REST API with Express, MongoDB and Mongoose - Assignment 2

This project is part of the online course "Server-side Development with NodeJS, Express and MongoDB" by Coursera.org

1. Introduction

The objective of this Assignment 2 is the integration of the REST API server based on the Express framework (implemented earlier), together with the Mongoose schema and models to create a full-fledged REST API server.

Three main entities compound the application in focus: DISH, PROMOTION and LEADER.

It may figure out a food business (restaurants, fast-foods, …) where plates are served (dishes), some of them with discounts (promotions), managed by their leaders.

Typical events to organize the inherent activities are CRUD for dishes, promotions, and leaders, saved in a database. Support for insert, access and update comments related to the dishes.

2. Design and Implementation

The implemented REST API is simple, however didactic. The operations use HTTP requests to GET, PUT, POST and DELETE data to all models representing those entities (Dish, Leader and Promotion). Eventually, the same operations can be applied to the Comments for Dishes.

Each one of these operations has a correspondent event in MongoDB (CRUD). The persistence of the data objects is mapped by Mongoose ODM. Mongoose is a Nodejs library that provides a schema-based solution for modeling your application data. It has a type conversion system, validation, creation of queries and hooks for business logic.
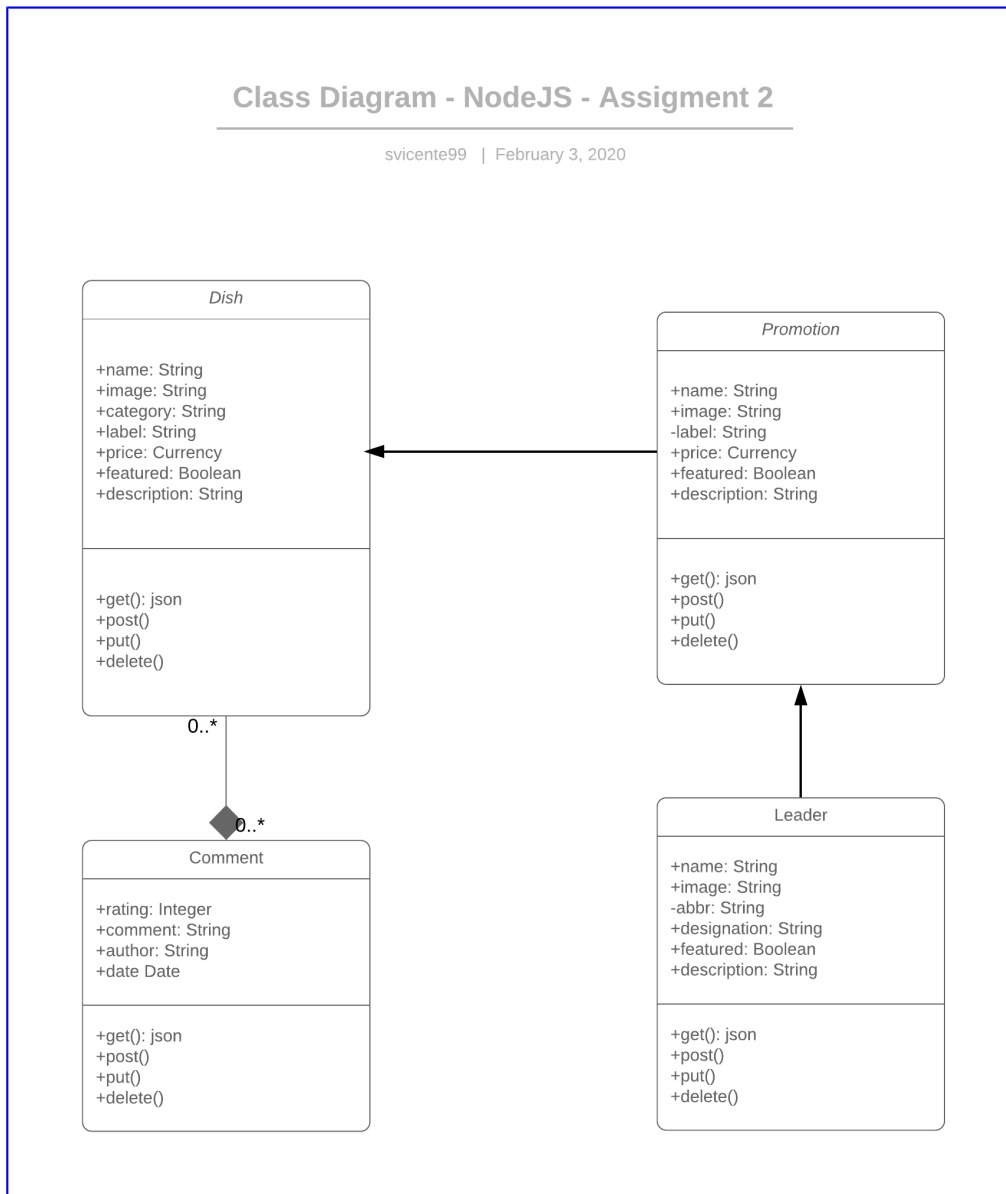
2.1 The REST API Specification

