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Project 4 Task 2 – FestBuddy App

Description:

Our application will prompt the user for a country name, year, and month. It will then search Calendarific to display all the holidays in that country for that particular year and month (all holiday types like national, local, religious or observance).

Here is how our application meets the task requirements –

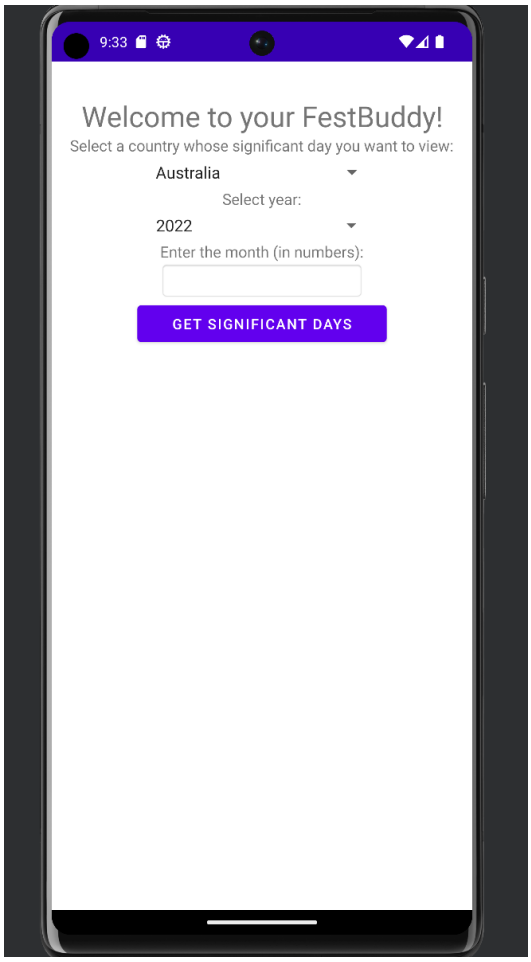
1. **Implement a native Android Application**

   The name of our native Android Application project in Android Studio is: Project4AndroidApp

   a. **Has at least three different kinds of views in your Layout (TextView, EditText, ImageView, etc.)**

   Our application uses TextView, Spinner View (for drop-down menu), EditTextView, Submit button and a TableLayout. See content_main.xml for details of how they are incorporated into the linear layout.

   Here is a screenshot of the layout before the data has been fetched from our 3rd party API



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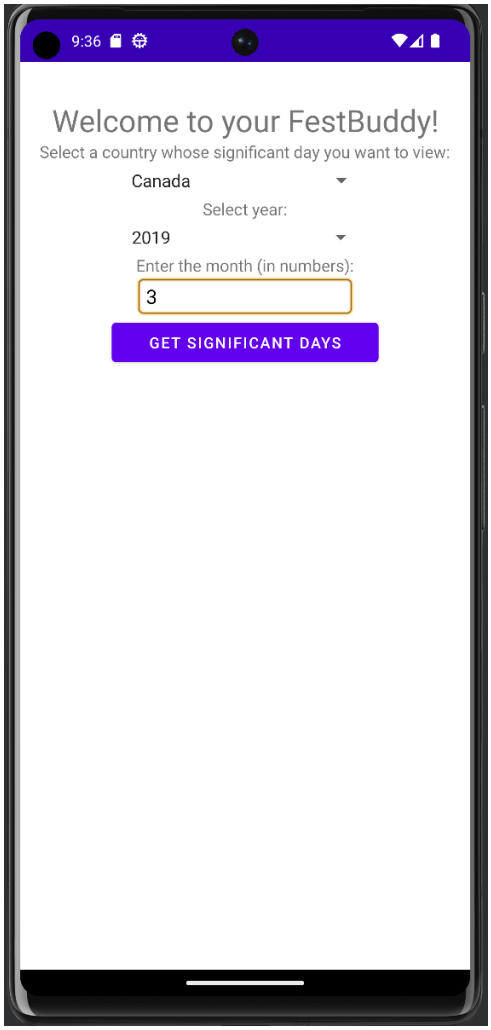
b. Requires input from the user

Here is a screenshot of a user selecting country as “Canada” and year as “2019” from the drop-down menu and types in the month “3”. They then clicks on “GET SIGNIFICANT DAYS” button.



c. Makes an HTTP request (using an appropriate HTTP method) to your web service

Our application does an HTTP GET request in GetFestsHandler.java. The HTTP request is:

https://gentle-gorge-81012.herokuapp.com/getDetails?country="+country+"&year="+year+"&month="+month

where the country, year and month are the user's search term. The search method makes this request of our web application, parses the returned JSON to find the relevant details like the name of the special occasion, their description and type.

