Project 4 – HolidayApp

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Description:

My application allows the user to check whether a specific date is a public holiday in a given country by querying the Calendarific API. The native Android app collects user input and interacts with a web service hosted in the cloud, which fetches and processes the holiday data. A dashboard is also included to log requests and display analytics from the MongoDB cloud database.

1. Native Android Application

Project name in Android Studio: `HolidayApp`

a. Layout with 3+ Views

My app uses the following UI components:

- `EditText` for date input
- `EditText` for country input
- `Button` to trigger the check
- `TextView` to display results

```xml
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:padding="24dp"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <EditText
        android:id="@+id/editCountry"
        android:hint="Enter Country Code (e.g. US)"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="text" />

    <EditText
        android:id="@+id/editDate"
        android:hint="Enter Date (YYYY-MM-DD)"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="date" />

    <Button
        android:id="@+id/btnCheck"
        android:text="Check Holiday"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp" />

    <TextView
        android:id="@+id/textResult"
        android:text=""
        android:textSize="18sp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="24dp"
        android:textColor="#000000" />
</LinearLayout>
```

b. Requires input from the user

The app requires the user to enter a **country code** (e.g., US) and a **date** (e.g., 2025-12-25).

c. Makes an HTTP GET request to the web service

The app uses an `ExecutorService` to send a background HTTP GET request to:

`http://<your-cloud-url>/checkHoliday?date=YYYY-MM-DD&country=XX`

This is implemented in `MainActivity.java`.

d. Receives and parses JSON from the web service

Sample JSON reply:

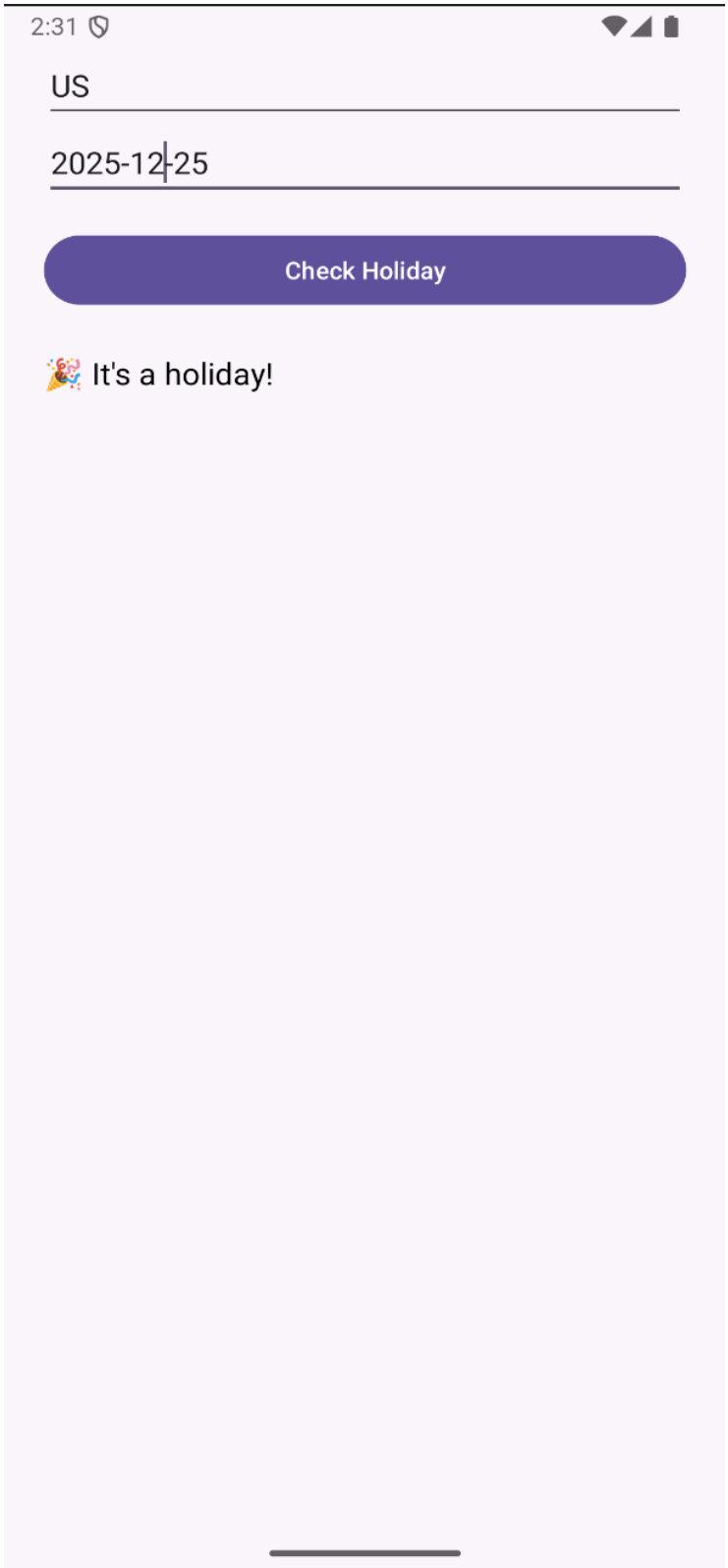
```
{
  "date": "2025-12-25",
  "country": "US",
  "isHoliday": true
}
```

