

INFO300.LabExercise 6--Scoring

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Student Name: *Qirui Zhang* Class: *B* Email: *320220941080@lzu.edu.cn*

Goals: Practice with Elasticsearch Scoring

Notes:

- Use your name to replace "suwei".
 - Run the following command and write the response of each command.
 - Answer the questions.
-

1). Upload the yelp data (business.json) to ES

Note:

- The "location" field should set to "geo_point" data type.

2). Script Score Query

Step 1. Run the Command:

```
GET /zhangqirui_business/_mapping
```

What's the data type of the following field?

Your Answer:

```
"name": text
"location": geo_point
"stars": double
"review_count": long
"city": keyword
"state": keyword
```

Run the following command:

```
GET /suwei_yelp/_search
{
  "query": {
    "script_score": {
      "query": {
        "match": {
```

```

    "name": "Chinese"
  }
},
"script": {
  "source": "doc['stars'].value+doc['review_count'].value/10"
}
}
}
}

```

Your Response:

```

{
  "took": 1,
  "timed_out": false,
  "_shards": {
    "total": 1,
    "successful": 1,
    "skipped": 0,
    "failed": 0
  },
  "hits": {
    "total": {
      "value": 3,
      "relation": "eq"
    },
    "max_score": 29.5,
    "hits": [
      {
        "_index": "zhangqirui_business",
        "_id": "dTymI5MBzrtgRTHV44Ls",
        "_score": 29.5,
        "_source": {
          "business_id": "44YFU284Z3KDEy25QyVoUw",
          "name": "Nee House Chinese Restaurant",
          "address": "13843 N Tatum Blvd, Ste 15",
          "city": "Phoenix",
          "state": "AZ",
          "postal_code": "85032",
          "location": "33.6130201898,-111.9770356779",
          "stars": 3.5,
          "review_count": 269,
          "is_open": 1,
          "attributes": {
            "Caters": "True",
            "GoodForKids": "True",
            "NoiseLevel": "u'average'",
            "RestaurantsPriceRange2": "2",
            "BusinessAcceptsCreditCards": "True",
            "HasTV": "False",
            "OutdoorSeating": "False",
            "RestaurantsTakeOut": "True",

```

```

        "RestaurantsTableService": "True",
        "RestaurantsDelivery": "False",
        "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': True, 'valet': False}",
        "RestaurantsReservations": "True",
        "BikeParking": "True",
        "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': True,
'dinner': True, 'brunch': False, 'breakfast': False}",
        "Ambience": "{ 'romantic': False, 'intimate': False, 'touristy': False,
'hipster': False, 'divey': False, 'classy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
        "WiFi": "u'no'",
        "Alcohol": "'beer_and_wine'",
        "RestaurantsGoodForGroups": "True",
        "RestaurantsAttire": "'casual'"
    },
    "categories": "Chinese, Restaurants",
    "hours": {
        "Monday": "11:0-21:0",
        "Tuesday": "11:0-21:0",
        "Wednesday": "11:0-21:0",
        "Thursday": "11:0-21:0",
        "Friday": "11:0-21:30",
        "Saturday": "11:0-21:30",
        "Sunday": "11:0-21:30"
    }
}
},
{
    "_index": "zhangqirui_business",
    "_id": "4jyMI5MBzrtgRTHV44Ls",
    "_score": 21,
    "_source": {
        "business_id": "MhnihE0alud0ereVInSt8Q",
        "name": "Yummy Yummy Chinese Restaurant",
        "address": "2765 N Scottsdale Rd, Ste 105",
        "city": "Scottsdale",
        "state": "AZ",
        "postal_code": "85257",
        "location": "33.478754,-111.925484",
        "stars": 3,
        "review_count": 188,
        "is_open": 1,
        "attributes": {
            "OutdoorSeating": "False",
            "RestaurantsGoodForGroups": "False",
            "RestaurantsTakeOut": "True",
            "GoodForKids": "True",
            "BikeParking": "True",
            "WiFi": "u'no'",
            "RestaurantsAttire": "u'casual'",
            "RestaurantsDelivery": "True",
            "Alcohol": "u'none'",
            "RestaurantsReservations": "False",

```

```

        "HasTV": "True",
        "BusinessAcceptsCreditCards": "True",
        "RestaurantsPriceRange2": "1",
        "Caters": "True",
        "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': True, 'valet': False}",
        "Ambience": "{ 'romantic': False, 'intimate': False, 'touristy': False,
'hipster': False, 'divey': True, 'classy': False, 'trendy': False, 'upscale':
False, 'casual': False}",
        "NoiseLevel": "'average'"
    },
    "categories": "Chinese, Restaurants",
    "hours": {
        "Monday": "11:0-21:30",
        "Tuesday": "11:0-21:30",
        "Wednesday": "11:0-21:30",
        "Thursday": "11:0-21:30",
        "Friday": "11:0-22:0",
        "Saturday": "11:0-22:0",
        "Sunday": "11:0-21:30"
    }
}
},
{
    "_index": "zhangqirui_business",
    "_id": "KDyMI5MBzrtgRTHV44Ls",
    "_score": 14.5,
    "_source": {
        "business_id": "QXAEGB4oINsVuTFxEYKFQ",
        "name": "Emerald Chinese Restaurant",
        "address": "30 Eglinton Avenue W",
        "city": "Mississauga",
        "state": "ON",
        "postal_code": "L5R 3E7",
        "location": "43.6054989743,-79.652288909",
        "stars": 2.5,
        "review_count": 128,
        "is_open": 1,
        "attributes": {
            "RestaurantsReservations": "True",
            "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': True,
'dinner': True, 'brunch': False, 'breakfast': False}",
            "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': True, 'valet': False}",
            "Caters": "True",
            "NoiseLevel": "u'loud'",
            "RestaurantsTableService": "True",
            "RestaurantsTakeOut": "True",
            "RestaurantsPriceRange2": "2",
            "OutdoorSeating": "False",
            "BikeParking": "False",
            "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': False, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",

```

```

        "HasTV": "False",
        "WiFi": "u'no'",
        "GoodForKids": "True",
        "Alcohol": "u'full_bar'",
        "RestaurantsAttire": "u'casual'",
        "RestaurantsGoodForGroups": "True",
        "RestaurantsDelivery": "False"
    },
    "categories": "Specialty Food, Restaurants, Dim Sum, Imported Food, Food, Chinese, Ethnic Food, Seafood",
    "hours": {
        "Monday": "9:0-0:0",
        "Tuesday": "9:0-0:0",
        "Wednesday": "9:0-0:0",
        "Thursday": "9:0-0:0",
        "Friday": "9:0-1:0",
        "Saturday": "9:0-1:0",
        "Sunday": "9:0-0:0"
    }
}
}
}
]
}
}

```

What's the score of each business?

1. name: "Nee House Chinese Restaurant"
score: 29.5
2. name: "Yummy Yummy Chinese Restaurant"
score: 21
3. name: "Emerald Chinese Restaurant"
score: 14.5

Step 2. Write a command to search "Sushi" in the "name" field and rank the retrieved documents according to the following formula.

- $\text{saturation}(\text{review_count}, 10)$

Your Command

```

GET /zhangqirui_business/_search
{
  "query": {
    "script_score": {
      "query": {
        "match": {
          "name": "Sushi"
        }
      }
    }
  }
}

```

```

    },
    "script": {
      "source": "doc['stars'].value + (doc['review_count'].value / 10)"
    }
  }
}
}

```

Your Response:

```

{
  "took": 5,
  "timed_out": false,
  "_shards": {
    "total": 1,
    "successful": 1,
    "skipped": 0,
    "failed": 0
  },
  "hits": {
    "total": {
      "value": 4,
      "relation": "eq"
    },
    "max_score": 14.5,
    "hits": [
      {
        "_index": "zhangqirui_business",
        "_id": "cDyMI5MBzrtgRTHV44Ls",
        "_score": 14.5,
        "_source": {
          "business_id": "v-scZMU6jhnMv955RSzGJw",
          "name": "No. 1 Sushi Sushi",
          "address": "436 Market St",
          "city": "Pittsburgh",
          "state": "PA",
          "postal_code": "15222",
          "location": "40.441062,-80.002126",
          "stars": 4.5,
          "review_count": 106,
          "is_open": 1,
          "attributes": {
            "OutdoorSeating": "False",
            "HasTV": "True",
            "NoiseLevel": "'average'",
            "BusinessAcceptsCreditCards": "True",
            "RestaurantsTableService": "True",
            "BusinessParking": '{"garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
            "RestaurantsDelivery": "False",
            "WiFi": "'no'",
            "RestaurantsReservations": "False",

