VREX Software Engineer Assessment

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1 Introduction

You will build a demo web-service in **Java** (any version ≥ 8) with **Spring Boot** which accepts a POST request consisting of recent speech commands and returns information about the most frequent commands by state and nationally.

2 Model Entities

2.1 Command

A Command object will have two fields:

- speaker: String

- command: String

Here is an example json for this object:

```
{
        "speaker": "Fred Zhang",
        "command": "CNN"
}
```

2.2 State Commands (Incoming Request)

An incoming request will contain recent commands spoken grouped by state:

```
{ "<state-name>": Array<Command> }
```

Example:

```
{
   "alabama": [{
      "speaker": "Fred Zhang",
```

```
      "command": "CNN"
    }, {
     "speaker": "Fred Zhang",
     "command": "NBC"
    },
  ],
  "florida": [
   {
     "speaker": "Thomas Brown",
     "command": "Show me movies"
    },
    //More Commands
  ],
  "maryland": [
     // Commands
  ],
  // More states
}
```

3   Requirements

- Your application defines a `POST` endpoint `/commands`

- The POST body is json formatted, where each state name is mapped to an array of `Command` objects associated with recent requests in that state

- The application should keep track of the top command by state. It should also keep track of the top three commands nationally.

- The response should contain the top command for each state across all requests. It should also contain the cumulative top three commands nationally.

- For each state, the response should include a timestamp for when processing began for that state (`startProcessTime`) and when processing finished (`stopProcessTime`).

- The application should only be able to handle **one** `POST` request at a time. If a request is made while the application is waiting for another, the first request should be fulfilled before attempting to fulfill the second.

- State and Command information is assumed to be case insensitive. ("Maryland" and "maryland" are the same state; "Game of thrones" is the same command as "game OF THRones")

4 Testing

- Write one or more unit tests demonstrating that the application behaves as expected. Calling methods directly is acceptable (You do not have to use REST templates or curl).

5 Example Request

```json
{
    "alabama": [{
        "speaker": "Fred Zhang",
        "command": "CNN"
    }, {
        "speaker": "Fred Zhang",
        "command": "NBC"
    }, {
        "speaker": "Fred Zhang",
        "command": "CNN"
    }
    ],
    "florida": [
     {
        "speaker": "Thomas Brown",
        "command": "Show me movies"
    }, {
        "speaker": "Alisha Brown",
        "command": "Stranger Things"
    }, {
        "speaker": "Marcus Brown",
        "command": "Game of Thrones"
     }, {
        "speaker": "Missy Brown",
        "command": "Turn off the TV"
     }, {
        "speaker": "Missy Brown",
        "command": "Turn off the TV"
     }
    ],
    "maryland": [
      {
        "speaker": "Thomas Black",
```

```json
      "command": "Show me comedies"
    }, {
     "speaker": "Alisha Black",
     "command": "Game of Thrones"
    }, {
      "speaker": "Marcus Black",
      "command": "Game of Thrones"
     }, {
      "speaker": "Missy Black",
      "command": "Game of Thrones"
      }, {
      "speaker": "Missy Black",
      "command": "Turn off the TV"
      }
  ]
}
```

6 Example Response

```json
{
  "alabama": {
    "mostFrequentCommand": "CNN",
    "startProcessTime": 12009234,
    "stopProcessTime": 12009239
  },
  "florida": {
    "mostFrequentCommand": "Turn Off the TV",
    "startProcessTime": 12009235,
    "stopProcessTime": 12009241
  }
  "maryland": {
    "mostFrequentCommand": "Game of Thrones"
    "startProcessTime": 12009236,
    "stopProcessTime": 12009239
  }
  "topCommandsNationally": ["Game of Thrones", "Turn off the TV",
"CNN"]
}
```