Upon a NodeJS web server, listening port 3000, that's the list of operations:

- http://localhost:3000/dishes => GET, POST, DELETE
- http://localhost:3000/dishes/:dishID => GET, PUT, DELETE
- http://localhost:3000/leaders => GET, POST, DELETE
- http://localhost:3000/leaders[/:leaderID](/:leaderID) => GET, PUT, DELETE
- http://localhost:3000/promotions => GET, POST, DELETE
- http://localhost:3000/promotions[/:promotionID](/:promotionID) => GET, PUT, DELETE
- http://localhost:3000/dishes/comments => GET, POST, DELETE
- http://localhost:3000/dishes/coments/:commentID => GET, PUT, DELETE
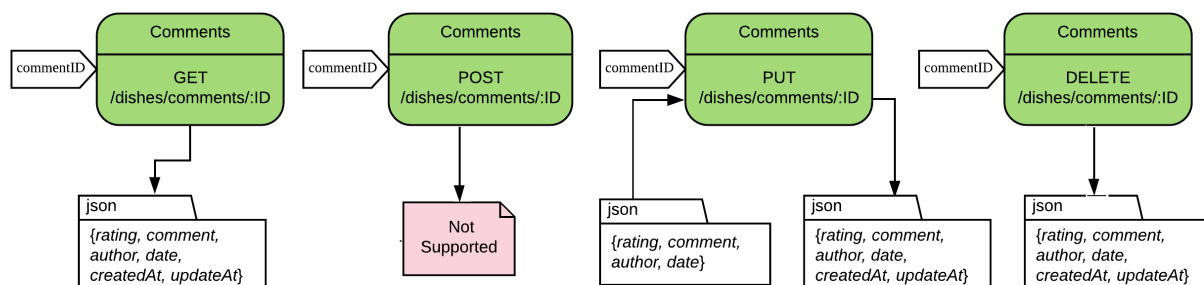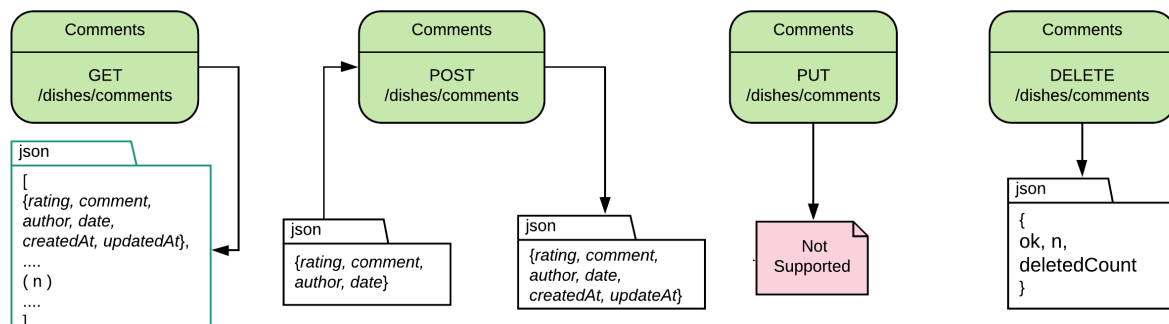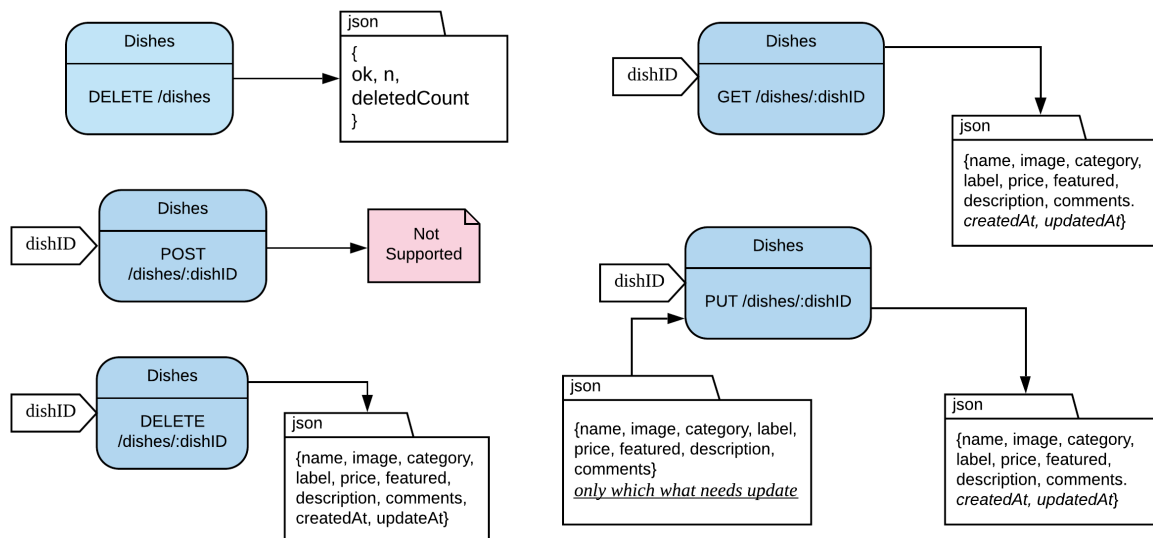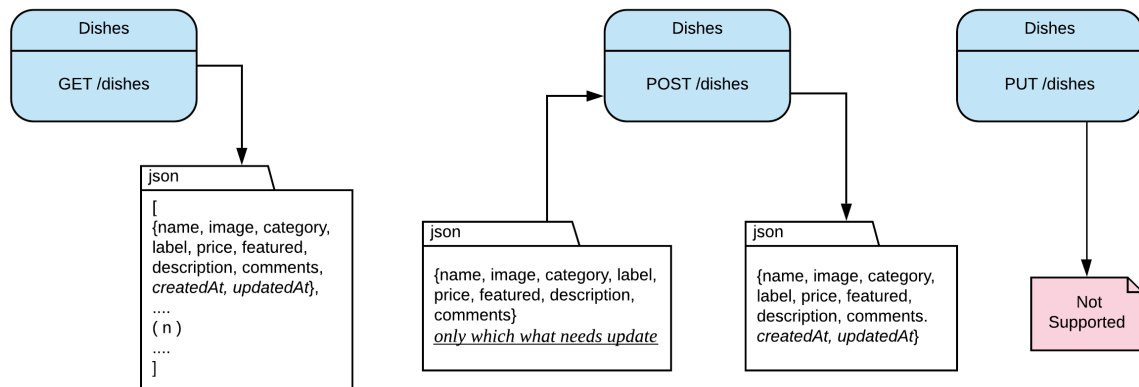
2.2 Database Schemas, Design and Structure

