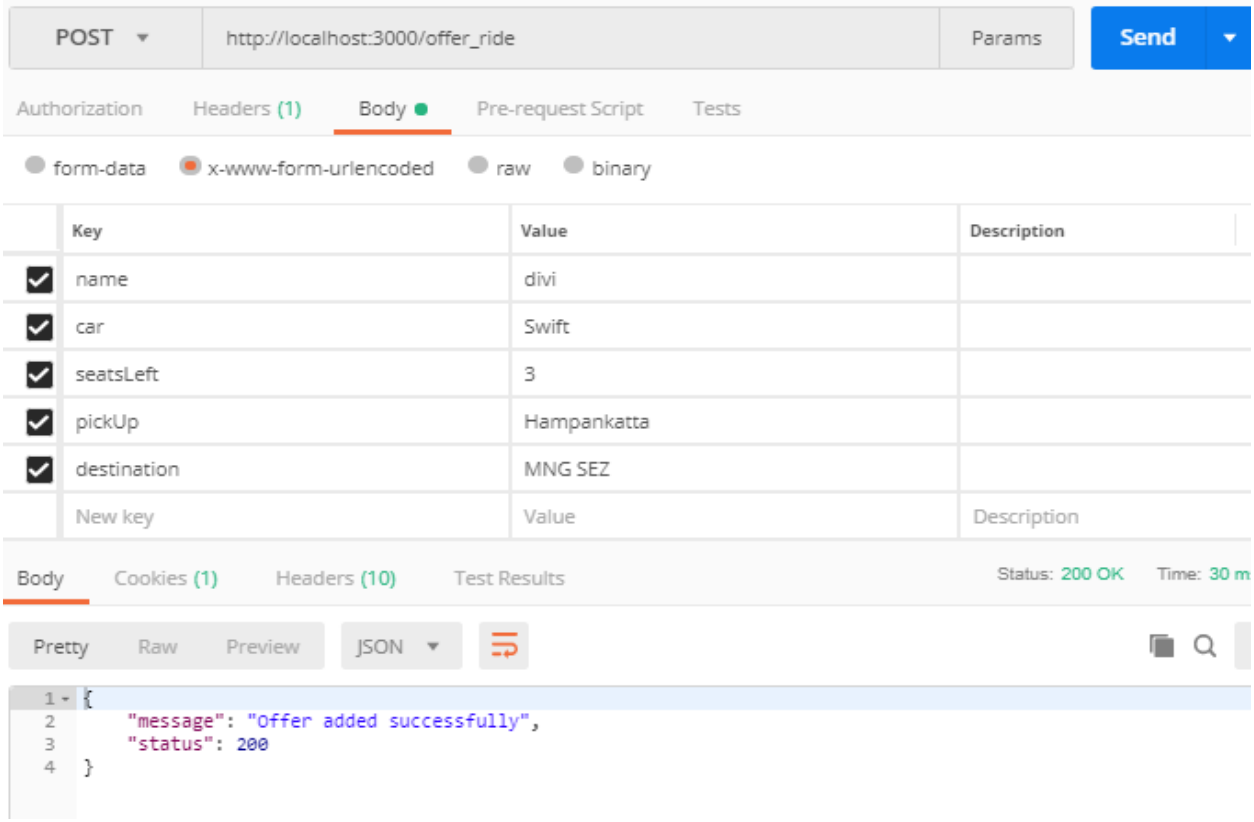
6. Offer Ride: http://localhost:3000/offer_ride

Request Data:

{ name: 'divi',
 pickUp:' Hampankatta',
 destination:'MNG SEZ',
 car: 'Swift',
 seatsLeft: 3 }

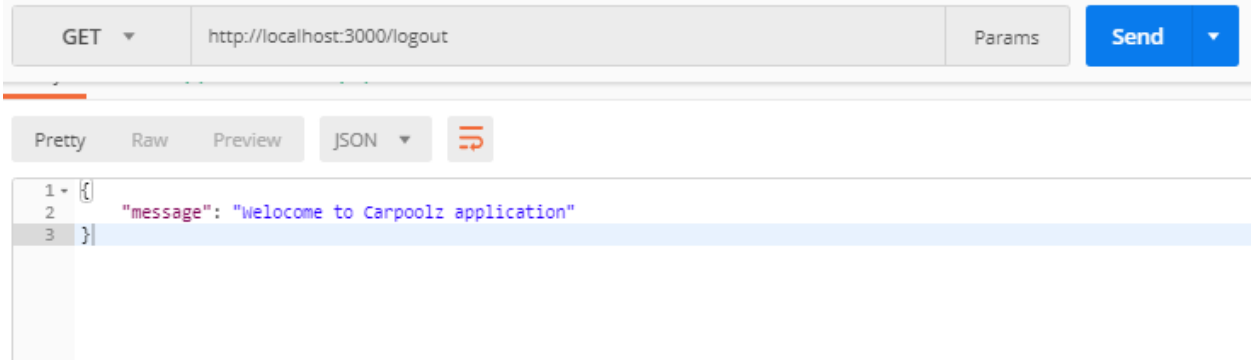
Response Data:

{ message:"Offer added successfully",status:200 }



7. Logout: http://localhost:3000/logout

Output:



8. Error handling: http://localhost:3000/invalid_URL

Response Data:


```
{
   "message": "Requested URL is not available!",
   "status": 404
}
```


Output: