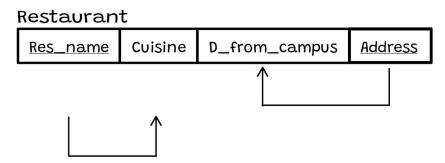**Task A: Third Normal Form Normalization**

None of our relations have any composite attributes, multivalued attributes, or nested relations, so they are all in First Normal Form (1NF).

Since our User, Review, and Food_item relations have no functional dependencies (FDs) aside from the fact that their primary keys determine all of their none prime attributes, they are clearly already in Second Normal Form (2NF) and Third Normal Form (3NF).

Our Restaurant relation has key {Res_name, Address} and two FDs:
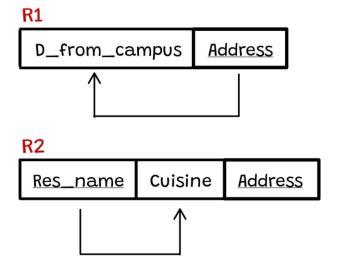
FD1: Address → D_from_campus

FD2: Res_name → Cuisine

Examining the first FD (FD1), Address → D_from_campus, we see that Address is a proper subset of a key and D_from_campus is a none prime attribute. Therefore, FD1 fails and the Restaurant relation is not in 2NF.

Decomposing this relation, we get

R1 = (Address)+ = {Address, D_from_campus} with FD1: Address → D_from_campus

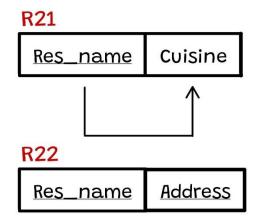R2 = (R – (Address)+) U Address = {Res_name, Cuisine, Address} with FD2: Res_name → Cuisine

Examining R1 with FD1, we see that Address is not a proper subset of a key, it is a complete key, so FD1 does not fail and R1 is in 2NF.

Examining R2 with FD2, we see that Res_name is a proper subset of a key and Cuisine is a none prime attribute, so FD2 fails and R2 is not in 2NF.

Decomposing this relation, we get

R21 = (Res_name)+ = {Res_name, Cuisine} with FD2: Res_name → Cuisine

R22 = (R – (Res_name)+) U Res_name = {Res_name, Address}

Examining R21 with FD2, we see that Res_name is not a proper subset of a key, it is a complete key, so FD2 does not fail and R21 is in 2NF.
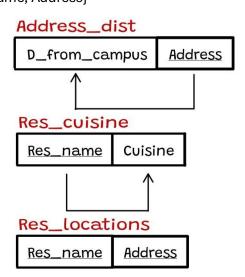
R22 has no FDs, so it is in 2NF as well.

The result is 3 relations:

R1 = Address_dist = {Address, D_from_campus} with FD1: Address → D_from_campus

R21 = Res_cuisine = {Res_name, Cuisine} with FD2: Res_name → Cuisine

R22 = Res_locations = {Res_name, Address}

All the relations are in 2NF, and since they have no transitive FDs, they are all in 3NF as well.

Video link: https://www.youtube.com/watch?v=g9-GF6LwzAU

Index.html screenshot

RatatoUTD

Enter your credentials to Sign/Log in!

Username:

Enter your Username

Password:

Enter your Password

Log In

Don't wanna register? Continue as AnonyMOUSE

*(not included in video)

Index.html code

```html
<!DOCTYPE html>
<html>
    <head>
        <link rel="stylesheet" href="index.css">
        <meta charset = "utf-8">
        <meta name = "viewport" content = "width=device-width, initial-scale=1">
        <title>HTML Elements Reference</title>
        <link rel="icon" type="image/x-icon" href="assets/favicon.ico">
    </head>
    <body>
        <div class="main">
            <h1>RatatoUTD</h1>
            <h3>Enter your credentials to Sign/Log in!</h3>
                <label for="first">
                    Username:
                </label>
                <input type="text" id="first" name="first"
                    placeholder="Enter your Username" required>

                <label for="password">
                    Password:
                </label>
                <input type="password" id="password" name="password"
                    placeholder="Enter your Password" required>

                <div class="wrap">
                    <a href="homepage.html">
                        <button>
                            Log In
                        </button>
                    </a>

                </div>

            <p>Don't wanna register?
                <a href="homepage.html" style="text-decoration: none;">
                    Continue as AnonyMOUSE
                </a>
            </p>
        </div>
    </body>
</html>
```