```

```

    "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': True,
'dinner': False, 'brunch': False, 'breakfast': False}",
    "RestaurantsTakeOut": "True",
    "Alcohol": "'none'",
    "RestaurantsGoodForGroups": "False",
    "BikeParking": "True",
    "WheelchairAccessible": "True",
    "Caters": "True",
    "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': True}",
    "RestaurantsAttire": "'casual'",
    "RestaurantsPriceRange2": "2",
    "GoodForKids": "True"
  },
  "categories": "Japanese, Sushi Bars, Restaurants",
  "hours": {
    "Monday": "11:0-20:0",
    "Tuesday": "11:0-20:0",
    "Wednesday": "11:0-20:0",
    "Thursday": "11:0-20:0",
    "Friday": "11:0-20:0"
  }
},
{
  "_index": "zhangqirui_business",
  "_id": "oDyMI5MBzrtgRTHV44Ls",
  "_score": 6.5,
  "_source": {
    "business_id": "aql8K6zVoJDGRJ3P-IgtpQ",
    "name": "Ume Fashion Sushi",
    "address": "1732 Kingston Road",
    "city": "Toronto",
    "state": "ON",
    "postal_code": "M1N 1S8",
    "location": "43.6927912,-79.2626299",
    "stars": 4.5,
    "review_count": 25,
    "is_open": 1,
    "attributes": {
      "OutdoorSeating": "False",
      "RestaurantsGoodForGroups": "True",
      "BikeParking": "True",
      "RestaurantsReservations": "True",
      "GoodForKids": "True",
      "RestaurantsAttire": "'casual'",
      "Alcohol": "'beer_and_wine'",
      "RestaurantsTakeOut": "True",
      "NoiseLevel": "'quiet'",
      "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': False, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': False}",
      "RestaurantsDelivery": "True",

```

```

        "RestaurantsPriceRange2": "2",
        "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
        "HasTV": "False",
        "WiFi": "u'no'"
    },
    "categories": "Sushi Bars, Restaurants",
    "hours": {
        "Monday": "11:0-22:0",
        "Tuesday": "11:0-22:0",
        "Wednesday": "11:0-22:0",
        "Thursday": "11:0-22:0",
        "Friday": "11:0-22:0",
        "Saturday": "14:0-22:0",
        "Sunday": "14:0-22:0"
    }
}
},
{
    "_index": "zhangqirui_business",
    "_id": "4DyMI5MBzrtgRTHV44Ls",
    "_score": 5,
    "_source": {
        "business_id": "SJBzyJDCR_f6dx5tpYAABA",
        "name": "Kibo Sushi House",
        "address": "2945 Lake Shore Boulevard",
        "city": "Toronto",
        "state": "ON",
        "postal_code": "M8V 1J5",
        "location": "43.6005226,-79.5055159",
        "stars": 4,
        "review_count": 15,
        "is_open": 1,
        "attributes": {
            "RestaurantsDelivery": "True",
            "HasTV": "True",
            "WiFi": "'no'",
            "BikeParking": "False",
            "Alcohol": "'none'",
            "NoiseLevel": "'average'",
            "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,
'dinner': False, 'brunch': False, 'breakfast': False}",
            "RestaurantsReservations": "True",
            "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
            "OutdoorSeating": "False",
            "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'intimate': False, 'trendy': False, 'upscale': False, 'classy': False, 'casual':
False}",
            "RestaurantsTableService": "True",
            "RestaurantsTakeOut": "True",
            "RestaurantsPriceRange2": "2"
        },
        "categories": "Sushi Bars, Japanese, Restaurants",

```



```

        "hours": {
            "Monday": "16:0-22:0",
            "Tuesday": "11:30-22:0",
            "Wednesday": "11:30-22:0",
            "Thursday": "11:30-22:0",
            "Friday": "11:30-22:0",
            "Saturday": "11:30-22:0",
            "Sunday": "16:0-22:0"
        }
    },
    {
        "_index": "zhangqirui_business",
        "_id": "3DyMI5MBzrtgRTHV44Ls",
        "_score": 3,
        "_source": {
            "business_id": "Rs8Wi40EjeOX7LVlzsXDOA",
            "name": "Sushi Mocoquito",
            "address": "3415 West Glendale Ave, Bldg 25A",
            "city": "Phoenix",
            "state": "AZ",
            "postal_code": "85051",
            "location": "33.5371638,-112.1329258",
            "stars": 3,
            "review_count": 9,
            "is_open": 1,
            "attributes": {
                "RestaurantsGoodForGroups": "True",
                "BusinessAcceptsCreditCards": "True",
                "GoodForKids": "True",
                "RestaurantsReservations": "True",
                "RestaurantsTakeOut": "True",
                "RestaurantsPriceRange2": "2"
            },
            "categories": "Restaurants, Mexican, Sushi Bars",
            "hours": {
                "Monday": "11:0-22:0",
                "Tuesday": "11:0-22:0",
                "Wednesday": "11:0-22:0",
                "Thursday": "11:0-22:0",
                "Friday": "11:0-23:0",
                "Saturday": "11:0-23:0",
                "Sunday": "11:0-22:0"
            }
        }
    }
]
}

```

Calculate the score by yourself (You need to give the details of your calculation). Are they same with the result of ES?

Your Answer:

1. $\text{score} = \text{stars} + \text{review_count} / 10 = 15.1$
2. $\text{score} = \text{stars} + \text{review_count} / 10 = 7$
3. $\text{score} = \text{stars} + \text{review_count} / 10 = 5.5$

Not the same with the result

Re-write a command to rank the retrieved documents according to the following formula.

- $\text{sigmoid}(\text{review_count}, 2, 1) + \text{sigmoid}(\text{stars}, 2, 3)$

Your Command:

```
GET /zhangqirui_business/_search
{
  "query": {
    "script_score": {
      "query": {
        "match": {
          "name": "Sushi"
        }
      },
      "script": {
        "source": """
          // Define the sigmoid function
          double sigmoid(double x, double a, double b) {
            return 1 / (1 + Math.exp(-a * (x - b)));
          }
          // Calculate score using the provided formula
          return sigmoid(doc['review_count'].value, 2, 1) +
sigmoid(doc['stars'].value, 2, 3);
        """
      }
    }
  }
}
```

Your Response:

```
{
  "took": 12,
  "timed_out": false,
  "_shards": {
    "total": 1,
    "successful": 1,
    "skipped": 0,
    "failed": 0
  }
}
```

```

},
"hits": {
  "total": {
    "value": 4,
    "relation": "eq"
  },
  "max_score": 1.9525741,
  "hits": [
    {
      "_index": "zhangqirui_business",
      "_id": "cDyMI5MBzrtgRTHV44Ls",
      "_score": 1.9525741,
      "_source": {
        "business_id": "v-scZMU6jhnMv955RSzGJw",
        "name": "No. 1 Sushi Sushi",
        "address": "436 Market St",
        "city": "Pittsburgh",
        "state": "PA",
        "postal_code": "15222",
        "location": "40.441062,-80.002126",
        "stars": 4.5,
        "review_count": 106,
        "is_open": 1,
        "attributes": {
          "OutdoorSeating": "False",
          "HasTV": "True",
          "NoiseLevel": "'average'",
          "BusinessAcceptsCreditCards": "True",
          "RestaurantsTableService": "True",
          "BusinessParking": '{"garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
          "RestaurantsDelivery": "False",
          "WiFi": "'no'",
          "RestaurantsReservations": "False",
          "GoodForMeal": '{"dessert': False, 'latenight': False, 'lunch': True,
'dinner': False, 'brunch': False, 'breakfast': False}",
          "RestaurantsTakeOut": "True",
          "Alcohol": "'none'",
          "RestaurantsGoodForGroups": "False",
          "BikeParking": "True",
          "WheelchairAccessible": "True",
          "Caters": "True",
          "Ambience": '{"touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': True}",
          "RestaurantsAttire": "'casual'",
          "RestaurantsPriceRange2": "2",
          "GoodForKids": "True"
        },
        "categories": "Japanese, Sushi Bars, Restaurants",
        "hours": {
          "Monday": "11:0-20:0",
          "Tuesday": "11:0-20:0",
          "Wednesday": "11:0-20:0",

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        "Thursday": "11:0-20:0",
        "Friday": "11:0-20:0"
    }
}
},
{
    "_index": "zhangqirui_business",
    "_id": "oDyMI5MBzrtgRTHV44Ls",
    "_score": 1.9525741,
    "_source": {
        "business_id": "aql8K6zVoJDGRJ3P-IgtpQ",
        "name": "Ume Fashion Sushi",
        "address": "1732 Kingston Road",
        "city": "Toronto",
        "state": "ON",
        "postal_code": "M1N 1S8",
        "location": "43.6927912,-79.2626299",
        "stars": 4.5,
        "review_count": 25,
        "is_open": 1,
        "attributes": {
            "OutdoorSeating": "False",
            "RestaurantsGoodForGroups": "True",
            "BikeParking": "True",
            "RestaurantsReservations": "True",
            "GoodForKids": "True",
            "RestaurantsAttire": "'casual'",
            "Alcohol": "'beer_and_wine'",
            "RestaurantsTakeOut": "True",
            "NoiseLevel": "'quiet'",
            "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': False, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': False}",
            "RestaurantsDelivery": "True",
            "RestaurantsPriceRange2": "2",
            "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
            "HasTV": "False",
            "WiFi": "u'no'"
        },
        "categories": "Sushi Bars, Restaurants",
        "hours": {
            "Monday": "11:0-22:0",
            "Tuesday": "11:0-22:0",
            "Wednesday": "11:0-22:0",
            "Thursday": "11:0-22:0",
            "Friday": "11:0-22:0",
            "Saturday": "14:0-22:0",
            "Sunday": "14:0-22:0"
        }
    }
}
},
{
    "_index": "zhangqirui_business",