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You can also make a request to view the dashboard showing analytical data as well as the logged data (in the MongoDB database). The link to do that is –

https://gentle-gorge-81012.herokuapp.com/getDashboard

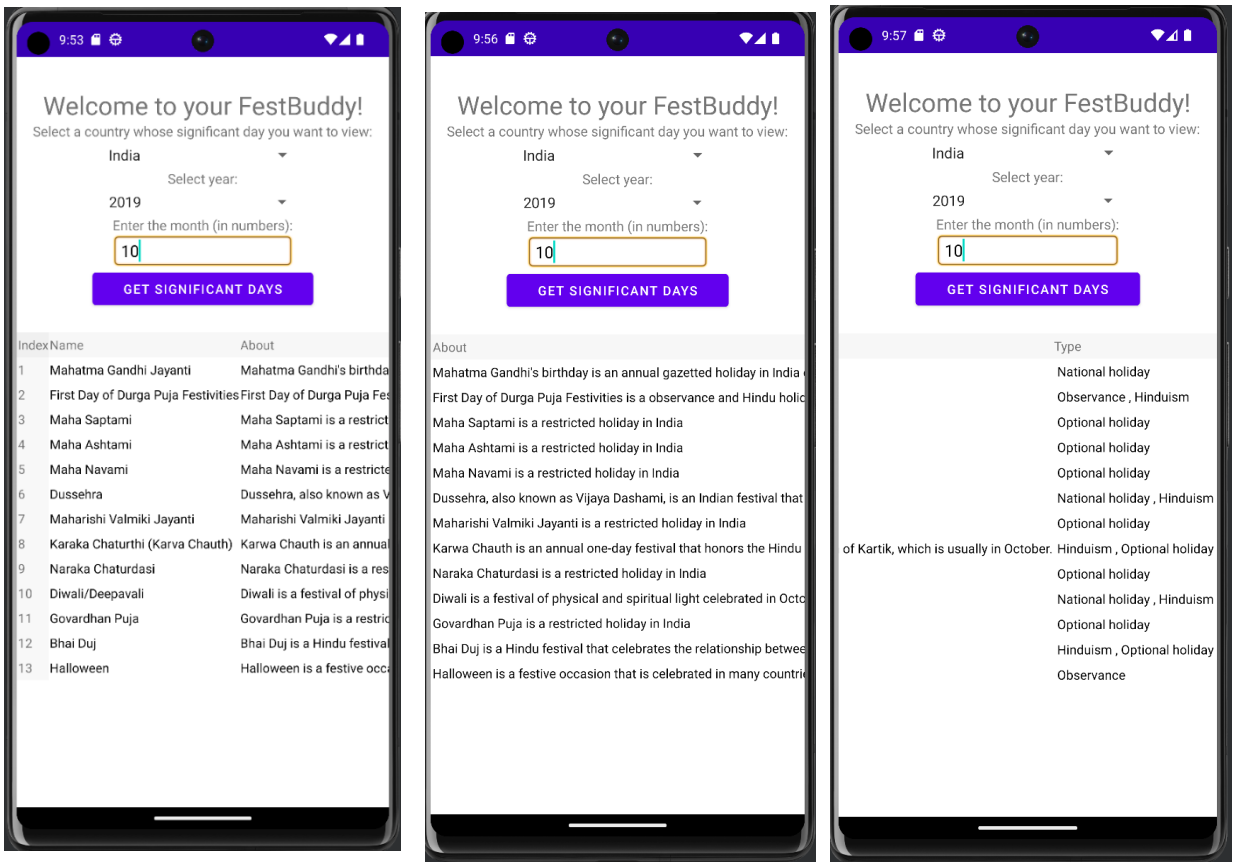
d. Receives and parses an XML or JSON formatted reply from the web service

An example of the JSON reply from the API is:


```
Retrieved data:
{"meta":{"code":200},"response":{"holidays":[{"name":"Lunar New Year","description":"Lunar New Year in the United Kingdom (UK) marks the start of the New
 Year in the Chinese calendar.","country":{"id":"gb","name":"United Kingdom"},"date":{"iso":"2022-02-01","datetime":{"year":2022,"month":2,"day":1}},
 "type":["Observance"],"urlid":"uk\/lunar-new-year","locations":"All","states":"All"},{"name":"Valentine's Day","description":"Valentine\u2019s Day is
 celebrated in the UK as a day of love and falls on February 14 every year.","country":{"id":"gb","name":"United Kingdom"},"date":{"iso":"2022-02-14",
 "datetime":{"year":2022,"month":2,"day":14}},"type":["Observance"],"urlid":"uk\/valentine-day","locations":"All","states":"All"},{"name":"Maha
 Shivaratri","description":"Maha Shivaratri is a Hindu holiday in the United Kingdom","country":{"id":"gb","name":"United Kingdom"},
 "date":{"iso":"2022-02-28","datetime":{"year":2022,"month":2,"day":28}},"type":["Observance","Hinduism"],"urlid":"uk\/hindu-maha-shivaratri",
 "locations":"All","states":"All"}]}}
```


e. Displays new information to the user

Here is the screenshot after the data has been returned.