Index.css code

```css
body {
    display: flex;
    align-items: center;
    justify-content: center;
    font-family: sans-serif;
    line-height: 1.5;
    min-height: 100vh;
    background: #f3f3f3;
    flex-direction: column;
    margin: 0;
}

.main {
    background-color: #fff;
    border-radius: 15px;
    box-shadow: 0 0 20px rgba(0, 0, 0, 0.2);
    padding: 10px 20px;
    transition: transform 0.2s;
    width: 500px;
    text-align: center;
}

h1 {
    color: rgb(44,167,255);
}

label {
    display: block;
    width: 100%;
    margin-top: 10px;
    margin-bottom: 5px;
    text-align: left;
    color: #9a9a9a;
    font-weight: bold;
}

input {
    display: block;
    width: 100%;
    margin-bottom: 15px;
    padding: 10px;
    box-sizing: border-box;
    border: 1px solid #ddd;
    border-radius: 5px;
}
```

```css
button {
    padding: 15px;
    border-radius: 10px;
    margin-top: 15px;
    margin-bottom: 15px;
    border: none;
    color: white;
    cursor: pointer;
    background-color: rgb(44,167,255);
    width: 100%;
    font-size: 16px;
}

.wrap {
    display: flex;
    justify-content: center;
    align-items: center;
}
```

homepage.html screenshots

Name	Pfp	Location	Comment	Favorite Item	Favorite Item Comment
David		Taco Bell	Love this place with alll my heart oml thisd place is the best ting to ever ha[pp[en to the UTD campus ongodd no capulations my fam	Alcoholic Baja Blast	The only thing you should order here
David		Taco Bell	Love this place with alll my heart oml thisd place is the best ting to ever ha[pp[en to the UTD campus ongodd no capulations my fam	Alcoholic Baja Blast	The only thing you should order here
David		Taco Bell	Love this place with alll my heart oml thisd place is the best ting to ever ha[pp[en to the UTD campus ongodd no capulations my fam	Alcoholic Baja Blast	The only thing you should order here
David		Taco Bell	Love this place with alll my heart oml thisd place is the best ting to ever ha[pp[en to the UTD campus ongodd no capulations my fam	Alcoholic Baja Blast	The only thing you should order here
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David		Taco Bell	Love this place with alll my heart oml thisd place is the best ting to ever ha[pp[en to the UTD campus ongodd no capulations my fam	Alcoholic Baja Blast	The only thing you should order here
David		Taco Bell	Love this place with alll my heart oml thisd place is the best ting to ever ha[pp[en to the UTD campus ongodd no capulations my fam	Alcoholic Baja Blast	The only thing you should order here
David		Taco Bell	Love this place with alll my heart oml thisd place is the best ting to ever ha[pp[en to the UTD campus ongodd no capulations my fam	Alcoholic Baja Blast	The only thing you should order here

Add Review

Add a review!

Name

Alfredo Linguini

Restaurant

Gusto

Review

type in here

Favorite Item

i like alc

Why?

0.08 is a myth

x   submit

homePage.html code

```html
<link rel="stylesheet" href="homepage.css">
<nav class="navbar">
    <div class="navdiv">
        <div style="display: flex; align-items: center;">
            <div class="logo">RatatoUTD</div>
            <div class="slogan">
            Sniffing out the best spots to eat
            </div>
        </div>
        <div>
            <img src= "assets/mascot.png" style="width: 5%; height: 7%; position:
absolute; left: 47.5%; top: 1.5%;">
        </div>
        <ul>
            <li><a href="#">Home Screen</a></li>
            <li><a href="#">Leaderboard</a></li>
        </ul>
    </div>
</nav>
<button class="plusButton" type="submit" id="plusButton">Add Review</button>
<div id="addReview" class="popup">
    <div class="popup-content">
        <h1>Add a review!</h1>
        <div>
            <p>Name</p>
            <input type="text" placeholder="Alfredo Linguini"> <br>
        </div>

        <div>
            <p>Restaurant</p>
            <input type="text" placeholder="Gusto"> <br>
        </div>

        <div>
            <p>Review</p>
            <input rows="2" placeholder="type in here"></span>
        </div>

        <div>
            <p>Favorite Item</p>
            <input type="text" placeholder="i like alc"> <br>
        </div>

        <div>
            <p>Why?</p>
            <input type="text" placeholder="0.08 is a myth"> <br>
```

```html
            </div>

            <!-- <textarea type="textarea"> <br> -->
            <!-- <textarea rows = "6"></textarea>
            <br> -->
            <div class="Revbuttons">
                <button id="closePopup">x</button>
                <button id="submit">submit</button>
            </div>

        </div>
    </div>
    <table class="table" border="1" id="reviewTable">
        <thead>
            <tr>
                <th style="width: 10%">Name</th>
                <th style="width: 10%">Pfp</th>
                <th style="width: 10%">Location</th>
                <th style="width: 40%">Comment</th>
                <th style="width: 10%">Favorite Item</th>
                <th style="width: 20%">Favorite Item Comment</th>
            </tr>
        </thead>
        <tbody>
        </tbody>
    </table>
    <script src="scripts.js"></script>
```