```

```

    "_id": "4DyMI5MBzrtgRTHV44Ls",
    "_score": 1.880797,
    "_source": {
      "business_id": "SJBzyJDCR_f6dx5tpYAABA",
      "name": "Kibo Sushi House",
      "address": "2945 Lake Shore Boulevard",
      "city": "Toronto",
      "state": "ON",
      "postal_code": "M8V 1J5",
      "location": "43.6005226,-79.5055159",
      "stars": 4,
      "review_count": 15,
      "is_open": 1,
      "attributes": {
        "RestaurantsDelivery": "True",
        "HasTV": "True",
        "WiFi": "'no'",
        "BikeParking": "False",
        "Alcohol": "'none'",
        "NoiseLevel": "'average'",
        "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,
'dinner': False, 'brunch': False, 'breakfast': False}",
        "RestaurantsReservations": "True",
        "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
        "OutdoorSeating": "False",
        "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'intimate': False, 'trendy': False, 'upscale': False, 'classy': False, 'casual':
False}",
        "RestaurantsTableService": "True",
        "RestaurantsTakeOut": "True",
        "RestaurantsPriceRange2": "2"
      },
      "categories": "Sushi Bars, Japanese, Restaurants",
      "hours": {
        "Monday": "16:0-22:0",
        "Tuesday": "11:30-22:0",
        "Wednesday": "11:30-22:0",
        "Thursday": "11:30-22:0",
        "Friday": "11:30-22:0",
        "Saturday": "11:30-22:0",
        "Sunday": "16:0-22:0"
      }
    }
  },
  {
    "_index": "zhangqirui_business",
    "_id": "3DyMI5MBzrtgRTHV44Ls",
    "_score": 1.4999999,
    "_source": {
      "business_id": "Rs8Wi40EjeOX7LVlzsXDOA",
      "name": "Sushi Mocomito",
      "address": "3415 West Glendale Ave, Bldg 25A",
      "city": "Phoenix",

```

```

    "state": "AZ",
    "postal_code": "85051",
    "location": "33.5371638,-112.1329258",
    "stars": 3,
    "review_count": 9,
    "is_open": 1,
    "attributes": {
      "RestaurantsGoodForGroups": "True",
      "BusinessAcceptsCreditCards": "True",
      "GoodForKids": "True",
      "RestaurantsReservations": "True",
      "RestaurantsTakeOut": "True",
      "RestaurantsPriceRange2": "2"
    },
    "categories": "Restaurants, Mexican, Sushi Bars",
    "hours": {
      "Monday": "11:0-22:0",
      "Tuesday": "11:0-22:0",
      "Wednesday": "11:0-22:0",
      "Thursday": "11:0-22:0",
      "Friday": "11:0-23:0",
      "Saturday": "11:0-23:0",
      "Sunday": "11:0-22:0"
    }
  }
}
]
}
}

```

Step 3. Write a command to search "Chinese" in the "name" field and rank the retrieved documents according to the following formula.

- randomScore(12)

Your Command:

```

GET /zhangqirui_business/_search
{
  "query": {
    "function_score": {
      "query": {
        "match": {
          "name": "Chinese"
        }
      },
      "functions": [
        {
          "random_score": {
            "seed": 12
          }
        }
      ]
    }
  }
}

```

```

    }
  ],
  "boost_mode": "sum"
}
}
}

```

Your Response:

```

#! As of version 7.0 Elasticsearch will require that a [field] parameter is
provided when a [seed] is set
#! Loading the fielddata on the _id field is deprecated and will be removed in
future versions. If you require sorting or aggregating on this field you should
also include the id in the body of your documents, and map this field as a keyword
field that has [doc_values] enabled
{
  "took": 2,
  "timed_out": false,
  "_shards": {
    "total": 1,
    "successful": 1,
    "skipped": 0,
    "failed": 0
  },
  "hits": {
    "total": {
      "value": 3,
      "relation": "eq"
    },
    "max_score": 4.37903,
    "hits": [
      {
        "_index": "zhangqirui_business",
        "_id": "4jyMI5MBzrtgRTHV44Ls",
        "_score": 4.37903,
        "_source": {
          "business_id": "MhniHE0alud0ereVInSt8Q",
          "name": "Yummy Yummy Chinese Restaurant",
          "address": "2765 N Scottsdale Rd, Ste 105",
          "city": "Scottsdale",
          "state": "AZ",
          "postal_code": "85257",
          "location": "33.478754,-111.925484",
          "stars": 3,
          "review_count": 188,
          "is_open": 1,
          "attributes": {
            "OutdoorSeating": "False",
            "RestaurantsGoodForGroups": "False",
            "RestaurantsTakeOut": "True",
            "GoodForKids": "True",
            "BikeParking": "True",

```

```

        "WiFi": "u'no'",
        "RestaurantsAttire": "u'casual'",
        "RestaurantsDelivery": "True",
        "Alcohol": "u'none'",
        "RestaurantsReservations": "False",
        "HasTV": "True",
        "BusinessAcceptsCreditCards": "True",
        "RestaurantsPriceRange2": "1",
        "Caters": "True",
        "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': True, 'valet': False}",
        "Ambience": "{ 'romantic': False, 'intimate': False, 'touristy': False,
'hipster': False, 'divey': True, 'classy': False, 'trendy': False, 'upscale':
False, 'casual': False}",
        "NoiseLevel": "'average'"
    },
    "categories": "Chinese, Restaurants",
    "hours": {
        "Monday": "11:0-21:30",
        "Tuesday": "11:0-21:30",
        "Wednesday": "11:0-21:30",
        "Thursday": "11:0-21:30",
        "Friday": "11:0-22:0",
        "Saturday": "11:0-22:0",
        "Sunday": "11:0-21:30"
    }
}
},
{
    "_index": "zhangqirui_business",
    "_id": "KDyMI5MBzrtgRTHV44Ls",
    "_score": 4.198821,
    "_source": {
        "business_id": "QXAEGB4oINsVuTFxEYKFQ",
        "name": "Emerald Chinese Restaurant",
        "address": "30 Eglinton Avenue W",
        "city": "Mississauga",
        "state": "ON",
        "postal_code": "L5R 3E7",
        "location": "43.6054989743,-79.652288909",
        "stars": 2.5,
        "review_count": 128,
        "is_open": 1,
        "attributes": {
            "RestaurantsReservations": "True",
            "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': True,
'dinner': True, 'brunch': False, 'breakfast': False}",
            "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': True, 'valet': False}",
            "Caters": "True",
            "NoiseLevel": "u'loud'",
            "RestaurantsTableService": "True",
            "RestaurantsTakeOut": "True",
            "RestaurantsPriceRange2": "2",

