

CMPE 273: Enterprise Distributed Systems

Lab 1 Assignment: Using REST (Node.js) and React JS

Due: October 3rd, 2021, 11:59 PM

This lab assignment covers developing REST services using Node.js (Express) and ReactJS. This lab assignment is graded based on 30 points and is an individual effort (Teamwork not allowed)

Prerequisite

- You should be able to run the basic node.js and React applications discussed in class.
- You must know programming languages, JavaScript.

Grading

UberEats Application - 30 marks

Questions – 5 marks

Total – 35 marks

Note: Late assignments will be accepted but will be subject to a penalty of -5 points per day late. Submissions received at or before the class on the due date can receive a maximum.

Uber Eats

You need to develop a “Prototype of **UberEats** application”. This prototype will be a web application using React and Node. Refer to the **UberEats** website and see how it functions.

The application should have the following persona:

1. Customer
2. Restaurant

You need to implement the following features in your application for the roles given above.

1. Customer Signup (name, email id, password)
2. Restaurant Signup (restaurant name, email id, password, location)
3. Sign in
4. Sign out

A Restaurant should be able to do the following functionalities:

Restaurant page (Dashboard – Landing page):

1. View restaurant profile – having all basic information about the restaurant (name, location, description, contact information, pictures of restaurant and dishes, timings)
2. Update restaurant profile (name, location, description, contact information, pictures of restaurant and dishes, timings)
3. Update Contact information
4. Add/Edit Dishes in the menu (with Dish name, Main Ingredients, Dish Images, Dish Price, description, dish category – Appetizer, Salads, Main Course, Desserts, Beverages)
5. View the list of dishes added by them.

Orders page:

1. View list of orders by customers
2. Click and view the profile page of each customer
3. Update the delivery status of each order – Order Received, Preparing, (If **Delivery option** selected) On the way, Delivered
(If **Pickup option** selected) Pick up Ready, Picked up
4. There should be 3 filters on orders (New Order, Delivered Order, Cancelled Order)

A **Customer** should be able to do the following functionalities:

Profile Page:

1. Display complete profile of a customer (basic details, favourites, about, profile picture)
2. Upload profile picture
3. Update basic details (name, date of birth, city, state, country, nickname)
4. Update Contact Information (email id, phone number)
5. **The country** should be a dropdown with the list of countries to select from and should not be entered manually.

Note: Your profile page need not be the same as Uber Eats profile as they have little information available.

Restaurant Search tab (Dashboard – Landing page)

1. Display the list of restaurants to the customer with the same location entered on the profile page. (i.e, Suppose I entered my location as Sunnyvale, my dashboard should show me all the restaurants available in Sunnyvale on the top and then the other restaurants available in your database. If no location is updated, show all the restaurants)
2. Customers should be able to search for Restaurant (using dish names, cuisines, location, mode of delivery)
3. Add a filter for the type of delivery (Delivery, Pickup) a customer can select. Also, add filters for the type of food a customer can order. The filter should include Veg, Non-Veg, and Vegan.
4. When a filter is selected, the restaurant's page should show the filtered result of the restaurant.
5. Customers should be able to click on the Restaurant and should be redirected to the restaurant landing page.

The screenshot shows the Uber Eats mobile application interface. At the top, there is a navigation bar with the Uber Eats logo, delivery/pickup options, a location indicator for "Swathi Tiffins · Now", a search bar containing "What are you craving?", and a cart icon showing "Cart · 0". Below the navigation bar is a row of category icons: Deals, Convenience, Alcohol, Pharmacy, Flowers, Top Eats, Pizza, Sushi, Chinese, Mexican, Indian, Thai, Healthy, and Bubble Tea. A promotional banner in the center says "Crave it? Get it." and "Get a free item on select orders through August 25. Treat yourself." with a "Order now →" button and an image of a pizza. At the bottom, there are sections for "All stores" and "Healthy eating", each with a "Sort" dropdown set to "Picked for you (default)" and "See all" buttons. There are also arrows for navigating between store lists. A horizontal scrollable menu at the very bottom displays various food items like salads, pizzas, and bowls.