Follow the UML class diagram to better understanding.
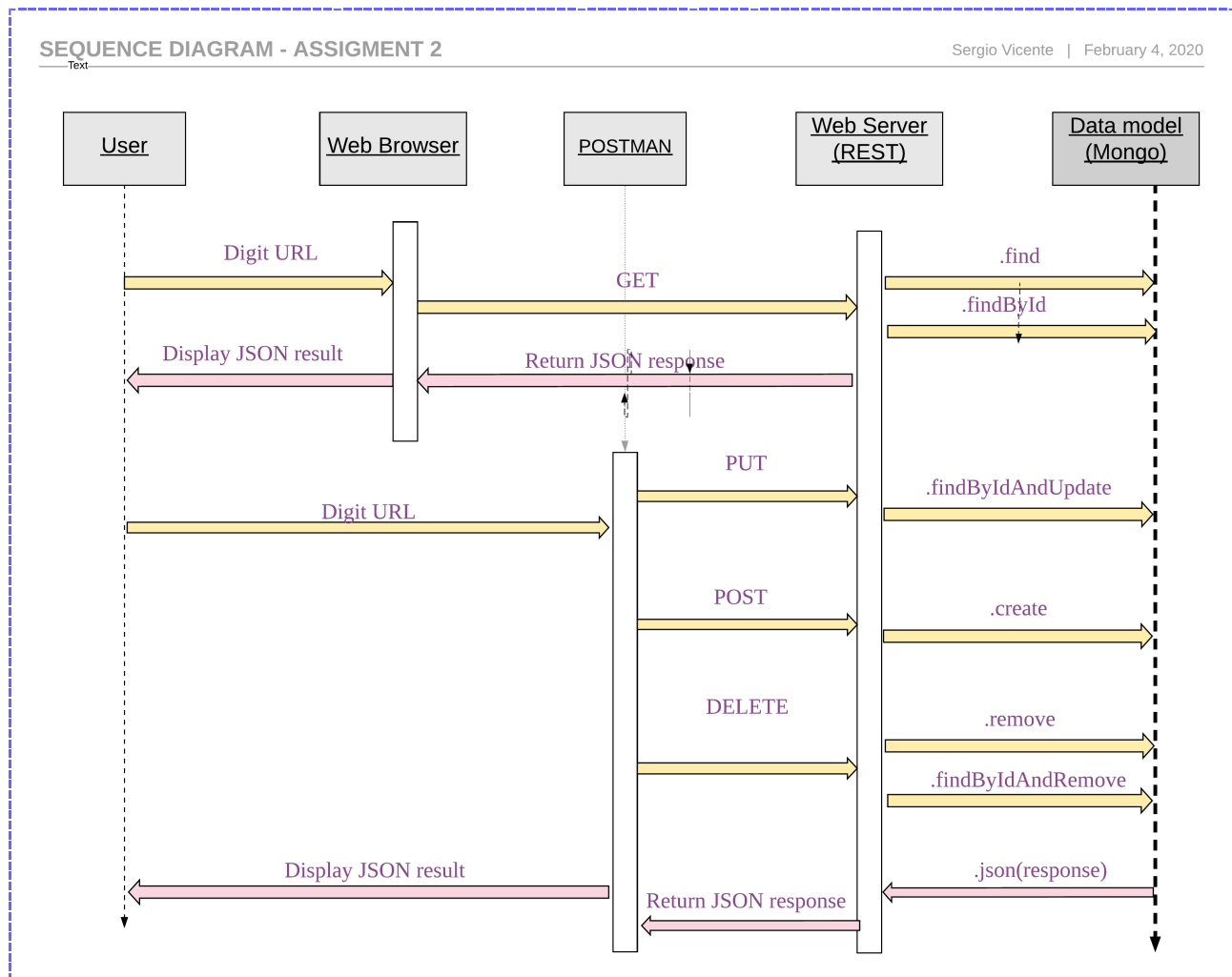

2.3 Communication

The standard messages in JSON format to communicate each one of the messages linked to the front-end (web browser) and the back-end (Mongo database and Express framework) are showed graphically in the next deployment diagram:

Dishes
GET /dishes

json
```
[
{name, image, category,
label, price, featured,
description, comments,
createdAt, updatedAt},
....
( n )
....
]
```