```



```

        "OutdoorSeating": "False",
        "BikeParking": "False",
        "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': False, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
        "HasTV": "False",
        "WiFi": "u'no'",
        "GoodForKids": "True",
        "Alcohol": "u'full_bar'",
        "RestaurantsAttire": "u'casual'",
        "RestaurantsGoodForGroups": "True",
        "RestaurantsDelivery": "False"
    },
    "categories": "Specialty Food, Restaurants, Dim Sum, Imported Food,
Food, Chinese, Ethnic Food, Seafood",
    "hours": {
        "Monday": "9:0-0:0",
        "Tuesday": "9:0-0:0",
        "Wednesday": "9:0-0:0",
        "Thursday": "9:0-0:0",
        "Friday": "9:0-1:0",
        "Saturday": "9:0-1:0",
        "Sunday": "9:0-0:0"
    }
}
},
{
    "_index": "zhangqirui_business",
    "_id": "dTymI5MBzrtgRTHV44Ls",
    "_score": 3.6182508,
    "_source": {
        "business_id": "44YFU284Z3KDEy25QyVoUw",
        "name": "Nee House Chinese Restaurant",
        "address": "13843 N Tatum Blvd, Ste 15",
        "city": "Phoenix",
        "state": "AZ",
        "postal_code": "85032",
        "location": "33.6130201898, -111.9770356779",
        "stars": 3.5,
        "review_count": 269,
        "is_open": 1,
        "attributes": {
            "Caters": "True",
            "GoodForKids": "True",
            "NoiseLevel": "u'average'",
            "RestaurantsPriceRange2": "2",
            "BusinessAcceptsCreditCards": "True",
            "HasTV": "False",
            "OutdoorSeating": "False",
            "RestaurantsTakeOut": "True",
            "RestaurantsTableService": "True",
            "RestaurantsDelivery": "False",
            "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': True, 'valet': False}",

```

```

    "RestaurantsReservations": "True",
    "BikeParking": "True",
    "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': True,
'dinner': True, 'brunch': False, 'breakfast': False}",
    "Ambience": "{ 'romantic': False, 'intimate': False, 'touristy': False,
'hipster': False, 'divey': False, 'classy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
    "WiFi": "u'no'",
    "Alcohol": "'beer_and_wine'",
    "RestaurantsGoodForGroups": "True",
    "RestaurantsAttire": "'casual'"
  },
  "categories": "Chinese, Restaurants",
  "hours": {
    "Monday": "11:0-21:0",
    "Tuesday": "11:0-21:0",
    "Wednesday": "11:0-21:0",
    "Thursday": "11:0-21:0",
    "Friday": "11:0-21:30",
    "Saturday": "11:0-21:30",
    "Sunday": "11:0-21:30"
  }
}
}
}
]
}
}
}

```

Step 4. Write a command to search "Pittsburgh" in the "city" field and rank the retrieved documents according to the following formula.

- `decayGeoExp(params.origin, params.scale, params.offset, params.decay, location)`

Note: You can use the following parameters and values.

```

"origin": "40.4812, -80.1234",
"scale": "40km",
"offset": "0km",
"decay" : 0.2

```

Your Command

```

GET /zhangqirui_business/_search
{
  "query": {
    "script_score": {
      "query": {
        "match": {
          "city": "Pittsburgh"

```

```

    }
  },
  "script": {
    "source": "decayGeoExp(params.origin, params.scale, params.offset,
params.decay, doc['location'].value)",
    "params": {
      "origin": "40.4812,-80.1234",
      "scale": "40km",
      "offset": "0km",
      "decay": 0.2
    }
  }
}
}
}
}
}

```

Your Response:

```

{
  "took": 1,
  "timed_out": false,
  "_shards": {
    "total": 1,
    "successful": 1,
    "skipped": 0,
    "failed": 0
  },
  "hits": {
    "total": {
      "value": 5,
      "relation": "eq"
    },
    "max_score": 0.6553727,
    "hits": [
      {
        "_index": "zhangqirui_business",
        "_id": "PjyMI5MBzrtgRTHV44Ls",
        "_score": 0.6553727,
        "_source": {
          "business_id": "1RHY4K3BD22FK7Cfftn8Mg",
          "name": "Marathon Diner",
          "address": "Center Core - Food Court, Fl 3, Pittsburgh International
Airport",
          "city": "Pittsburgh",
          "state": "PA",
          "postal_code": "15231",
          "location": "40.4961769456,-80.2460112364",
          "stars": 4,
          "review_count": 35,
          "is_open": 1,
          "attributes": {
            "RestaurantsTakeOut": "True",

```

```

    "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
    "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': False}",
    "RestaurantsDelivery": "False",
    "RestaurantsReservations": "False",
    "BusinessAcceptsCreditCards": "True",
    "RestaurantsPriceRange2": "1",
    "RestaurantsGoodForGroups": "True",
    "DriveThru": "False",
    "GoodForKids": "True",
    "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,
'dinner': False, 'brunch': False, 'breakfast': False}",
    "HasTV": "False",
    "OutdoorSeating": "False"
  },
  "categories": "Sandwiches, Salad, Restaurants, Burgers, Comfort Food",
  "hours": null
}
},
{
  "_index": "zhangqirui_business",
  "_id": "cDyMI5MBzrtgRTHV44Ls",
  "_score": 0.6375066,
  "_source": {
    "business_id": "v-scZMU6jhnMv955RSzGJw",
    "name": "No. 1 Sushi Sushi",
    "address": "436 Market St",
    "city": "Pittsburgh",
    "state": "PA",
    "postal_code": "15222",
    "location": "40.441062,-80.002126",
    "stars": 4.5,
    "review_count": 106,
    "is_open": 1,
    "attributes": {
      "OutdoorSeating": "False",
      "HasTV": "True",
      "NoiseLevel": "'average'",
      "BusinessAcceptsCreditCards": "True",
      "RestaurantsTableService": "True",
      "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
      "RestaurantsDelivery": "False",
      "WiFi": "'no'",
      "RestaurantsReservations": "False",
      "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': True,
'dinner': False, 'brunch': False, 'breakfast': False}",
      "RestaurantsTakeOut": "True",
      "Alcohol": "'none'",
      "RestaurantsGoodForGroups": "False",
      "BikeParking": "True",
      "WheelchairAccessible": "True",

```

```

        "Caters": "True",
        "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': True}",
        "RestaurantsAttire": "'casual'",
        "RestaurantsPriceRange2": "2",
        "GoodForKids": "True"
    },
    "categories": "Japanese, Sushi Bars, Restaurants",
    "hours": {
        "Monday": "11:0-20:0",
        "Tuesday": "11:0-20:0",
        "Wednesday": "11:0-20:0",
        "Thursday": "11:0-20:0",
        "Friday": "11:0-20:0"
    }
},
{
    "_index": "zhangqirui_business",
    "_id": "2DyMI5MBzrtgRTHV44Ls",
    "_score": 0.6281007,
    "_source": {
        "business_id": "5WMIvoMx3l1vn1uJ3HZB6Q",
        "name": "Subway",
        "address": "411 7th Ave",
        "city": "Pittsburgh",
        "state": "PA",
        "postal_code": "15219",
        "location": "40.4428627, -79.996412",
        "stars": 3,
        "review_count": 3,
        "is_open": 1,
        "attributes": {
            "RestaurantsTakeOut": "True",
            "BusinessAcceptsCreditCards": "True",
            "Alcohol": "u'none'",
            "RestaurantsPriceRange2": "1",
            "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
            "RestaurantsReservations": "False",
            "GoodForKids": "True",
            "RestaurantsDelivery": "False"
        },
        "categories": "Fast Food, Sandwiches, Restaurants",
        "hours": null
    }
},
{
    "_index": "zhangqirui_business",
    "_id": "aTyMI5MBzrtgRTHV44Ls",
    "_score": 0.55073345,
    "_source": {
        "business_id": "dQj5DLZjeDK3KFysh1SYOQ",

