Keyword-Driven Exploration of Relational Data using Firebase

Midterm Report

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Checklists:

In this project, we worked on importing data from MySQL to Firebase and develop a keyword driven interface for user to explore data via foreign-key relationships. Our timeline is shown below as Fig 1, and we are on track to achieve milestones.

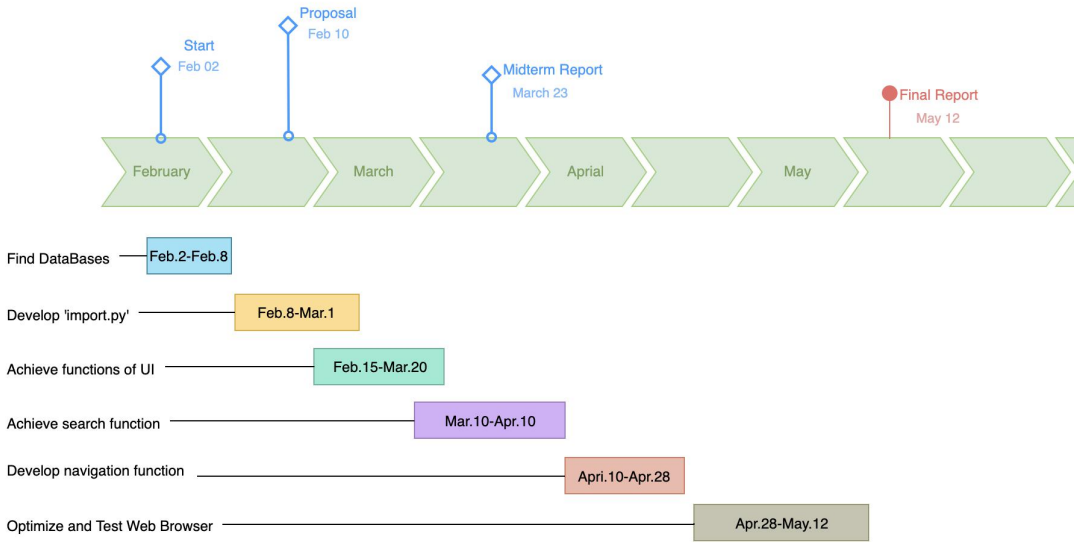

Fig 1. Time line

What we have already completed:

Find two additional databases;
Finished the UI web page using html and css;
Developed ‘import.py’ which imports data from MySQL to Firebase;
Developed ‘search.py’ which can return sorted tuples when accepts the search query.

Ongoing:

Figuring out how to write API and connect the back end to the web page;
Achieving data navigation through foreign key;
Adding filtering function which can extract the key words from users’ query;
Beautify the UI page and make our web page executable and become more professional.

Screen shot of completed work:

Based on our initial user interface design, a real web achieved using html and css. The screen shot of web page is shown as Fig 2. It concludes four major components: title, search box, choose button, and result display.

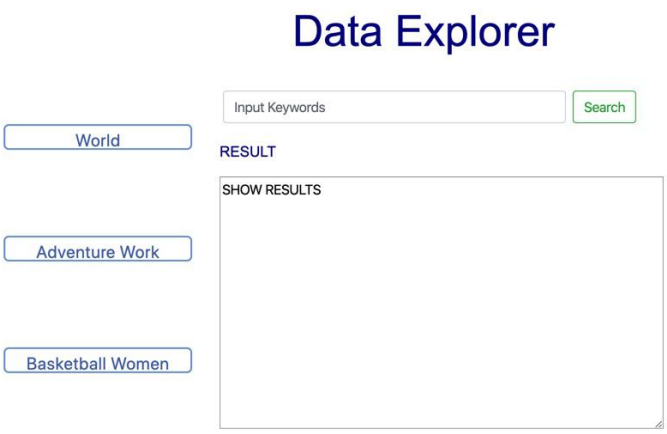

Fig 2: Screen Shot of Web Interface

The data we uploaded from MySQL to Firebase in the following structure, besides the tables in databases, we also added inverted index which provide results for searching query. Fig 3 shows how data structured on Firebase. We also test the search.py using search query 'Quang Nam Da Nang', the results shown in Fig 4.

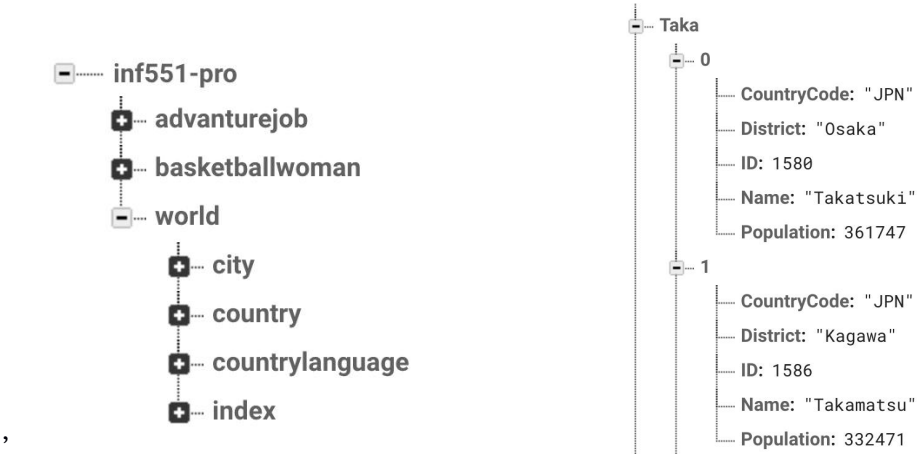

Fig 3 Databases and Inverted Index shown on Firebase

```
{'CountryCode': 'VNM', 'District': 'Quang Nam-Da Nang', 'ID': 3772, 'Name': 'Da Nang', 'Population': 382674}

{'CountryCode': 'TKM', 'District': 'Dashhowuz', 'ID': 3421, 'Name': 'Dashhowuz', 'Population': 141800}

{'CountryCode': 'NOR', 'IsOfficial': 'F', 'Language': 'Danish', 'Percentage': '0.4'}
```

Fig 4 Results of search query

- **Challenges:**

What we need to solve is how to query the necessary data which contained the key words from database instead of get the whole data node from Firebase. Besides, if we query only necessary data from Firebase, we need to use API multiple times which may be inefficient because of time delay. We also need to achieve user friendly interface by adding some executable elements.