Dishes
POST /dishes

json
```
{name, image, category, label,
price, featured, description,
comments}
only which what needs update
```

json
```
{name, image, category,
label, price, featured,
description, comments.
createdAt, updatedAt}
```

Dishes
PUT /dishes

Not Supported

Dishes
DELETE /dishes

json
```
{
ok, n,
deletedCount
}
```

dishID → **Dishes** GET /dishes/:dishID

json
```
{name, image, category,
label, price, featured,
description, comments.
createdAt, updatedAt}
```

dishID → **Dishes** POST /dishes/:dishID

Not Supported

dishID → **Dishes** PUT /dishes/:dishID

json
```
{name, image, category, label,
price, featured, description,
comments}
only which what needs update
```

json
```
{name, image, category,
label, price, featured,
description, comments.
createdAt, updatedAt}
```

dishID → **Dishes** DELETE /dishes/:dishID

json
```
{name, image, category,
label, price, featured,
description, comments,
createdAt, updateAt}
```

Comments
GET /dishes/comments

json
```
[
{rating, comment,
author, date,
createdAt, updatedAt},
....
( n )
....
]
```

Comments
POST /dishes/comments

json
```
{rating, comment,
author, date}
```

json
```
{rating, comment,
author, date,
createdAt, updateAt}
```

Comments
PUT /dishes/comments

Not Supported

Comments
DELETE /dishes/comments

json
```
{
ok, n,
deletedCount
}
```

commentID → **Comments** GET /dishes/comments/:ID

json
```
{rating, comment,
author, date,
createdAt, updateAt}
```

commentID → **Comments** POST /dishes/comments/:ID

Not Supported

commentID → **Comments** PUT /dishes/comments/:ID

json
```
{rating, comment,
author, date}
```

json
```
{rating, comment,
author, date,
createdAt, updateAt}
```

commentID → **Comments** DELETE /dishes/comments/:ID

json
```
{rating, comment,
author, date,
createdAt, updateAt}
```

Below, I present the UML Sequence Diagram to ilustrate – in very high level – how it was implemented the end-to-end code solution integrating Express, Node and Mongo.

SEQUENCE DIAGRAM - ASSIGMENT 2 Sergio Vicente | February 4, 2020

You may think "Data Model" box as each one of the classes above described (Dishes, Leaders, Comments and Promotions). There is a specific method to perform operation by operation in all of that cases.

Attached at the end of this document you may see a file example in a json format that contains data to simulate all these operations. Using software like "Postman" it helps to see the web server working. Put in the "Body" part data exactly as described in "db.json".

Finally, I leave my GitHub repository where the whole solution is available to you inspect the code implement in this project/assignment. Feel free to download and read it.

https://github.com/svicente99/NodeJS_Course_2

3. **Conclusions**

There's not too much to say about what it concludes itself this work. It is aimed to demonstrate the right way to use Express framework methods in order to develop a full-fledged REST API server communicating Express, MongoDB and Mongoose. The solution is a kick-off to understand how it works each part of these tools and start building other solutions more complex.