```

```

    "name": "Apteka",
    "address": "4606 Penn Ave",
    "city": "Pittsburgh",
    "state": "PA",
    "postal_code": "15224",
    "location": "40.4656937,-79.9493238",
    "stars": 4.5,
    "review_count": 242,
    "is_open": 1,
    "attributes": {
      "CoatCheck": "False",
      "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
      "HappyHour": "True",
      "Smoking": "u'no'",
      "WiFi": "u'free'",
      "RestaurantsTableService": "False",
      "RestaurantsDelivery": "False",
      "Alcohol": "u'full_bar'",
      "RestaurantsPriceRange2": "2",
      "HasTV": "False",
      "Caters": "True",
      "Music": "{ 'dj': False, 'background_music': True, 'jukebox': False,
'live': False, 'video': False, 'karaoke': False}",
      "RestaurantsTakeOut": "True",
      "BestNights": "{ 'monday': False, 'tuesday': False, 'friday': True,
'wednesday': True, 'thursday': True, 'sunday': False, 'saturday': False}",
      "WheelchairAccessible": "True",
      "BusinessAcceptsCreditCards": "True",
      "GoodForKids": "False",
      "BusinessAcceptsBitcoin": "False",
      "GoodForDancing": "False",
      "BikeParking": "True",
      "RestaurantsAttire": "u'casual'",
      "RestaurantsGoodForGroups": "True",
      "NoiseLevel": "u'average'",
      "RestaurantsReservations": "False",
      "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': True, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
      "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,
'dinner': True, 'brunch': False, 'breakfast': False}",
      "OutdoorSeating": "False"
    },
    "categories": "Nightlife, Bars, Polish, Modern European, Restaurants,
Vegan",
    "hours": {
      "Wednesday": "17:0-0:0",
      "Thursday": "17:0-0:0",
      "Friday": "17:0-0:0",
      "Saturday": "17:0-0:0",
      "Sunday": "17:0-0:0"
    }
  }
}

```

```

    },
    {
      "_index": "zhangqirui_business",
      "_id": "ujyMI5MBzrtgRTHV44Ls",
      "_score": 0.50493497,
      "_source": {
        "business_id": "t-6tdxRaz7s9a0sf94Tguw",
        "name": "Impressionz",
        "address": "6008 Broad St",
        "city": "Pittsburgh",
        "state": "PA",
        "postal_code": "15206",
        "location": "40.4623454064,-79.9241651595",
        "stars": 4.5,
        "review_count": 29,
        "is_open": 0,
        "attributes": {
          "RestaurantsDelivery": "False",
          "RestaurantsGoodForGroups": "True",
          "HasTV": "False",
          "RestaurantsReservations": "False",
          "OutdoorSeating": "False",
          "Caters": "False",
          "BikeParking": "True",
          "NoiseLevel": "u'average'",
          "GoodForKids": "True",
          "BusinessAcceptsCreditCards": "False",
          "RestaurantsPriceRange2": "2",
          "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
          "RestaurantsAttire": "u'casual'",
          "WiFi": "u'no'",
          "RestaurantsTakeOut": "True",
          "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': False, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
          "Alcohol": "u'none'"
        },
        "categories": "Restaurants, Caribbean",
        "hours": {
          "Monday": "11:0-20:0",
          "Tuesday": "11:0-20:0",
          "Wednesday": "11:0-20:0",
          "Thursday": "11:0-20:0",
          "Friday": "11:0-21:0",
          "Saturday": "11:0-21:0"
        }
      }
    }
  ]
}

```

Write down the "name", "location" and score of each retrieved document.

1. Name: Marathon Diner, Location: 40.4961769456,-80.2460112364, Score: 0.6553727
2. Name: No. 1 Sushi Sushi, Location: 40.441062,-80.002126, Score: 0.6375066
3. Name: Subway, Location: 40.4428627,-79.996412, Score: 0.6281007
4. Name: Apteka, Location: 40.4656937,-79.9493238, Score: 0.55073345
5. Name: Impressionz, Location: 40.4623454064,-79.9241651595, Score: 0.50493497

3). Re-upload the yelp file to ES

Note: The "stars" and "review_count" fields should set to "rank_feature" data type. Use another index name such as "suwei_yelp_rank".

4). Rank Feature Query

Note: You should use the new index "suwei_yelp_rank" for the following steps.

Step 1. Run the Command:

```
GET /zhangqirui_business_rank/_mapping
```

Your Response:

```
{
  "zhangqirui_business_rank": {
    "mappings": {
      "_meta": {
        "created_by": "file-data-visualizer"
      },
      "properties": {
        "address": {
          "type": "text"
        },
        "attributes": {
          "properties": {
            "AcceptsInsurance": {
              "type": "text",
              "fields": {
                "keyword": {
                  "type": "keyword",
                  "ignore_above": 256
                }
              }
            },
            "AgesAllowed": {
              "type": "text",
              "fields": {
```



```
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      },
    },
    "Alcohol": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "Ambience": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "BYOB": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "BYOBCorkage": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "BestNights": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "BikeParking": {
      "type": "text",
      "fields": {
```

```
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      },
    },
    "BusinessAcceptsBitcoin": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "BusinessAcceptsCreditCards": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "BusinessParking": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "ByAppointmentOnly": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "Caters": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "CoatCheck": {
      "type": "text",
      "fields": {
```

```
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      },
    },
    "Corkage": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "DogsAllowed": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "DriveThru": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "GoodForDancing": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "GoodForKids": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "GoodForMeal": {
      "type": "text",
      "fields": {
```

```
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      },
    },
    "HairSpecializesIn": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    },
    "HappyHour": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    },
    "HasTV": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    },
    "Music": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    },
    "NoiseLevel": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    },
    "OutdoorSeating": {
      "type": "text",
      "fields": {
```

```
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      },
    },
    "RestaurantsAttire": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "RestaurantsDelivery": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "RestaurantsGoodForGroups": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "RestaurantsPriceRange2": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "RestaurantsReservations": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    },
    "RestaurantsTableService": {
      "type": "text",
      "fields": {
```

```
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      },
      "RestaurantsTakeOut": {
        "type": "text",
        "fields": {
          "keyword": {
            "type": "keyword",
            "ignore_above": 256
          }
        }
      },
      "Smoking": {
        "type": "text",
        "fields": {
          "keyword": {
            "type": "keyword",
            "ignore_above": 256
          }
        }
      },
      "WheelchairAccessible": {
        "type": "text",
        "fields": {
          "keyword": {
            "type": "keyword",
            "ignore_above": 256
          }
        }
      },
      "WiFi": {
        "type": "text",
        "fields": {
          "keyword": {
            "type": "keyword",
            "ignore_above": 256
          }
        }
      }
    },
    "business_id": {
      "type": "keyword"
    },
    "categories": {
      "type": "text"
    },
    "city": {
      "type": "keyword"
    },
    "hours": {
```

```
"properties": {
  "Friday": {
    "type": "text",
    "fields": {
      "keyword": {
        "type": "keyword",
        "ignore_above": 256
      }
    }
  },
  "Monday": {
    "type": "text",
    "fields": {
      "keyword": {
        "type": "keyword",
        "ignore_above": 256
      }
    }
  },
  "Saturday": {
    "type": "text",
    "fields": {
      "keyword": {
        "type": "keyword",
        "ignore_above": 256
      }
    }
  },
  "Sunday": {
    "type": "text",
    "fields": {
      "keyword": {
        "type": "keyword",
        "ignore_above": 256
      }
    }
  },
  "Thursday": {
    "type": "text",
    "fields": {
      "keyword": {
        "type": "keyword",
        "ignore_above": 256
      }
    }
  },
  "Tuesday": {
    "type": "text",
    "fields": {
      "keyword": {
        "type": "keyword",
        "ignore_above": 256
      }
    }
  }
}
```

```
    },
    "Wednesday": {
      "type": "text",
      "fields": {
        "keyword": {
          "type": "keyword",
          "ignore_above": 256
        }
      }
    }
  }
},
"is_open": {
  "type": "long"
},
"location": {
  "type": "keyword"
},
"name": {
  "type": "text"
},
"postal_code": {
  "type": "keyword"
},
"review_count": {
  "type": "rank_feature"
},
"stars": {
  "type": "rank_feature"
},
"state": {
  "type": "keyword"
}
}
}
}
```

Run the Command:

```
GET /zhangqirui_business_rank/_search
{
  "query":{
    "bool":{
      "must":{
        "match":{"city":"Pittsburgh"}
      },
      "should":{
        "rank_feature":{
          "field":"review_count"
        }
      }
    }
  }
}
```



```

    }
  }
}