homepage.css code

```css
*{
    text-decoration: none;
}
.navbar{
    background: rgb(44,167,255);
    background: radial-gradient(circle, rgba(44,167,255,1) 0%, rgba(178,223,255,1) 0%,
rgba(246,251,255,1) 10%, rgba(0,148,255,1) 15%, rgba(63,175,255,1) 100%);
    font-family: calibri;
    /* position: sticky; */
    /*border-style: dashed;
    border-width: 2px;
    border-color: black;*/
}
.navdiv{
    height: 80px;
    display: flex;
    align-items: center;
```

```css
    justify-content: space-between;

    /*border-style: dashed;
    border-width: 2px;
    border-color: black;*/
}

.slogan {
    margin-left: 50px;
    color: white;
    font-style: italic;
    font-size: large;
    /*border-style: dashed;
    border-width: 2px;
    border-color: black;*/
}

.logo {
    margin-left: 35px;
    font-size: xx-large;
    color: white;
    font-style: bold;

    /*border-style: dashed;
    border-width: 2px;
    border-color: black;*/
}

.logo a{
    font-size: 35px;

    /*border-style: dashed;
    border-width: 2px;
    border-color: black;*/
}

li {
    list-style: none;
    display: inline-block;

    /*border-style: dashed;
    border-width: 2px;
    border-color: black;*/
}

li a {
    margin-right: 50px;
    color: white;
```

```css
    /*border-style: dashed;
    border-width: 2px;
    border-color: black;*/
}

.table {
    /*border-style: dashed;
    border-width: 2px;
    border-color: black;*/
    text-align: center;
    width: 100%;
}

.popup {
    position: fixed;
    z-index: 1;
    left: 0;
    top: 0;
    width: 100%;
    height: 100%;
    display: none;
    background-color: rgba(144, 151, 207, 0.4);
}

.popup-content {
    background-color: white;
    margin: 10% auto;
    width: 30%;
    padding: 20px;
    border-style: dashed;
    border-width: 2px;
    border-color: black;
    text-align:center
}

input::placeholder {
    color: grey;
    opacity: 0.5;
}

.Revbuttons{
    display: flex;
    align-items: center;
    justify-content: space-between;
}

textarea::placeholder {
```

```css
    color: grey;
    opacity: 0.5;
}

.plusButton {
    position: fixed;
    border-radius: 50%;
    top: 92%;
    left: 90%;
    color: white;
    background: rgb(44,167,255);
    border:none;
    padding: 15px 30px;
    text-align: center;
    font-size: large;
    transition-duration: 0.4s;
    cursor: pointer;
}

.plusButton:hover {
    background-color: white;
    color: white;
}

.show {
    display:block;
}
```

scripts.js code

```javascript
function Review(name, pfp, location, review, favItem, favItemComment) {
  this.name = name;
  this.pfp = pfp;
  this.location = location;
  this.review = review;
  this.favItem = favItem;
  this.favItemComment = favItemComment;
}

let myArr = [];

for (let index = 0; index < 20; index++) {
  myArr[index] = new Review(
    "David",
    "assets/pfpIcon.png",
    "Taco Bell",
    "Love this place with alll my heart oml thisd place is the best ting to ever
ha[pp[en to the UTD campus ongodd no capulations my fam",
    "Alcoholic Baja Blast",
    "The only thing you should order here"
  );
}

document.querySelector("#reviewTable tbody").innerHTML = myArr
  .map(
    (Review) =>
      `<tr><td>${Review.name}</td><td><img src=${Review.pfp} style="width: 50px;
height:
50px"></td><td>${Review.location}</td><td>${Review.review}</td><td>${Review.favItem}</
td><td>${Review.favItemComment}</td></tr>`
  )
  .join("");

plusButton.addEventListener(
  "click",
  function(){
    addReview.classList.add("show");
  }
);
closePopup.addEventListener(
  "click",
  function() {
    addReview.classList.remove("show");
  }
);
```

```javascript
window.addEventListener(
  "click",
  function (event) {
      if (event.target == addReview) {
          addReview.classList.remove(
              "show"
          );
      }
  }
);
```

