1. Native Android Application

a. Different Views
My app uses four kinds of Views:

EditText – lets the user type a keyword (tag)

Button – user clicks this to start the request

TextView – shows the quote on the screen

ProgressBar – shows a loading spinner while waiting

These are all subclasses of android.view.View.

b. User Input
The user types a tag into the EditText. This tag is used to search for a quote.

c. HTTP Request in Background
The app uses OkHttpClient to send a GET request. The request is done on a background thread using Callback. This keeps the UI smooth.

d. Parse JSON Reply
The reply from the server is in JSON format. I use Gson and JsonParser to read the quote from it.

e. Show New Info to User
The app shows the quote in the TextView when the reply comes back.

f. Repeatable
The user can enter a new tag and get another quote. No need to restart the app.

2. Web Service

a. Simple API
I made an API endpoint called /quote. It is in QuoteServlet.java.

b. Receives Request from Android App
The Android app sends a GET request with the tag. The server reads the tag from the request.

c. Business Logic and 3rd Party API
The server uses the tag to search for a quote using the ZenQuotes API. It gets the quote and prepares the result.

d. Reply in JSON
The server sends back a short JSON reply with just the quote text. This makes it easy for the app to use.

4. Logging

The server logs 6 things for each request:

Android phone model (from the request header)

The tag typed by the user

Time when the server got the request

Time when the server called the 3rd party API

The quote received from the 3rd party API

Time when the server replied to the Android app

Logs are stored in MongoDB.

5. MongoDB for Log Storage

The server saves all log data in MongoDB Atlas (cloud database).
I use `MongoClients` to connect and write logs into the `logData` collection.

6. Dashboard (Web Page)

a. Dashboard URL

There is a dashboard at /dashboard. It is served by DashboardServlet.java.

b. Three Analytics

The dashboard shows:

Top 10 most used tags

Top 5 Android phone models

Average response time for the quote request

c. Formatted Logs

The logs are shown in an HTML table (not as raw JSON or XML).
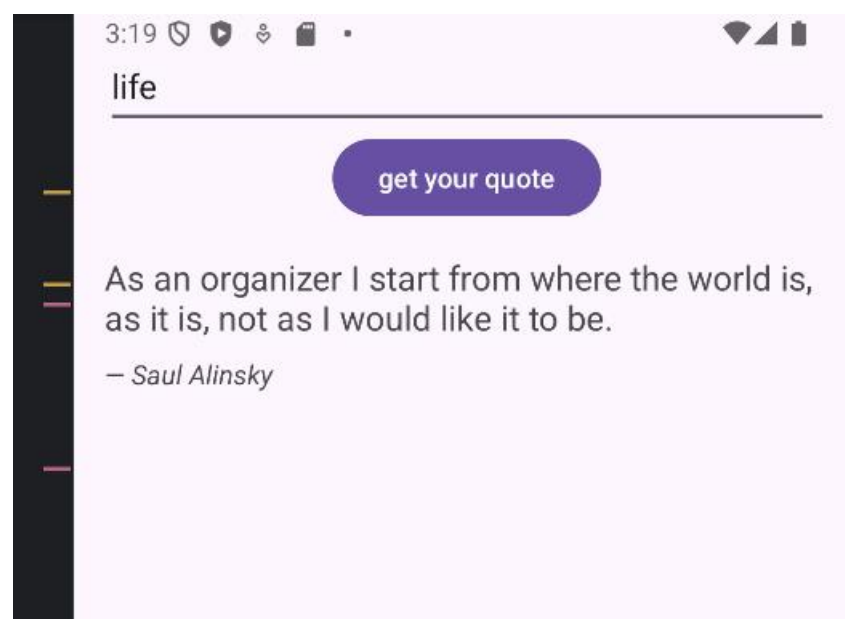
The table is made using JSP.

7. Deployment on GitHub Codespaces

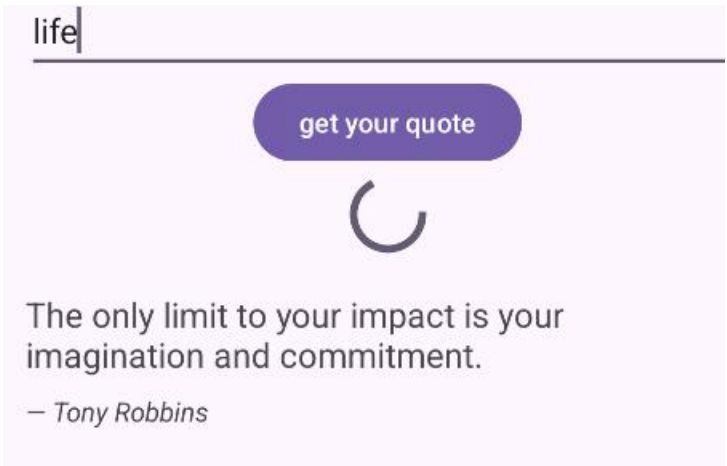I used Dockerfile and .devcontainer.json to deploy the server.

The .war file is deployed and runs on port 8080.

I made the port public so the Android app can reach it.

I tested the app URL in a private/incognito browser window to confirm it works without login.

The progressBar

Dashboard

Top 3 Tags:

- life (13)
- null (12)

Full Logs

Device	Tag	Content	Time
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	If you don't design your own life plan, chances are you'll fall into someone else's plan. And guess what they have planned for you? Not much. - Jim Rohn	2025-03-30T03:17:29.547542500Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	Most people are about as happy as they make up their minds to be - Abraham Lincoln	2025-03-30T03:19:45.199736300Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	The thoughts we choose to think are the tools we use to paint the canvas of our lives. - Louise Hay	2025-03-30T03:21:30.963388600Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	If you don't design your own life plan, chances are you'll fall into someone else's plan. And guess what they have planned for you? Not much. - Jim Rohn	2025-03-30T03:25:55.060787Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	As you think, so shall you become. - Bruce Lee	2025-03-30T03:26:49.966562800Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	If A is success in life, then A equals x plus y plus z. Work is x; y is play; and z is keeping your mouth shut. - Albert Einstein	2025-03-30T03:30:38.923254700Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	The thoughts we choose to think are the tools we use to paint the canvas of our lives. - Louise Hay	2025-03-30T03:55:33.835955096Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	You have to do your own growing no matter how tall your grandfather was. - Abraham Lincoln	2025-03-30T04:14:58.537764900Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	No valid plans for the future can be made by those who have no capacity for living now. - Alan Watts	2025-03-30T04:17:06.798842857Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	There is only one success - to be able to spend your life in your own way. - Christopher Morley	2025-03-30T04:17:11.656492569Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	Life is a succession of lessons, which must be lived to be understood. - Ralph Waldo Emerson	2025-03-30T04:26:12.236438900Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	One of the advantages of being disorderly is that one is constantly making exciting discoveries. - A. A. Milne	2025-03-30T04:30:25.857381861Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	life	One of the advantages of being disorderly is that one is constantly making exciting discoveries. - A. A. Milne	2025-04-01T12:57:47.969472050Z
okhttp/4.12.0	null	Stay away from what might have been and look at what will be. - Marsha Petrie Sue	2025-04-01T13:14:07.462088379Z
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/134.0.0.0 Safari/537.36 Edg/134.0.0.0	null	Let us be grateful to people who make us happy; they are the charming gardeners who make our souls blossom. - Marcel Proust	2025-04-01T13:37:30.581223475Z
okhttp/4.12.0	null	Kindness in words creates confidence. Kindness in thinking creates profoundness. Kindness in giving creates love. - Laozi	2025-04-01T13:41:15.044719996Z