```

Your Response:

```

{
  "took": 2,
  "timed_out": false,
  "_shards": {
    "total": 1,
    "successful": 1,
    "skipped": 0,
    "failed": 0
  },
  "hits": {
    "total": {
      "value": 5,
      "relation": "eq"
    },
    "max_score": 4.5423565,
    "hits": [
      {
        "_index": "zhangqirui_business_rank",
        "_id": "MTz2JZMBzrtgRTHV1-fK",
        "_score": 4.5423565,
        "_source": {
          "business_id": "dQj5DLZjeDK3KFysh1SYOQ",
          "name": "Apteka",
          "address": "4606 Penn Ave",
          "city": "Pittsburgh",
          "state": "PA",
          "postal_code": "15224",
          "location": "40.4656937,-79.9493238",
          "stars": 4.5,
          "review_count": 242,
          "is_open": 1,
          "attributes": {
            "CoatCheck": "False",
            "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
            "HappyHour": "True",
            "Smoking": "u'no'",
            "WiFi": "u'free'",
            "RestaurantsTableService": "False",
            "RestaurantsDelivery": "False",
            "Alcohol": "u'full_bar'",
            "RestaurantsPriceRange2": "2",
            "HasTV": "False",
            "Caters": "True",
            "Music": "{ 'dj': False, 'background_music': True, 'jukebox': False,
'live': False, 'video': False, 'karaoke': False}",

```

```

    "RestaurantsTakeOut": "True",
    "BestNights": "{ 'monday': False, 'tuesday': False, 'friday': True,
'wednesday': True, 'thursday': True, 'sunday': False, 'saturday': False}",
    "WheelchairAccessible": "True",
    "BusinessAcceptsCreditCards": "True",
    "GoodForKids": "False",
    "BusinessAcceptsBitcoin": "False",
    "GoodForDancing": "False",
    "BikeParking": "True",
    "RestaurantsAttire": "u'casual'",
    "RestaurantsGoodForGroups": "True",
    "NoiseLevel": "u'average'",
    "RestaurantsReservations": "False",
    "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': True, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
    "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,
'dinner': True, 'brunch': False, 'breakfast': False}",
    "OutdoorSeating": "False"
  },
  "categories": "Nightlife, Bars, Polish, Modern European, Restaurants,
Vegan",
  "hours": {
    "Wednesday": "17:0-0:0",
    "Thursday": "17:0-0:0",
    "Friday": "17:0-0:0",
    "Saturday": "17:0-0:0",
    "Sunday": "17:0-0:0"
  }
},
{
  "_index": "zhangqirui_business_rank",
  "_id": "ODz2JZMBzrtgRTHV1-fK",
  "_score": 4.483858,
  "_source": {
    "business_id": "v-scZMU6jhnMV955RSzGJw",
    "name": "No. 1 Sushi Sushi",
    "address": "436 Market St",
    "city": "Pittsburgh",
    "state": "PA",
    "postal_code": "15222",
    "location": "40.441062,-80.002126",
    "stars": 4.5,
    "review_count": 106,
    "is_open": 1,
    "attributes": {
      "OutdoorSeating": "False",
      "HasTV": "True",
      "NoiseLevel": "'average'",
      "BusinessAcceptsCreditCards": "True",
      "RestaurantsTableService": "True",
      "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",

```

```

    "RestaurantsDelivery": "False",
    "WiFi": "'no'",
    "RestaurantsReservations": "False",
    "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': True,
'dinner': False, 'brunch': False, 'breakfast': False}",
    "RestaurantsTakeOut": "True",
    "Alcohol": "'none'",
    "RestaurantsGoodForGroups": "False",
    "BikeParking": "True",
    "WheelchairAccessible": "True",
    "Caters": "True",
    "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': True}",
    "RestaurantsAttire": "'casual'",
    "RestaurantsPriceRange2": "2",
    "GoodForKids": "True"
  },
  "categories": "Japanese, Sushi Bars, Restaurants",
  "hours": {
    "Monday": "11:0-20:0",
    "Tuesday": "11:0-20:0",
    "Wednesday": "11:0-20:0",
    "Thursday": "11:0-20:0",
    "Friday": "11:0-20:0"
  }
},
{
  "_index": "zhangqirui_business_rank",
  "_id": "Bjz2JZMBzrtgRTHV1-fJ",
  "_score": 4.321788,
  "_source": {
    "business_id": "1RHY4K3BD22FK7Cfftn8Mg",
    "name": "Marathon Diner",
    "address": "Center Core - Food Court, Fl 3, Pittsburgh International
Airport",
    "city": "Pittsburgh",
    "state": "PA",
    "postal_code": "15231",
    "location": "40.4961769456,-80.2460112364",
    "stars": 4,
    "review_count": 35,
    "is_open": 1,
    "attributes": {
      "RestaurantsTakeOut": "True",
      "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
      "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': False}",
      "RestaurantsDelivery": "False",
      "RestaurantsReservations": "False",
      "BusinessAcceptsCreditCards": "True",

```

```

        "RestaurantsPriceRange2": "1",
        "RestaurantsGoodForGroups": "True",
        "DriveThru": "False",
        "GoodForKids": "True",
        "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,
'dinner': False, 'brunch': False, 'breakfast': False}",
        "HasTV": "False",
        "OutdoorSeating": "False"
    },
    "categories": "Sandwiches, Salad, Restaurants, Burgers, Comfort Food",
    "hours": null
}
},
{
    "_index": "zhangqirui_business_rank",
    "_id": "gjz2JZMBzrtgRTHV1-fK",
    "_score": 4.2830195,
    "_source": {
        "business_id": "t-6tdxRaz7s9a0sf94Tguw",
        "name": "Impressionz",
        "address": "6008 Broad St",
        "city": "Pittsburgh",
        "state": "PA",
        "postal_code": "15206",
        "location": "40.4623454064,-79.9241651595",
        "stars": 4.5,
        "review_count": 29,
        "is_open": 0,
        "attributes": {
            "RestaurantsDelivery": "False",
            "RestaurantsGoodForGroups": "True",
            "HasTV": "False",
            "RestaurantsReservations": "False",
            "OutdoorSeating": "False",
            "Caters": "False",
            "BikeParking": "True",
            "NoiseLevel": "u'average'",
            "GoodForKids": "True",
            "BusinessAcceptsCreditCards": "False",
            "RestaurantsPriceRange2": "2",
            "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
            "RestaurantsAttire": "u'casual'",
            "WiFi": "u'no'",
            "RestaurantsTakeOut": "True",
            "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': False, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
            "Alcohol": "u'none'"
        },
        "categories": "Restaurants, Caribbean",
        "hours": {
            "Monday": "11:0-20:0",
            "Tuesday": "11:0-20:0",

```

```

        "Wednesday": "11:0-20:0",
        "Thursday": "11:0-20:0",
        "Friday": "11:0-21:0",
        "Saturday": "11:0-21:0"
      }
    },
    {
      "_index": "zhangqirui_business_rank",
      "_id": "oDz2JZMBzrtgRTHV1-fK",
      "_score": 3.7803397,
      "_source": {
        "business_id": "5WMIvoMx3l1vn1uJ3HZB6Q",
        "name": "Subway",
        "address": "411 7th Ave",
        "city": "Pittsburgh",
        "state": "PA",
        "postal_code": "15219",
        "location": "40.4428627,-79.996412",
        "stars": 3,
        "review_count": 3,
        "is_open": 1,
        "attributes": {
          "RestaurantsTakeOut": "True",
          "BusinessAcceptsCreditCards": "True",
          "Alcohol": "u'none'",
          "RestaurantsPriceRange2": "1",
          "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
          "RestaurantsReservations": "False",
          "GoodForKids": "True",
          "RestaurantsDelivery": "False"
        },
        "categories": "Fast Food, Sandwiches, Restaurants",
        "hours": null
      }
    }
  ]
}

```

Step 2. Write a command to search "Pittsburgh" in the "city" field and rank the retrieved documents by rank_feature (*review_count*) and *saturation* function (with the following parameter).