Task C: Creating and loading relations

This is our **create.sql** file, used to create the tables found in our database:

```sql
1    -- Create the User table
2  CREATE TABLE User (
3        Username VARCHAR(20) PRIMARY KEY NOT NULL,
4        Major VARCHAR(40),
5        Fname VARCHAR(20) NOT NULL,
6        Lname VARCHAR(20),
7        DOB DATE NOT NULL,
8        Classification VARCHAR(10),
9        PFP VARCHAR(200) NOT NULL DEFAULT 'link_to_silhouette_image'
10   );
11
12   -- Create the Restaurant table
13 CREATE TABLE Restaurant (
14       Res_name VARCHAR(50) PRIMARY KEY NOT NULL,
15       Cuisine VARCHAR(20),
16       D_from_campus VARCHAR(20),
17       Address VARCHAR(100)
18   );
19
20   -- Create the Food_item table (note consistent naming)
21 CREATE TABLE Food_item (
22       Res_name VARCHAR(50) NOT NULL,
23       I_name VARCHAR(30) NOT NULL,
24       Photo VARCHAR(200),
25       PRIMARY KEY (Res_name, I_name),
26       FOREIGN KEY (Res_name) REFERENCES Restaurant (Res_name)
27       ON DELETE CASCADE
28   );
29
30   -- Create the Review table
31 CREATE TABLE Review (
32       Res_name VARCHAR(50) NOT NULL,
33       Rev_id INT NOT NULL,
34       Rating SMALLINT CHECK (Rating BETWEEN 1 AND 5),
35       Rev_comment VARCHAR(500),
36       I_comment VARCHAR(500),
37       Username VARCHAR(20),
38       Fav_item VARCHAR(30),
39       PRIMARY KEY (Res_name, Rev_id),
40       FOREIGN KEY (Res_name) REFERENCES Restaurant (Res_name)
41       ON DELETE CASCADE,
42       FOREIGN KEY (Username) REFERENCES User (Username)
43       ON DELETE CASCADE,
44       FOREIGN KEY (Res_name, Fav_item) REFERENCES Food_item (Res_name, I_name)
45       ON DELETE CASCADE
46   );
```

This is our **load.sql** file, used to load the data found within our sample files into the tables:

```
1   LOAD DATA INFILE 'C:/ProgramData/MySQL/MySQL Server 8.0/Uploads/users.csv'
2   INTO TABLE User
3   FIELDS TERMINATED BY ','
4   LINES TERMINATED BY '\n'
5   IGNORE 1 ROWS;
6
7   LOAD DATA INFILE 'C:/ProgramData/MySQL/MySQL Server 8.0/Uploads/restaurants.csv'
8   INTO TABLE Restaurant
9   FIELDS TERMINATED BY ','
10  LINES TERMINATED BY '\n'
11  IGNORE 1 ROWS;
12
13  LOAD DATA INFILE 'C:/ProgramData/MySQL/MySQL Server 8.0/Uploads/food_items.csv'
14  INTO TABLE Food_item
15  FIELDS TERMINATED BY ','
16  LINES TERMINATED BY '\n'
17  IGNORE 1 ROWS;
18
19  LOAD DATA INFILE 'C:/ProgramData/MySQL/MySQL Server 8.0/Uploads/reviews.csv'
20  INTO TABLE Review
21  FIELDS TERMINATED BY ','
22  LINES TERMINATED BY '\n'
23  IGNORE 1 ROWS;
```

This is our **users.csv** file:

Username	Major	Fname	Lname	DOB	Classification	PFP
iLovePasta	Culinary Arts	Alfredo	Linguini	3/27/2000	Graduate	
TouilleRat	Criminal Analysis	Remy	Littlechef	10/28/1962	Freshman	
youCantCook	Linguistics	Colette	Tatou	7/3/2001	Senior	
kaciedance	Computer Science	Kacie	Yee	5/9/2003	Senior	
thatOneRat	Graphic Design	Trash	Rat	2/3/2005	Sophomore	

This is our **restaurants.csv** file:

Res_name	Cuisine	D_from_campus	Address
Gusteau's	French	6000	14 rue Delambre 75014 Paris
La Ratatouille	French	0	3845 Ratford Ave Richardson TX 75080

This is our **reviews.csv** file:

Res_name	Rev_id	Rating	Rev_comment	I_comment	Username	Fav_item
Gusteau's	0	5	My best friend Remy makes the food and it slaps. If I could give this place a 10 out of 5 I would. He always says any	Great name.	thatOneRat	Ratatouille
Gusteau's	1	1	Outrageous health code violations everywhere you look. I saw a rat touching my food with his little rat hands. DO	The bread is so good with olive oil	kaciedances	Bread
La Ratatouille	La Ratatouille	La Ratatouille	La Ratatouille	La Ratatouille	La Ratatouille	La Ratatouille

This is our **food_items.csv** file:

Res_name	I_name	Photo
Gusteau's	Ratatouille	
La Ratatouille	Napkin	