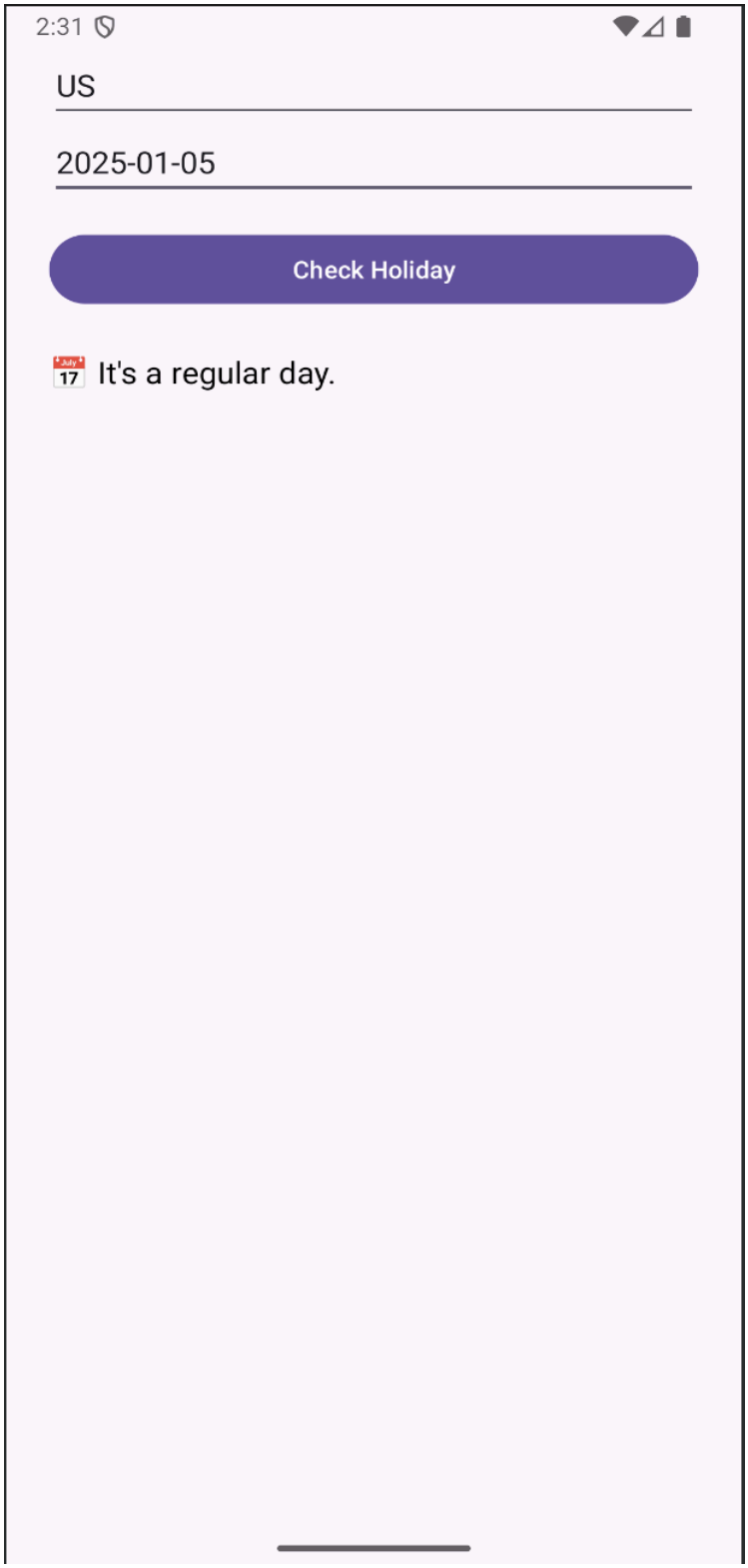
The response is parsed using `org.json.JSONObject`.

e. Displays new information to the user

Result is shown in a `TextView`:

- `"🎉 It's a holiday!"` or
- `"📅 It's a regular day."`


2:31
US
2025-12-25
Check Holiday
🎉 It's a holiday!