Feb. 4th 2020

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db.json

"dishes": [
    {
        "name": "Uthappizza",
        "image": "images/uthappizza.png",
        "category": "mains",
        "label": "Hot",
        "price": "4.99",
        "featured": "true",
        "description": "A unique combination of Indian Uthappam (pancake) and Italian pizza, topped with Cerignola olives, ripe vine cherry tomatoes,
Vidalia onion, Guntur chillies and Buffalo Paneer.",
        "comments": [
            {
                "rating": 5,
                "comment": "Imagine all the eatables, living in conFusion!",
                "author": "John Lemon",
                "date": "2012-10-16T17:57:28.556094Z"
            },
            {
                "rating": 4,
                "comment": "Sends anyone to heaven, I wish I could get my mother-in-law to eat it!",
                "author": "Paul McVites",
                "date": "2014-09-05T17:57:28.556094Z"
            },
            {
                "rating": 3,
                "comment": "Eat it, just eat it!",
                "author": "Michael Jaikishan",
                "date": "2015-02-13T17:57:28.556094Z"
            },
            {
                "rating": 4,
                "comment": "Ultimate, Reaching for the stars!",
                "author": "Ringo Starry",
                "date": "2013-12-02T17:57:28.556094Z"
            },
            {
                "rating": 2,
                "comment": "It's your birthday, we're gonna party!",
                "author": "25 Cent",
                "date": "2011-12-02T17:57:28.556094Z"
            }
        ]
    },
    {
        "name": "Zucchipakoda",
        "image": "images/zucchipakoda.png",
        "category": "appetizer",
        "label": "",
        "price": "1.99",
        "featured": "false",
        "description": "Deep fried Zucchini coated with mildly spiced Chickpea flour batter accompanied with a sweet-tangy tamarind sauce",
        "comments": [
            {
                "rating": 5,
                "comment": "Imagine all the eatables, living in conFusion!",
                "author": "John Lemon",
                "date": "2012-10-16T17:57:28.556094Z"
            },
            {
                "rating": 4,
                "comment": "Sends anyone to heaven, I wish I could get my mother-in-law to eat it!",
                "author": "Paul McVites",
                "date": "2014-09-05T17:57:28.556094Z"
            },
            {
                "rating": 3,
                "comment": "Eat it, just eat it!",
                "author": "Michael Jaikishan",
                "date": "2015-02-13T17:57:28.556094Z"
            },

```
      },
      {
        "rating": 4,
        "comment": "Ultimate, Reaching for the stars!",
        "author": "Ringo Starry",
        "date": "2013-12-02T17:57:28.556094Z"
      },
      {
        "rating": 2,
        "comment": "It's your birthday, we're gonna party!",
        "author": "25 Cent",
        "date": "2011-12-02T17:57:28.556094Z"
      }
    ]
  },
  {
    "name": "Vadonut",
    "image": "images/vadonut.png",
    "category": "appetizer",
    "label": "New",
    "price": "1.99",
    "featured": "false",
    "description": "A quintessential ConFusion experience, is it a vada or is it a donut?",
    "comments": [
      {
        "rating": 5,
        "comment": "Imagine all the eatables, living in conFusion!",
        "author": "John Lemon",
        "date": "2012-10-16T17:57:28.556094Z"
      },
      {
        "rating": 4,
        "comment": "Sends anyone to heaven, I wish I could get my mother-in-law to eat it!",
        "author": "Paul McVites",
        "date": "2014-09-05T17:57:28.556094Z"
      },
      {
        "rating": 3,
        "comment": "Eat it, just eat it!",
        "author": "Michael Jaikishan",
        "date": "2015-02-13T17:57:28.556094Z"
      },
      {
        "rating": 4,
        "comment": "Ultimate, Reaching for the stars!",
        "author": "Ringo Starry",