All stores

Sort
 Picked for you (default)
 Most popular
 Rating
 Delivery time

Price range
\$ \$\$ \$\$\$ \$\$\$\$

Max Delivery Fee
\$1 \$3 \$5 \$5+

Dietary
 Vegetarian Vegan
 Gluten-free Halal

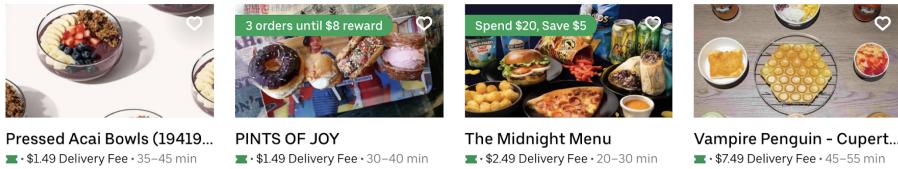


Starbucks + Uber Eats



Iced Matc... Iced Cara... Caffè Latte Vanilla Sw... Classic Oa... Iced Shake...

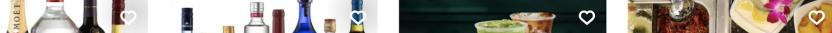
Treat yourself



Pressed Acai Bowls (19419...) • \$1.49 Delivery Fee • 35–45 min
PINTS OF JOY • \$1.49 Delivery Fee • 30–40 min
The Midnight Menu • \$2.49 Delivery Fee • 20–30 min
Vampire Penguin - Cupert... • \$7.49 Delivery Fee • 45–55 min

Popular near you

[See all](#)



Restaurant Tab

1. View Restaurant Page
2. Add a small description of the restaurant.
3. Show the menu of the restaurant along with the amount.
4. Customers should be able to select a dish and it should be added to the cart.
5. Once the customer is done, he can go to the view cart to finalize the order.

≡ Uber Eats Swathi Tiffins · Now Q What are you craving? Cart • 0

\$0 Delivery Fee + 5% off with Eats Pass →



Kettle'e

• \$2.49 Delivery Fee • 50–60 Min • 4.2(20)

Start group order Schedule Heart

Wish you could ask someone what's popular here? Users love the aloo, which is one of the most ordered items on the menu at this midday go-to. • \$ • Indian • Vegetarian • Breakfast and Brunch • Healthy

1610 El Camino Real, Santa Clara, CA 95050 • [More](#)

Menu 10:00 AM – 8:00 PM ...

Chowmein Veg Noodles with vegetable. \$13.00	Murgh Malai Boneless chicken thigh served with lachha paratha. \$11.50	Kathi Paneer Paneer wrapped in egg and paratha. \$10.50
Egg Bhujia and Paratha Indian style scrambled egg. \$10.50	Sliced Bread Omelet Stuffed with sautéed tomato and onion. \$10.50	

Chowmein Veg
Noodles with vegetable.



Murgh Malai
Boneless chicken thigh served with lachha paratha.



Kathi Paneer
Paneer wrapped in egg and paratha.



Egg Bhujia and Paratha
Indian style scrambled egg.

\$10.50

Sliced Bread Omelet
Stuffed with sautéed tomato and onion.



\$10.50

Favourite:

1. Customers should be able to select a restaurant as their favourite.
2. A customer should be able to select the Favorite tab and it should display a list of restaurants selected by the customer.

The screenshot shows the Uber Eats mobile application interface. At the top, there's a header with the Uber Eats logo, a location indicator for "Swathi Tiffins · Now", a search bar with the placeholder "What are you craving?", and a "Cart +3" button. Below the header, the main content area is titled "Recently added". It displays five restaurant cards with images, names, ratings, and delivery details:

- Five Guys CA-1189 116 E. El Camino Real** (4.8) - \$0 Delivery Fee (Spend \$20)
- Fleming's Prime Steakhouse & Wine Bar (Sa...** (4.6) - \$0.49 Delivery Fee • 35–45 min
- Jack in the Box (3367 El Camino real)** (4.6) - \$2.49 Delivery Fee • 15–25 min
- Panda Express (798 East El Camino Real)** (4.5) - \$2.49 Delivery Fee • 20–30 min