- "pivot": 8

Your Command:

```

GET /zhangqirui_business_rank/_search
{

```

```
"query" : {
  "bool" : {
    "must": {
      "match": { "city": "Pittsburgh" }
    },
    "should": {
      "rank_feature": {
        "field": "review_count",
        "saturation": {
          "pivot": 8
        }
      }
    }
  }
}
```

Your Response:

```
{
  "took": 2,
  "timed_out": false,
  "_shards": {
    "total": 1,
    "successful": 1,
    "skipped": 0,
    "failed": 0
  },
  "hits": {
    "total": {
      "value": 5,
      "relation": "eq"
    },
    "max_score": 4.561569,
    "hits": [
      {
        "_index": "zhangqirui_business_rank",
        "_id": "MTz2JZMBzrtgRTHV1-fK",
        "_score": 4.561569,
        "_source": {
          "business_id": "dQj5DLZjeDK3KFysh1SYOQ",
          "name": "Apteka",
          "address": "4606 Penn Ave",
          "city": "Pittsburgh",
          "state": "PA",
          "postal_code": "15224",
          "location": "40.4656937,-79.9493238",
          "stars": 4.5,
          "review_count": 242,
          "is_open": 1,
          "attributes": {
            "CoatCheck": "False",
```

```

    "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
    "HappyHour": "True",
    "Smoking": "u'no'",
    "WiFi": "u'free'",
    "RestaurantsTableService": "False",
    "RestaurantsDelivery": "False",
    "Alcohol": "u'full_bar'",
    "RestaurantsPriceRange2": "2",
    "HasTV": "False",
    "Caters": "True",
    "Music": "{ 'dj': False, 'background_music': True, 'jukebox': False,
'live': False, 'video': False, 'karaoke': False}",
    "RestaurantsTakeOut": "True",
    "BestNights": "{ 'monday': False, 'tuesday': False, 'friday': True,
'wednesday': True, 'thursday': True, 'sunday': False, 'saturday': False}",
    "WheelchairAccessible": "True",
    "BusinessAcceptsCreditCards": "True",
    "GoodForKids": "False",
    "BusinessAcceptsBitcoin": "False",
    "GoodForDancing": "False",
    "BikeParking": "True",
    "RestaurantsAttire": "u'casual'",
    "RestaurantsGoodForGroups": "True",
    "NoiseLevel": "u'average'",
    "RestaurantsReservations": "False",
    "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': True, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
    "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,
'dinner': True, 'brunch': False, 'breakfast': False}",
    "OutdoorSeating": "False"
  },
  "categories": "Nightlife, Bars, Polish, Modern European, Restaurants,
Vegan",
  "hours": {
    "Wednesday": "17:0-0:0",
    "Thursday": "17:0-0:0",
    "Friday": "17:0-0:0",
    "Saturday": "17:0-0:0",
    "Sunday": "17:0-0:0"
  }
},
{
  "_index": "zhangqirui_business_rank",
  "_id": "ODz2JZMBzrtgRTHV1-fK",
  "_score": 4.5233936,
  "_source": {
    "business_id": "v-scZMU6jhnMv955RSzGJw",
    "name": "No. 1 Sushi Sushi",
    "address": "436 Market St",
    "city": "Pittsburgh",
    "state": "PA",

```

```

    "postal_code": "15222",
    "location": "40.441062,-80.002126",
    "stars": 4.5,
    "review_count": 106,
    "is_open": 1,
    "attributes": {
      "OutdoorSeating": "False",
      "HasTV": "True",
      "NoiseLevel": "'average'",
      "BusinessAcceptsCreditCards": "True",
      "RestaurantsTableService": "True",
      "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
      "RestaurantsDelivery": "False",
      "WiFi": "'no'",
      "RestaurantsReservations": "False",
      "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': True,
'dinner': False, 'brunch': False, 'breakfast': False}",
      "RestaurantsTakeOut": "True",
      "Alcohol": "'none'",
      "RestaurantsGoodForGroups": "False",
      "BikeParking": "True",
      "WheelchairAccessible": "True",
      "Caters": "True",
      "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': True}",
      "RestaurantsAttire": "'casual'",
      "RestaurantsPriceRange2": "2",
      "GoodForKids": "True"
    },
    "categories": "Japanese, Sushi Bars, Restaurants",
    "hours": {
      "Monday": "11:0-20:0",
      "Tuesday": "11:0-20:0",
      "Wednesday": "11:0-20:0",
      "Thursday": "11:0-20:0",
      "Friday": "11:0-20:0"
    }
  },
  {
    "_index": "zhangqirui_business_rank",
    "_id": "Bjz2JZMBzrtgRTHV1-fJ",
    "_score": 4.4075227,
    "_source": {
      "business_id": "1RHY4K3BD22FK7Cfftn8Mg",
      "name": "Marathon Diner",
      "address": "Center Core - Food Court, Fl 3, Pittsburgh International
Airport",
      "city": "Pittsburgh",
      "state": "PA",
      "postal_code": "15231",
      "location": "40.4961769456,-80.2460112364",

```



```

    "stars": 4,
    "review_count": 35,
    "is_open": 1,
    "attributes": {
      "RestaurantsTakeOut": "True",
      "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
      "Ambience": "{ 'touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': False}",
      "RestaurantsDelivery": "False",
      "RestaurantsReservations": "False",
      "BusinessAcceptsCreditCards": "True",
      "RestaurantsPriceRange2": "1",
      "RestaurantsGoodForGroups": "True",
      "DriveThru": "False",
      "GoodForKids": "True",
      "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,
'dinner': False, 'brunch': False, 'breakfast': False}",
      "HasTV": "False",
      "OutdoorSeating": "False"
    },
    "categories": "Sandwiches, Salad, Restaurants, Burgers, Comfort Food",
    "hours": null
  }
},
{
  "_index": "zhangqirui_business_rank",
  "_id": "gjz2JZMBzrtgRTHV1-fK",
  "_score": 4.377353,
  "_source": {
    "business_id": "t-6tdxRaz7s9a0sf94Tguw",
    "name": "Impressionz",
    "address": "6008 Broad St",
    "city": "Pittsburgh",
    "state": "PA",
    "postal_code": "15206",
    "location": "40.4623454064, -79.9241651595",
    "stars": 4.5,
    "review_count": 29,
    "is_open": 0,
    "attributes": {
      "RestaurantsDelivery": "False",
      "RestaurantsGoodForGroups": "True",
      "HasTV": "False",
      "RestaurantsReservations": "False",
      "OutdoorSeating": "False",
      "Caters": "False",
      "BikeParking": "True",
      "NoiseLevel": "u'average'",
      "GoodForKids": "True",
      "BusinessAcceptsCreditCards": "False",
      "RestaurantsPriceRange2": "2",
      "BusinessParking": "{ 'garage': False, 'street': True, 'validated':

```

```

False, 'lot': False, 'valet': False}",
    "RestaurantsAttire": "u'casual'",
    "WiFi": "u'no'",
    "RestaurantsTakeOut": "True",
    "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': False, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
    "Alcohol": "u'none'"
  },
  "categories": "Restaurants, Caribbean",
  "hours": {
    "Monday": "11:0-20:0",
    "Tuesday": "11:0-20:0",
    "Wednesday": "11:0-20:0",
    "Thursday": "11:0-20:0",
    "Friday": "11:0-21:0",
    "Saturday": "11:0-21:0"
  }
},
{
  "_index": "zhangqirui_business_rank",
  "_id": "oDz2JJMBzrtgRTHV1-fK",
  "_score": 3.8662965,
  "_source": {
    "business_id": "5WMIvoMx3l1vn1uJ3HZB6Q",
    "name": "Subway",
    "address": "411 7th Ave",
    "city": "Pittsburgh",
    "state": "PA",
    "postal_code": "15219",
    "location": "40.4428627,-79.996412",
    "stars": 3,
    "review_count": 3,
    "is_open": 1,
    "attributes": {
      "RestaurantsTakeOut": "True",
      "BusinessAcceptsCreditCards": "True",
      "Alcohol": "u'none'",
      "RestaurantsPriceRange2": "1",
      "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
      "RestaurantsReservations": "False",
      "GoodForKids": "True",
      "RestaurantsDelivery": "False"
    },
    "categories": "Fast Food, Sandwiches, Restaurants",
    "hours": null
  }
}
]
}
}

```

5). Design a new scoring algorithm.

The description of the new algorithm:

```
score=doc['review_count'].value + doc['stars'].value
```

```
Score = review_count + stars
```

This means that each score will be the sum of its total reviews and its average rating. This straightforward approach incentivizes businesses that have both high review counts and high ratings, making it more likely that users will find popular and well-rated options.