We display a table having 4 columns - index number, name of the days, about (having the description) and the type of holiday. Vertical and Horizontal scroll are enabled for the user to read the entire description.

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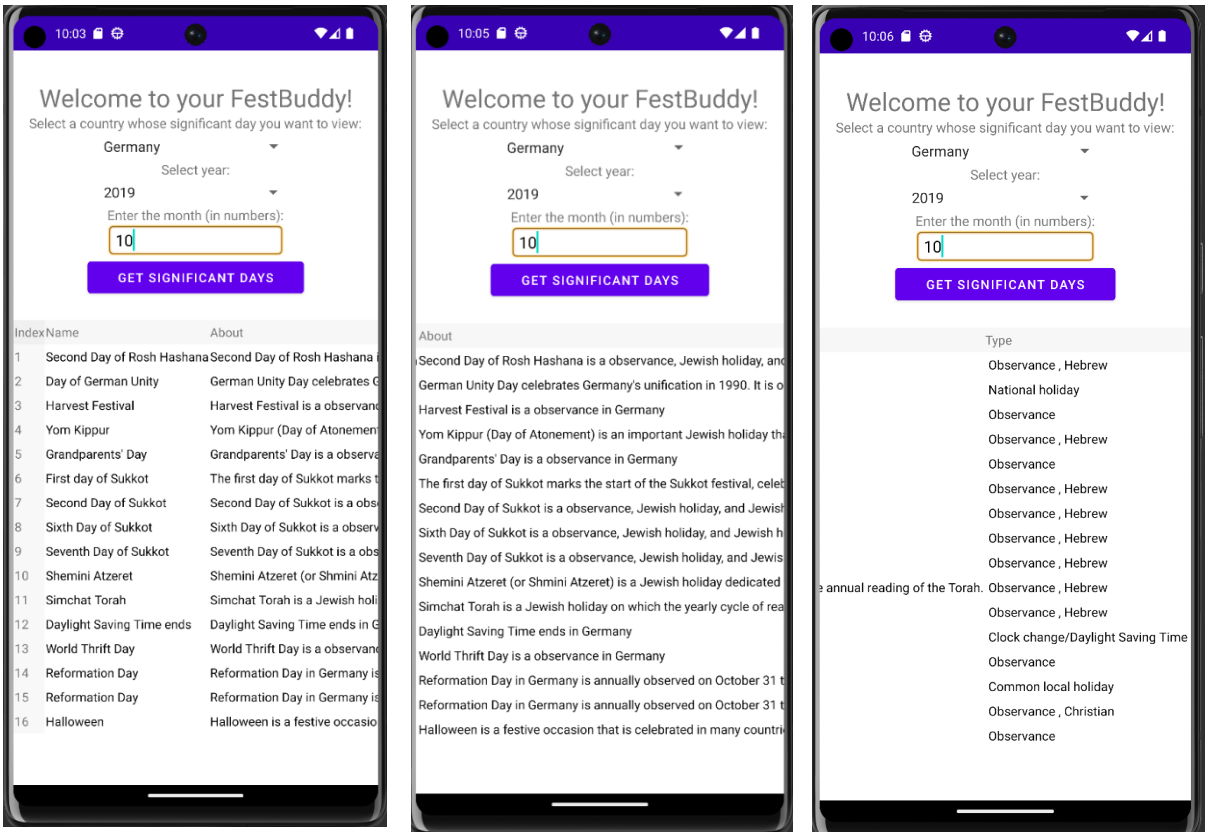
f. Is repeatable (I.e. the user can repeatedly reuse the application without restarting it.)

The user can put in another request for another country, year or month and hit “GET SIGNIFICANT DAYS”. Here is an example of having put “Germany” instead.