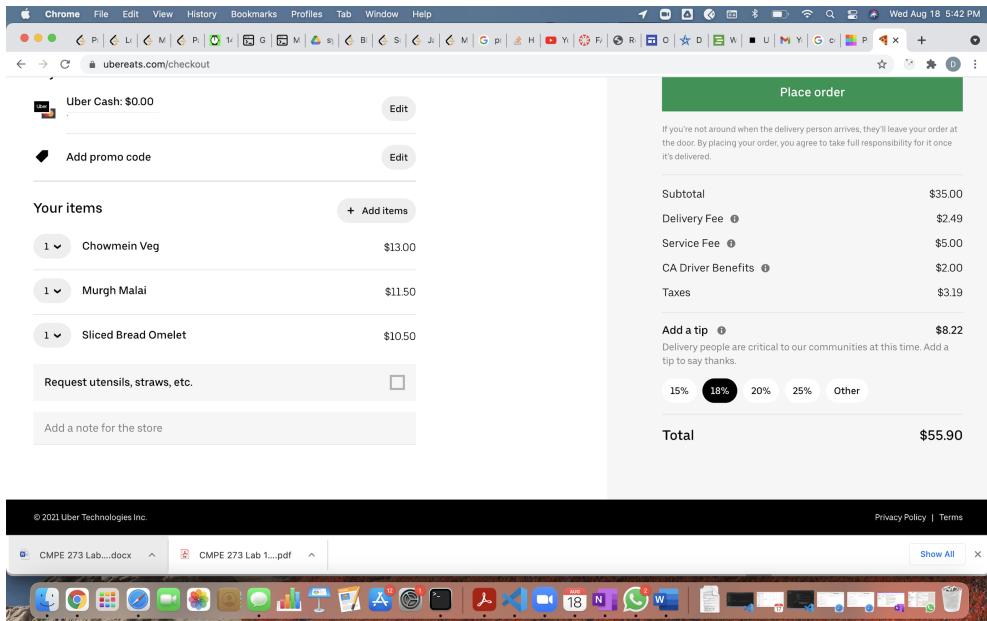
Place Your Order

1. The customer should click on the cart and a pop-up window should be displaying the list of items added by the customer

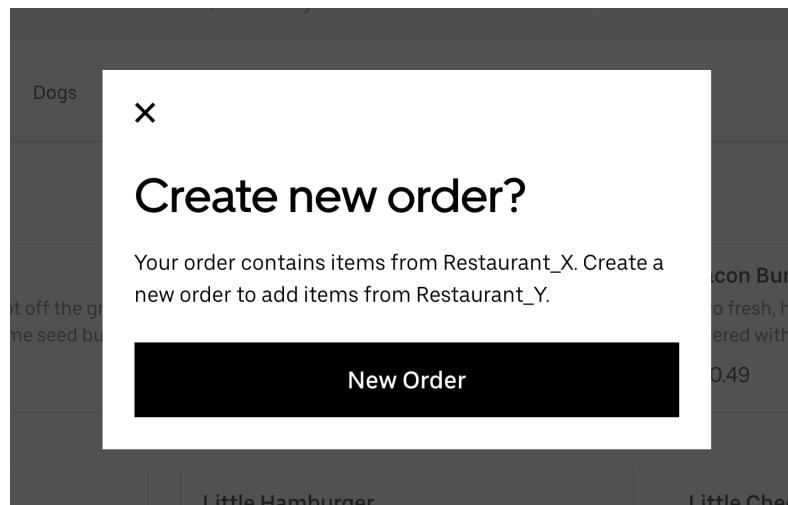
The screenshot shows a modal dialog box for placing an order. The title of the modal is "Kettle'e". Inside the modal, there is a summary of the order:

- A "Add items" button and a "Group order" button.
- A row showing "1" (quantity dropdown), "Chowmein Veg", and "\$13.00".
- A checkbox labeled "Request utensils, straws, etc." with an unchecked state.
- A text input field labeled "Add a note for the store".
- A large black button at the bottom labeled "Go to checkout • \$13.00".

