University of Toronto - Computer Science - Image

Restaurant Recommendations: Representing the Data

The first step to solving the restaurant recommendations problem is choosing data structures to store the information on restaurant prices, ratings, and cuisines.

Examining the Data File

Here is the restaurant data from a sample file:

```
Georgie Porgie
87%
$$$
Canadian, Pub Food

Queen St. Cafe
82%
$
Malaysian, Thai

Dumplings R Us
71%
$
Chinese

Mexican Grill
85%
$$
Mexican

Deep Fried Everything
52%
$
Pub Food
```

Examining the Data

We'll organize the data by grouping it according to tasks that we would like to perform.

Rating Information

For each restaurant, we want to be able to look up the rating, so we'll keep track of that information:

Georgie Porgie: 87
Queen St. Cafe: 82
Dumplings R Us: 71
Mexican Grill: 85
Deep Fried Everything: 52

Price Range Information

We'll also want to look up restaurants by price, so we'll make a list of that data:

$: Queen St. Cafe, Dumplings R Us, Deep Fried Everything
$$: Mexican Grill
$$$: Georgie Porgie
$$$$:

Cuisine Information

Recommendations are made based on types of cuisine as well, so we need to keep track of that information:

Canadian: Georgie Porgie
Pub Food: Georgie Porgie, Deep Fried Everything
Malaysian: Queen St. Cafe
Thai: Queen St. Cafe
Chinese: Dumplings R Us
Mexican: Mexican Grill

Choose the data structure

What data structures can we use to store this information? We could use strings, lists, tuples or dictionaries. That is a design decision that we need to make.

Rating Information

Our "Rating Information" looks a lot like a Python dictionary, where each key is a restaurant name and each value is a rating.

Let's add some braces and commas to make the structure look more like a Python dictionary. Let's also add quotes around the restaurant names to make them strings. Finally, let's create a variable name `name_to_rating` that refers to this dictionary:

Georgie Porgie: 87
Queen St. Cafe: 82
Dumplings R Us: 71
Mexican Grill: 85
Deep Fried Everything: 52

→

```
name_to_rating = {'Georgie Porgie': 87,
'Queen St. Cafe': 82,
'Dumplings R Us': 71,
'Mexican Grill': 85,
'Deep Fried Everything': 52}
```

Now, to find ratings, we can use the restaurant's name.

```
>>>name_to_rating['Queen St. Cafe']
82
```

This dictionary type can be written as: `dict of {str: int}`

Pricing Information

Pricing information also looks a lot like a Python dictionary. We would like to be able to look up a price and get all the restaurants in the price range.

The `keys` (price ranges) look like strings, and the `values` (restaurant names) look like `strings` too; however, there can be zero, one or more than one restaurant associated with each price range. Therefore, each `value` will be a `list of str`.

Again, adding quotes, commas, brackets, braces and a variable name gives us:

$: Queen St. Cafe, Dumplings R Us, Deep Fried Everything
$$: Mexican Grill
$$$: Georgie Porgie
$$$$:

→

```
price_to_names = {'$': ['Queen St. Cafe',
'Dumplings R Us', 'Deep Fried Everything'],
'$$': ['Mexican Grill'],
'$$$': ['Georgie Porgie'],
'$$$$': []}
```

We can use this dictionary to find restaurants in a given price range.

```
>>>price_to_names['$']
['Queen St. Cafe', 'Dumplings R Us', 'Deep Fried Everything']
```

This dictionary type can be written as: `dict of {str: list of str}`

Cuisine Information

A dictionary is also suitable for representing cuisine information.

In this case, the type will be `dict of {str: list of str}`. Each key will be a cuisine and each value will be a `list of str`, since there can be more than one restaurant for each type of cuisine.

Once again, adding quotes, commas, brakets, braces and a variable name gives us:

Canadian: Georgie Porgie
Pub Food: Georgie Porgie, Deep Fried Everything
Malaysian: Queen St. Cafe
Thai: Queen St. Cafe
Chinese: Dumplings R Us
Mexican: Mexican Grill

→

```
cuisine_to_name = {'Canadian': ['Georgie
Porgie'],
'Pub Food': ['Georgie Porgie', Deep Fried
Everything'],
'Malaysian': ['Queen St. Cafe'],
'Thai': ['Queen St. Cafe'],
'Chinese': ['Dumplings R Us'],
'Mexican': ['Mexican Grill']}
```

We can use this dictionary to find restaurants that serve a particular type of cuisine.

```
>>>cuisine_to_name['Chinese']
['Dumplings R Us']
```

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