2:31
US
2025-01-05
Check Holiday
It's a regular day.

f. Is repeatable

The user can input different country-date combinations and check repeatedly without restarting the app.

2. Web Application

Web app name: HolidayCalendar
Deployment: GitHub Codespaces (Tomcat 11 + JDK 21)
WAR file name: ROOT.war

a. Servlet-based API

- HolidayCheckServlet.java: Receives requests, calls Calendarific API, and returns a simplified JSON response.
- MongoLogger.java: Logs details to MongoDB
- LogViewerServlet.java: Displays logs and analytics via a web dashboard

b. Receives requests from Android

HolidayCheckServlet handles GET requests from the Android app with parameters date and country.

c. Executes business logic

Fetches holiday data from:

https://calendarific.com/api/v2/holidays

- Extracts whether the date is a holiday.
- Logs the request to MongoDB Atlas.

d. Responds with JSON

Sample custom JSON reply from the servlet:

```
{
  "date": "2025-12-25",
  "country": "US",
  "isHoliday": true
}
```

4. Logging Useful Information

The following **6 fields** are logged per request:

1. Country code
2. Date
3. Whether it is a holiday
4. Device type (hardcoded as “Android Emulator” for now)
5. Timestamp of request
6. API response status or message

These fields were chosen to support future analytics and debugging.

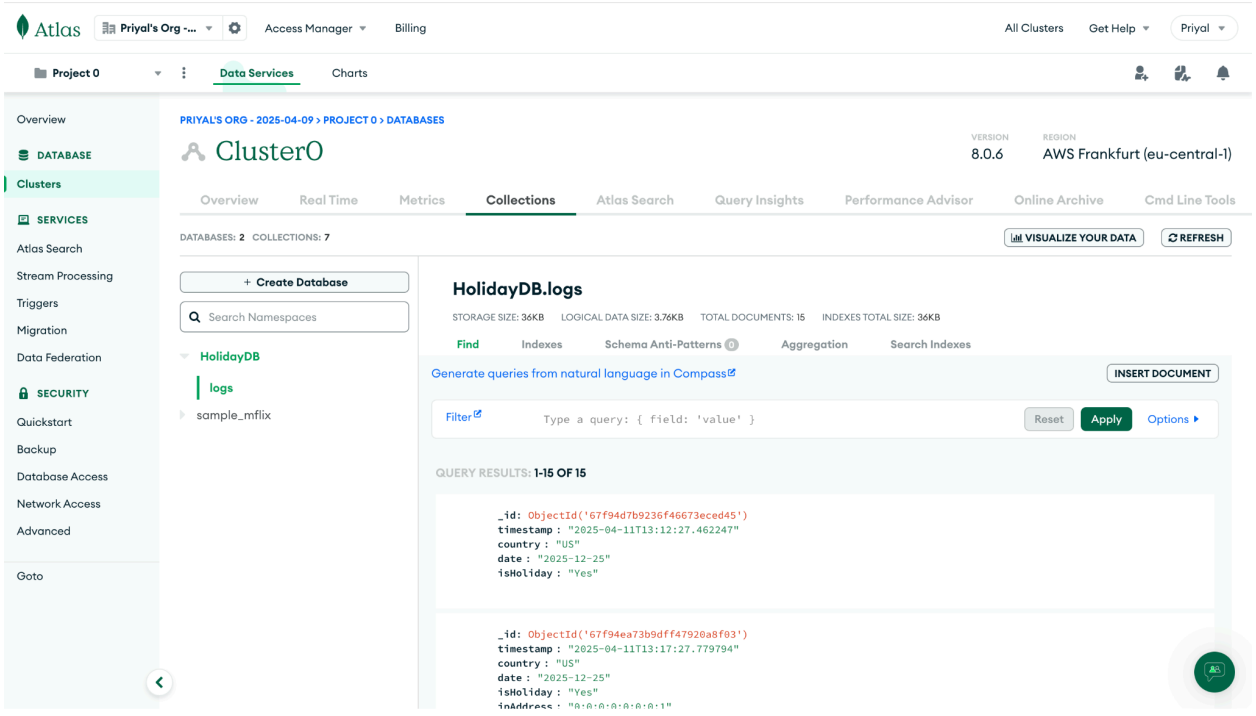
5. MongoDB Database

Database provider: MongoDB Atlas
Connection string:

mongodb+srv://Priyal07:<dbpassword>@cluster0.jksc2gm.mongodb.net/?retryWrites=true&w=majority&appName=Cluster0