        "date": "2013-12-02T17:57:28.556094Z"
      },
      {
        "rating": 2,
        "comment": "It's your birthday, we're gonna party!",
        "author": "25 Cent",
        "date": "2011-12-02T17:57:28.556094Z"
      }
    ]
  },
  {
    "name": "ElaiCheese Cake",
    "image": "images/elaicheesecake.png",
    "category": "dessert",
    "label": "",
    "price": "2.99",
    "featured": "false",
    "description": "A delectable, semi-sweet New York Style Cheese Cake, with Graham cracker crust and spiced with Indian cardamoms",
    "comments": [
      {
        "rating": 5,
        "comment": "Imagine all the eatables, living in conFusion!",
        "author": "John Lemon",
        "date": "2012-10-16T17:57:28.556094Z"
      },
      {
        "rating": 4,
        "comment": "Sends anyone to heaven, I wish I could get my mother-in-law to eat it!",
```

```
            "author": "Paul McVites",
            "date": "2014-09-05T17:57:28.556094Z"
          },
          {
            "rating": 3,
            "comment": "Eat it, just eat it!",
            "author": "Michael Jaikishan",
            "date": "2015-02-13T17:57:28.556094Z"
          },
          {
            "rating": 4,
            "comment": "Ultimate, Reaching for the stars!",
            "author": "Ringo Starry",
            "date": "2013-12-02T17:57:28.556094Z"
          },
          {
            "rating": 2,
            "comment": "It's your birthday, we're gonna party!",
            "author": "25 Cent",
            "date": "2011-12-02T17:57:28.556094Z"
          }
        ]
      }
  ],
  "promotions": [
      {
        "name": "Weekend Grand Buffet",
        "image": "images/buffet.png",
        "label": "New",
        "price": "19.99",
        "featured": "true",
        "description": "Featuring mouthwatering combinations with a choice of five different salads, six enticing appetizers, six main entrees and five
choicest desserts. Free flowing bubbly and soft drinks. All for just $19.99 per person "
      }
  ],
  "leaders": [
      {
        "name": "Peter Pan",
        "image": "images/alberto.png",
        "designation": "Chief Epicurious Officer",
        "abbr": "CEO",
        "featured": "false",
        "description": "Our CEO, Peter, credits his hardworking East Asian immigrant parents who undertook the arduous journey to the shores of America
with the intention of giving their children the best future. His mother's wizardy in the kitchen whipping up the tastiest dishes with whatever is available
inexpensively at the supermarket, was his first inspiration to create the fusion cuisines for which The Frying Pan became well known. He brings his zeal
for fusion cuisines to this restaurant, pioneering cross-cultural culinary connections."
      },
      {
        "name": "Dhanasekaran Witherspoon",
        "image": "images/alberto.png",
        "designation": "Chief Food Officer",
        "abbr": "CFO",
        "featured": "false",
        "description": "Our CFO, Danny, as he is affectionately referred to by his colleagues, comes from a long established family tradition in farming and
produce. His experiences growing up on a farm in the Australian outback gave him great appreciation for varieties of food sources. As he puts it in his
own words, Everything that runs, wins, and everything that stays, pays!"
      },
      {
        "name": "Agumbe Tang",
        "image": "images/alberto.png",
        "designation": "Chief Taste Officer",
        "abbr": "CTO",
        "featured": "false",
        "description": "Blessed with the most discerning gustatory sense, Agumbe, our CFO, personally ensures that every dish that we serve meets his
exacting tastes. Our chefs dread the tongue lashing that ensues if their dish does not meet his exacting standards. He lives by his motto, You click only
if you survive my lick."
      },
      {
        "name": "Alberto Somayya",
        "image": "images/alberto.png",
        "designation": "Executive Chef",
        "abbr": "EC",
        "featured": "true",
```