2. Implement a web application, deployed to Heroku

The URL of my web service deployed to Heroku is:

https://gentle-gorge-81012.herokuapp.com/

The project directory name is Project4Task2. (It has 2 classes – SignificantDaysServlet and SignificantDaysModel.

a. Using an HttpServlet to implement a simple (can be a single path) API

In our web app project:

Model – SignificantDaysModel.java
View – index.jsp and festBuddyDashboard.jsp (depending on the GET request)
Controller – SignificantDaysServlet.java

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b. Receives an HTTP request from the native Android application

SignificantDaysServlet.java receives the HTTP GET request with the argument "country", “year” and “month”. It passes this search string on to the model

c. Executes business logic appropriate to your application

SignificantDaysModel.java makes an HTTP request to:

https://calendarific.com/api/v2/holidays?&api_key=20912e8c78839c50b16a2c6701123930b963021b&country=" + country_code + "&year=" + year_string+"&month="+month_string

where country_code, year_string and month_string are the user inputs.

It then parses the JSON response and extracts the parts it needs to respond to the Android application

d. Replies to the Android application with an XML or JSON formatted response.

SignificantDaysServlet.java formats the response to the mobile application in a simple JSON format

```
//extracted information which is a list of lists stored in a JSON Array
JSONArray responses = sdm.fetch(url_link);
//setting the content type of the response object
response.setContentType("application/json");
 //preparing to write out the responses received from the 3rd party API
PrintWriter out = response.getWriter();
//sending the responses back to the Android Application
out.println(responses);
//flushing the output writer
out.flush();
```

3. Log useful information - Itemize what information you log and why you chose it.

We log the following pieces of information:

- **User Agent** – to check which type of device is being used to make requests and access the dashboard. We also use this piece of information to not store in MongoDB any requests made from devices that are not our Android Application (like a desktop/laptop browser)
- **Connection Type –** To check whether the type of connection is closed or Keep-Alive.
- **Country –** To store which country was requested by user

- **Year –** To store which year was requested by user
- **Month –** To store which month was requested by user
- **Special Occasions –** The special occasions for a particular country, year and month as returned by the 3rd party API.
- **Types of Special Occasions –** Whether the special occasion is a national, local, religious or observance day.

All the above pieces of information are then used to conduct some analytics to display the type of requests being made by users to our application.

4. **Store the log information in a database - Give your Atlas connection string with the three shards**

   The Atlas connection string with the three shards is:

   mongodb://pawanjes:pawanjes2022@ac-v0fevae-shard-00-00.eg0o3xs.mongodb.net:27017,ac-v0fevae-shard-00-01.eg0o3xs.mongodb.net:27017,ac-v0fevae-shard-00-02.eg0o3xs.mongodb.net:27017/FestBuddyDashboard?w=majority&retryWrites=true&tls=true&authMechanism=SCRAM-SHA-1

   We used the following login details to create a database and collection on MongoDB –

   Email ID: pawanjes@andrew.cmu.edu

   Password: Password#20202020

   Cluster0 has the database named FestBuddyDashboard. The name of the collection is FestBuddyLogs. The USER is pawanjes and PASSWD is pawanjes2022.

5. **Display operations analytics and full logs on a web-based dashboard - Provide a screen shot.**

   The dashboard can be accessed using the following link –

   https://gentle-gorge-81012.herokuapp.com/getDashboard

   The dashboard contains the following analytics datapoints.

   - **Popular Countries Searched -** This displays the top-most searched countries ranked on the basis of popularity (and with a count of how many times users have requested them)
   - **Most Searched Years -** This displays the top-most searched years ranked on the basis of popularity (and with a count of how many times users have requested them)
   - **Most Searched Months -** This displays the top-most searched months ranked on the basis of popularity (and with a count of how many times users have requested them)
   - **Most Common Special Days -** This displays the most common special days returned by the API, accounting for all user requests. This would mostly include special days that are common across many countries!
   - **Unique Special Days -** This displays the most unique special days returned by the API, accounting for all user requests.
   - **Most Common Types of Occasions:** This displays the most common types of special occasions returned by the API, accounting for all user requests.
   - **Unique User Agents –** This displays the unique user agents that are making requests.