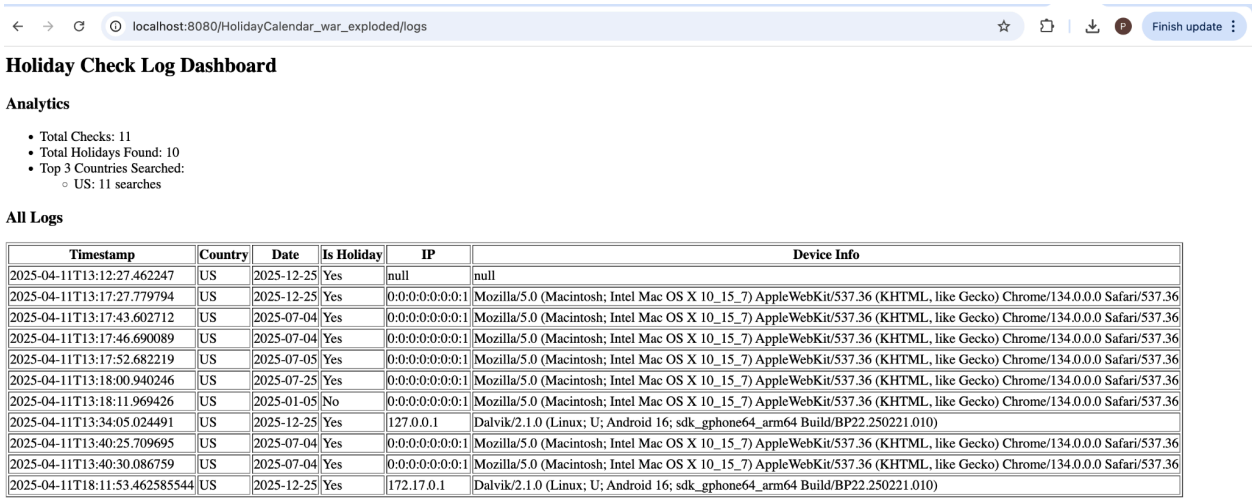
Three shard servers:

- cluster0-shard-00-00.jksc2gm.mongodb.net:27017
- cluster0-shard-00-01.jksc2gm.mongodb.net:27017
- cluster0-shard-00-02.jksc2gm.mongodb.net:27017



6. Dashboard – Logs + Analytics

URL:
`http://localhost:8080/HolidayCalendar_war_exploded/logs`



Timestamp	Country	Date	Is Holiday	IP	Device Info
2025-04-11T13:12:27.462247	US	2025-12-25	Yes	null	null
2025-04-11T13:17:27.779794	US	2025-12-25	Yes	0:0:0:0:0:0:0:1	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36
2025-04-11T13:17:43.602712	US	2025-07-04	Yes	0:0:0:0:0:0:0:1	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36
2025-04-11T13:17:46.690089	US	2025-07-04	Yes	0:0:0:0:0:0:0:1	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36
2025-04-11T13:17:52.682219	US	2025-07-05	Yes	0:0:0:0:0:0:0:1	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36
2025-04-11T13:18:00.940246	US	2025-07-25	Yes	0:0:0:0:0:0:0:1	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36
2025-04-11T13:18:11.969426	US	2025-01-05	No	0:0:0:0:0:0:0:1	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36
2025-04-11T13:34:05.024491	US	2025-12-25	Yes	127.0.0.1	Dalvik/2.1.0 (Linux; U; Android 16; sdk_gphone64_arm64 Build/BP22.250221.010)
2025-04-11T13:40:25.709695	US	2025-07-04	Yes	0:0:0:0:0:0:0:1	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36
2025-04-11T13:40:30.086759	US	2025-07-04	Yes	0:0:0:0:0:0:0:1	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36
2025-04-11T18:11:53.462585544	US	2025-12-25	Yes	172.17.0.1	Dalvik/2.1.0 (Linux; U; Android 16; sdk_gphone64_arm64 Build/BP22.250221.010)