        "description": "Award winning three-star Michelin chef with wide International experience having worked closely with whos-who in the culinary world, he specializes in creating mouthwatering Indo-Italian fusion experiences. He says, Put together the cuisines from the two craziest cultures, and you get a winning hit! Amma Mia!"
    }
]

"promotions": [
            {
                        "name": "Weekend Grand Buffet",
                        "image": "images/buffet.png",
                        "label": "New",
                        "price": "19.99",
                        "description": "Featuring enormous array of cuisine to grant your culinary wishes. From the Champagne brunch to the endless beer and wine with our dinner New York Strip and Crab Legs, guests will find plenty of favorite dishes. ",
                        "featured": false
            }
]

"leaders": [
            {
    "name": "Peter Pan",
    "image": "images/alberto.png",
    "designation": "Chief Epicurious Officer",
    "abbr": "CEO",
    "description": "Our CEO, Peter, . . .",
    "featured": false
            },
            {
    "name": "Barack Obama",
    "image": "images/obama.png",
    "designation": "Ex-presidente of the USA",
    "abbr": "Pres",
    "description": "A member of the Democratic Party, he was the first African American president of the United States.",
    "featured": true
            },
            {
    "name": "Sundar Pichai",
    "image": "images/pichai.png",
    "designation": "GOOGLE's Chief Executive Officer",
    "abbr": "CEO",
    "description": "Sundar Pichai is an Indian American business executive, the chief executive officer (CEO) of Alphabet Inc. and its subsidiary Google LLC.",
    "featured": false
            }
]