2. Click on checkout and the customer should be redirected to the next page to order the food.

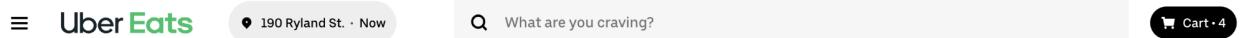


3. Customers should be able to see all the selected items and the total amount which needs to be paid.
 4. Users should be able to add a delivery address. If any addresses are previously given, the User should be able to select one from them or add a new one.
 5. The user should click on Place order and the page should notify the customer with "Order placed successfully".
- Note:** If a customer is trying to add items from another restaurant, a confirmation dialog should be displayed as shown below.



Orders Tab

1. View list of all the orders placed (along with order Date-Time, order status)



Past Orders

McDonald's® (Landess Ave)

10 items for \$39.97 · Feb 15 at 02:01 AM · [View receipt](#)

McDonald's® (Story Rd)

12 items for \$0.00 · Canceled on Feb 14 at 01:49 AM · [View receipt](#)

Jarlie Desserts - Gachibowli

1 item for ₹0.00 · Jul 31 at 12:02 AM · [View receipt](#)

2. Filter the order based on the order status – Order Received, Preparing, (If Delivery option selected) On the way, Delivered (If Pickup option selected) Pick up Ready, Picked up
3. Clicking on any order should open a pop-up that displays the order summary, status of the order, delivery address, and other order-related information.

The image shows a modal window titled 'Receipt' overlaid on the Uber Eats app. The receipt details are as follows:

Item	Description	Price
6 McChicken	McChicken Comes With 2 Mayonnaise \$0.00 Shredded Lettuce \$0.25 McChicken Patty \$1.00 Regular Bun \$0.50	\$1.59
1 40 McNuggets	Select Sauce Tangy BBQ Dipping Sauce \$0.00 Sweet N Sour Dipping Sauce \$0.00 Hot Mustard Dipping Sauce \$0.00 2 Ketchup Packets \$0.00 Spicy Buffalo \$0.00	\$10.00
3 Medium Coke®	Select Option Large Coke® \$0.10 Large Coke® Comes With No Ice \$0.00	\$1.29

At the bottom left of the receipt, there's a promotional offer: 'Get 50% off* Use code: BUMPERSO'.

Every service should have proper exception handling and every input field should have proper validation.

Password values should be encrypted.

* All images are just for reference. Please follow the instructions written.

ESLint should be used in your code following the Airbnb style guide.

The application should be deployed on the cloud (E.g. Heroku, AWS EC2)

A simple, attractive, and responsive client attracts good marks.

Testing

1. Testing of the backend server should be done using JMeter and Mocha.
2. The enzyme should be used to test at least 3 views/pages.

Following tasks to be tested using JMeter:

Test the server for **100, 200, 300, 400, and 500 concurrent users** with and without connection pooling. Draw the graph with the average time and include it in the report.

Following tasks to be tested using Mocha:

Implement five randomly selected REST web service API calls using Mocha. Display the output in the report.

Questions

1. Compare the results of graphs with and without in-built MySQL connection pooling of the database. Explain the result in detail and describe the connection pooling algorithm if you need to implement connection pooling on your own. (3 pts)
2. What are the ways to improve SQL Performance? List at least 3 strategies. Explain why those strategies improve the performance. (2 pts)

Git Repository

- In your Git repository, create two sub-folders, one for Frontend and one for Backend. Place all your source code in respective Folders.
- Add a proper description for every commit describing what code changes are added.
- Regular commits to your repository are mandatory. (Penalty of 3 marks if missed).
- Do not submit dependencies or supporting libraries (e.g. node_modules) (including them causes deduction of 2 marks).
- All the dependencies should be included in the package.json file.
- The Readme file of your repository should contain the steps to run the application.

Project Report

- Introduction: State your goals and purpose of the system
- System Design: Describe your chosen system design
- Results: Screen captures of testing results and important screens of the application.
- Performance: What was the performance? Analyze results and explain why you are getting those results.
- Git Commit history – screen capture
- Answers to the questions.

Submission

Please upload your report (John_Lab1_Report.doc) on Canvas before the deadline.
(Number of pages in Report should be below 30)