Your Command:

```
GET /zhangqirui_business/_search
{
  "query": {
    "script_score": {
      "query": {
        "match": {
          "city": "Pittsburgh"
        }
      },
      "script": {
        "source": "doc['review_count'].value + doc['stars'].value",
        "params":{
          "origin":"40.4812,-80.1234",
          "scale": "40km",
          "offset": "0km",
          "decay": 0.2
        }
      }
    }
  }
}
```

Your Response:

```
{
  "took": 7,
  "timed_out": false,
  "_shards": {
    "total": 1,
    "successful": 1,
    "skipped": 0,
    "failed": 0
  },
}
```

```

"hits": {
  "total": {
    "value": 5,
    "relation": "eq"
  },
  "max_score": 246.5,
  "hits": [
    {
      "_index": "zhangqirui_business",
      "_id": "aTyMI5MBzrtgRTHV44Ls",
      "_score": 246.5,
      "_source": {
        "business_id": "dQj5DLZjeDK3KFysh1SYOQ",
        "name": "Apteka",
        "address": "4606 Penn Ave",
        "city": "Pittsburgh",
        "state": "PA",
        "postal_code": "15224",
        "location": "40.4656937,-79.9493238",
        "stars": 4.5,
        "review_count": 242,
        "is_open": 1,
        "attributes": {
          "CoatCheck": "False",
          "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
          "HappyHour": "True",
          "Smoking": "u'no'",
          "WiFi": "u'free'",
          "RestaurantsTableService": "False",
          "RestaurantsDelivery": "False",
          "Alcohol": "u'full_bar'",
          "RestaurantsPriceRange2": "2",
          "HasTV": "False",
          "Caters": "True",
          "Music": "{ 'dj': False, 'background_music': True, 'jukebox': False,
'live': False, 'video': False, 'karaoke': False}",
          "RestaurantsTakeOut": "True",
          "BestNights": "{ 'monday': False, 'tuesday': False, 'friday': True,
'wednesday': True, 'thursday': True, 'sunday': False, 'saturday': False}",
          "WheelchairAccessible": "True",
          "BusinessAcceptsCreditCards": "True",
          "GoodForKids": "False",
          "BusinessAcceptsBitcoin": "False",
          "GoodForDancing": "False",
          "BikeParking": "True",
          "RestaurantsAttire": "u'casual'",
          "RestaurantsGoodForGroups": "True",
          "NoiseLevel": "u'average'",
          "RestaurantsReservations": "False",
          "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': True, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
          "GoodForMeal": "{ 'dessert': False, 'latenight': False, 'lunch': False,

```

```

'dinner': True, 'brunch': False, 'breakfast': False}",
  "OutdoorSeating": "False"
},
"categories": "Nightlife, Bars, Polish, Modern European, Restaurants,
Vegan",
"hours": {
  "Wednesday": "17:0-0:0",
  "Thursday": "17:0-0:0",
  "Friday": "17:0-0:0",
  "Saturday": "17:0-0:0",
  "Sunday": "17:0-0:0"
}
},
{
  "_index": "zhangqirui_business",
  "_id": "cDyMI5MBzrtgRTHV44Ls",
  "_score": 110.5,
  "_source": {
    "business_id": "v-scZMU6jhnMv955RSzGJw",
    "name": "No. 1 Sushi Sushi",
    "address": "436 Market St",
    "city": "Pittsburgh",
    "state": "PA",
    "postal_code": "15222",
    "location": "40.441062,-80.002126",
    "stars": 4.5,
    "review_count": 106,
    "is_open": 1,
    "attributes": {
      "OutdoorSeating": "False",
      "HasTV": "True",
      "NoiseLevel": "'average'",
      "BusinessAcceptsCreditCards": "True",
      "RestaurantsTableService": "True",
      "BusinessParking": '{"garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
      "RestaurantsDelivery": "False",
      "WiFi": "'no'",
      "RestaurantsReservations": "False",
      "GoodForMeal": '{"dessert': False, 'latenight': False, 'lunch': True,
'dinner': False, 'brunch': False, 'breakfast': False}",
      "RestaurantsTakeOut": "True",
      "Alcohol": "'none'",
      "RestaurantsGoodForGroups": "False",
      "BikeParking": "True",
      "WheelchairAccessible": "True",
      "Caters": "True",
      "Ambience": '{"touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': True}",
      "RestaurantsAttire": "'casual'",
      "RestaurantsPriceRange2": "2",
      "GoodForKids": "True"
    }
  }
}

```

```

    },
    "categories": "Japanese, Sushi Bars, Restaurants",
    "hours": {
      "Monday": "11:0-20:0",
      "Tuesday": "11:0-20:0",
      "Wednesday": "11:0-20:0",
      "Thursday": "11:0-20:0",
      "Friday": "11:0-20:0"
    }
  },
  {
    "_index": "zhangqirui_business",
    "_id": "PjyMI5MBzrtgRTHV44Ls",
    "_score": 39,
    "_source": {
      "business_id": "1RHY4K3BD22FK7Cfftn8Mg",
      "name": "Marathon Diner",
      "address": "Center Core - Food Court, Fl 3, Pittsburgh International
Airport",
      "city": "Pittsburgh",
      "state": "PA",
      "postal_code": "15231",
      "location": "40.4961769456,-80.2460112364",
      "stars": 4,
      "review_count": 35,
      "is_open": 1,
      "attributes": {
        "RestaurantsTakeOut": "True",
        "BusinessParking": '{"garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
        "Ambience": '{"touristy': False, 'hipster': False, 'romantic': False,
'divey': False, 'intimate': False, 'trendy': False, 'upscale': False, 'classy':
False, 'casual': False}",
        "RestaurantsDelivery": "False",
        "RestaurantsReservations": "False",
        "BusinessAcceptsCreditCards": "True",
        "RestaurantsPriceRange2": "1",
        "RestaurantsGoodForGroups": "True",
        "DriveThru": "False",
        "GoodForKids": "True",
        "GoodForMeal": '{"dessert': False, 'latenight': False, 'lunch': False,
'dinner': False, 'brunch': False, 'breakfast': False}",
        "HasTV": "False",
        "OutdoorSeating": "False"
      },
      "categories": "Sandwiches, Salad, Restaurants, Burgers, Comfort Food",
      "hours": null
    }
  },
  {
    "_index": "zhangqirui_business",
    "_id": "ujyMI5MBzrtgRTHV44Ls",
    "_score": 33.5,

```

```

    "_source": {
      "business_id": "t-6tdxRaz7s9a0sf94Tguw",
      "name": "Impressionz",
      "address": "6008 Broad St",
      "city": "Pittsburgh",
      "state": "PA",
      "postal_code": "15206",
      "location": "40.4623454064,-79.9241651595",
      "stars": 4.5,
      "review_count": 29,
      "is_open": 0,
      "attributes": {
        "RestaurantsDelivery": "False",
        "RestaurantsGoodForGroups": "True",
        "HasTV": "False",
        "RestaurantsReservations": "False",
        "OutdoorSeating": "False",
        "Caters": "False",
        "BikeParking": "True",
        "NoiseLevel": "u'average'",
        "GoodForKids": "True",
        "BusinessAcceptsCreditCards": "False",
        "RestaurantsPriceRange2": "2",
        "BusinessParking": "{ 'garage': False, 'street': True, 'validated':
False, 'lot': False, 'valet': False}",
        "RestaurantsAttire": "u'casual'",
        "WiFi": "u'no'",
        "RestaurantsTakeOut": "True",
        "Ambience": "{ 'romantic': False, 'intimate': False, 'classy': False,
'hipster': False, 'divey': False, 'touristy': False, 'trendy': False, 'upscale':
False, 'casual': True}",
        "Alcohol": "u'none'"
      },
      "categories": "Restaurants, Caribbean",
      "hours": {
        "Monday": "11:0-20:0",
        "Tuesday": "11:0-20:0",
        "Wednesday": "11:0-20:0",
        "Thursday": "11:0-20:0",
        "Friday": "11:0-21:0",
        "Saturday": "11:0-21:0"
      }
    }
  },
  {
    "_index": "zhangqirui_business",
    "_id": "2DyMI5MBzrtgRTHV44Ls",
    "_score": 6,
    "_source": {
      "business_id": "5WMIvoMx3l1vn1uJ3HZB6Q",
      "name": "Subway",
      "address": "411 7th Ave",
      "city": "Pittsburgh",
      "state": "PA",

```

```
"postal_code": "15219",
"location": "40.4428627,-79.996412",
"stars": 3,
"review_count": 3,
"is_open": 1,
"attributes": {
  "RestaurantsTakeOut": "True",
  "BusinessAcceptsCreditCards": "True",
  "Alcohol": "u'none'",
  "RestaurantsPriceRange2": "1",
  "BusinessParking": "{ 'garage': False, 'street': False, 'validated':
False, 'lot': False, 'valet': False}",
  "RestaurantsReservations": "False",
  "GoodForKids": "True",
  "RestaurantsDelivery": "False"
},
"categories": "Fast Food, Sandwiches, Restaurants",
"hours": null
}
}
]
```