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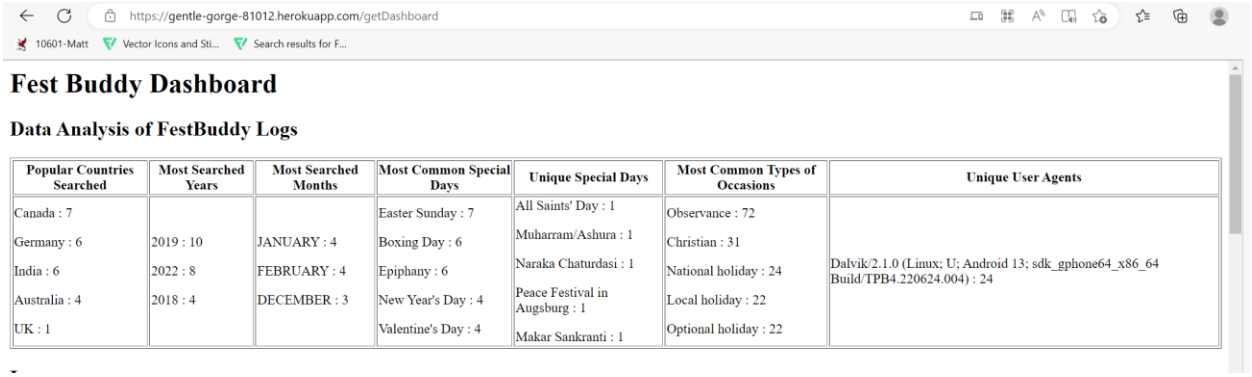
Screenshot of the Dashboard having the Analytical data table

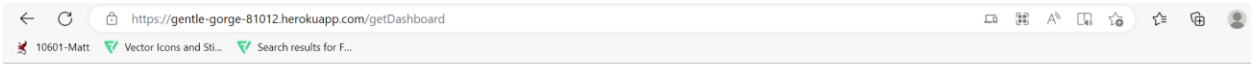


Fest Buddy Dashboard

Data Analysis of FestBuddy Logs

Popular Countries Searched	Most Searched Years	Most Searched Months	Most Common Special Days	Unique Special Days	Most Common Types of Occasions	Unique User Agents
Canada : 7 Germany : 6 India : 6 Australia : 4 UK : 1	2019 : 10 2022 : 8 2018 : 4	JANUARY : 4 FEBRUARY : 4 DECEMBER : 3	Easter Sunday : 7 Boxing Day : 6 Epiphany : 6 New Year's Day : 4 Valentine's Day : 4	All Saints' Day : 1 Muharram/Ashura : 1 Naraka Chaturdasi : 1 Peace Festival in Augsburg : 1 Makar Sankranti : 1	Observance : 72 Christian : 31 National holiday : 24 Local holiday : 22 Optional holiday : 22	Dalvik/2.1.0 (Linux; U; Android 13; sdk_gphone64_x86_64 Build/TPB4.220624.004) : 24

Screenshot of the Dashboard having the logs data



Logs

Index	User Agent	Connection	Selected Country	Selected Year	Selected Month	Special Occasion	Type of Special Day
1	Dalvik/2.1.0 (Linux; U; Android 13; sdk_gphone64_x86_64 Build/TPB4.220624.004)	Keep-Alive	Canada	2022	2	Lunar New Year , Groundhog Day , Valentine's Day , National Flag of Canada Day , Louis Riel Day , Nova Scotia Heritage Day , Islander Day , Family Day , Family Day , Yukon Heritage Day	Observance , Observance , Observance , Observance , Common local holiday , Common local holiday , Common local holiday , Common local holiday , Common local holiday , Common local holiday
2	Dalvik/2.1.0 (Linux; U; Android 13; sdk_gphone64_x86_64 Build/TPB4.220624.004)	Keep-Alive	Germany	2022	8	Peace Festival in Augsburg , Ashura , Assumption of Mary , Assumption of Mary	Local holiday , Observance , Muslim , Christian , Common local holiday , Observance , Christian
3	Dalvik/2.1.0 (Linux; U; Android 13; sdk_gphone64_x86_64 Build/TPB4.220624.004)	Keep-Alive	Germany	2022	12	Second Advent Sunday , Saint Nicholas Day , Feast of the Immaculate Conception , Third Advent Sunday , Fourth Advent Sunday , Remembrance Day for Roma and Sinti killed by Genocide , December Solstice , Christmas Eve , Christmas Day , Boxing Day , New Year's Eve	Observance , Christian , Observance , Christian , Observance , Christian , Observance , Christian , Observance , Christian , Observance , Season , Half-day holiday , National holiday , Christian , National holiday , Christian , Half-day holiday
4	Dalvik/2.1.0 (Linux; U; Android 13; sdk_gphone64_x86_64 Build/TPB4.220624.004)	Keep-Alive	Germany	2022	1	New Year's Day , Epiphany , Epiphany , Franco-German Day , Remembrance Day for the Victims of National Socialism	National holiday , Observance , Christian , Common local holiday , Observance , Observance
5	Dalvik/2.1.0 (Linux; U; Android 13; sdk_gphone64_x86_64 Build/TPB4.220624.004)	Keep-Alive	Germany	2019	1	New Year's Day , Epiphany , Epiphany , Franco-German Day , Remembrance Day for the Victims of National Socialism	National holiday , Observance , Christian , Common local holiday , Observance , Observance