Software Engineer–Coding Walkthrough

Current as of 20220803

Please attempt this exercise using whichever tools you prefer.

A coding exercise is not a natural or normal way to approach work–the outcome here is that we get to see how you approach a new problem, discover issues with your first assumptions, and ask questions–not that we get to see a perfectly functioning piece of code.

Please do not spend more than 120 minutes on this. If you're stuck, write out where you need help or what you would do next, and send it over to us. While the parts of the exercise are related, you do not need to complete the parts in order.

Exercise

You are given a JSON formatted file that contains Primary election results by state, county, party, and candidate. An example record is provided below:

```
{
    "Pennsylvania":{
        "Chester":{
            "Democrats":{
                "Humphrey":10000,
                "McGovern":5000
            },
            "Republicans":{
                "Nixon":20000,
                "Ashbrook":200,
                "McCloskey":100
            }
        }
    }
}
```

Part 1: Using the language of your choice, write a lightweight REST API with a single route that returns the winning primary candidate in each county. (Reminder: There are separate Republican and Democratic winners in each county)

Part 2: Suppose the data existed in a SQL database, with the data fit into a tabular format with the table structure of

```
CREATE TABLE results (
    state VARCHAR
  , county VARCHAR
  , party VARCHAR
  , candidate VARCHAR
  , votes INTEGER
);
```

Can you write a single SELECT query that returns the winning primary candidate in each county?

Part 3: Say the data provider tells you JSON files will be arriving once an hour with incremental vote count updates. You are tasked with architecting a system to load those files into the table from part 2 once they arrive. In a paragraph or two, please answer the following

- What does your ideal architecture look like to accomplish this?
- What questions do you still need answered in order to build the system?

Questions? Email adam@demexchange.com.