ISTA 2023

THINK . PREDICT . CREATE

ChatGPT Experiment: Building with technology we don't know

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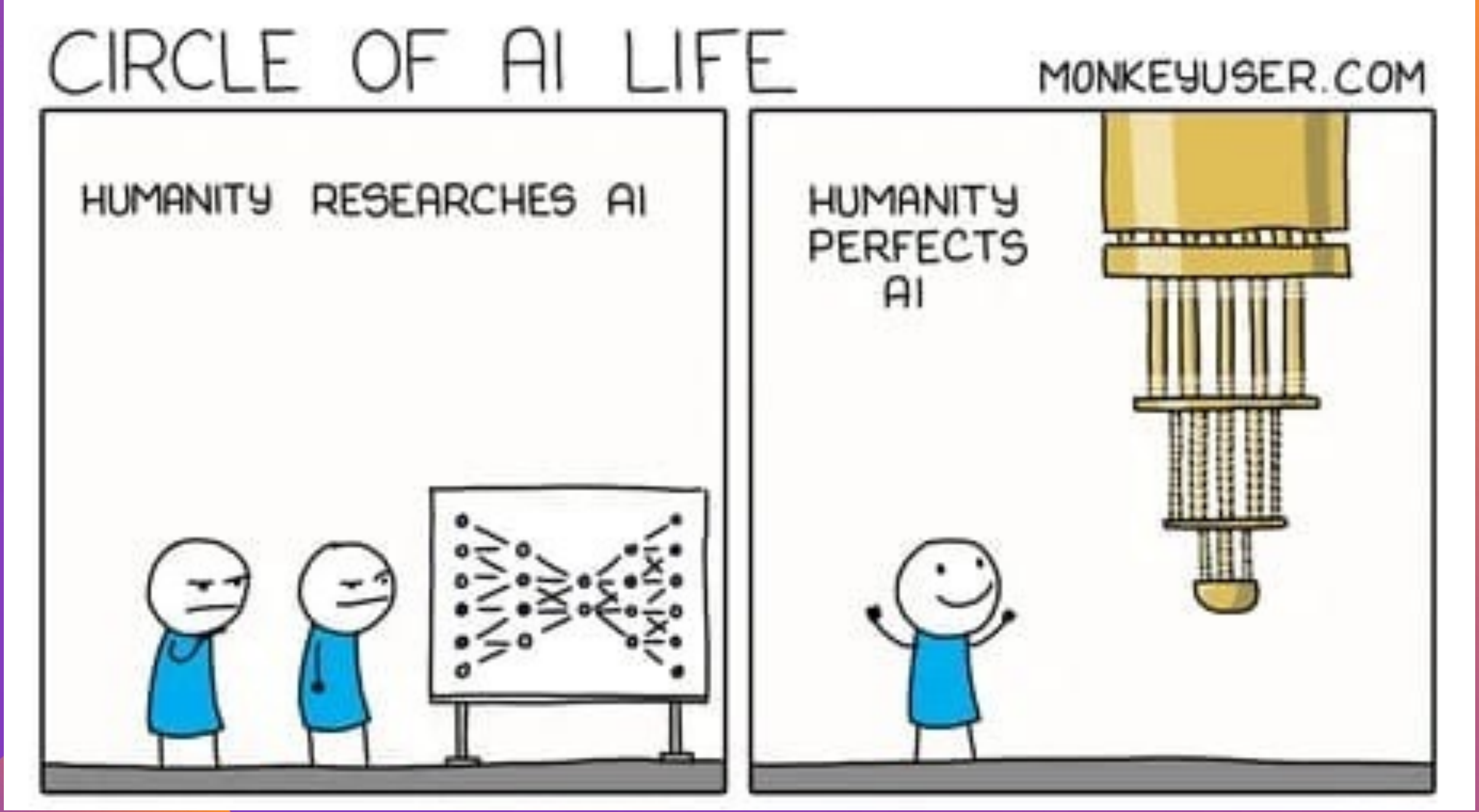
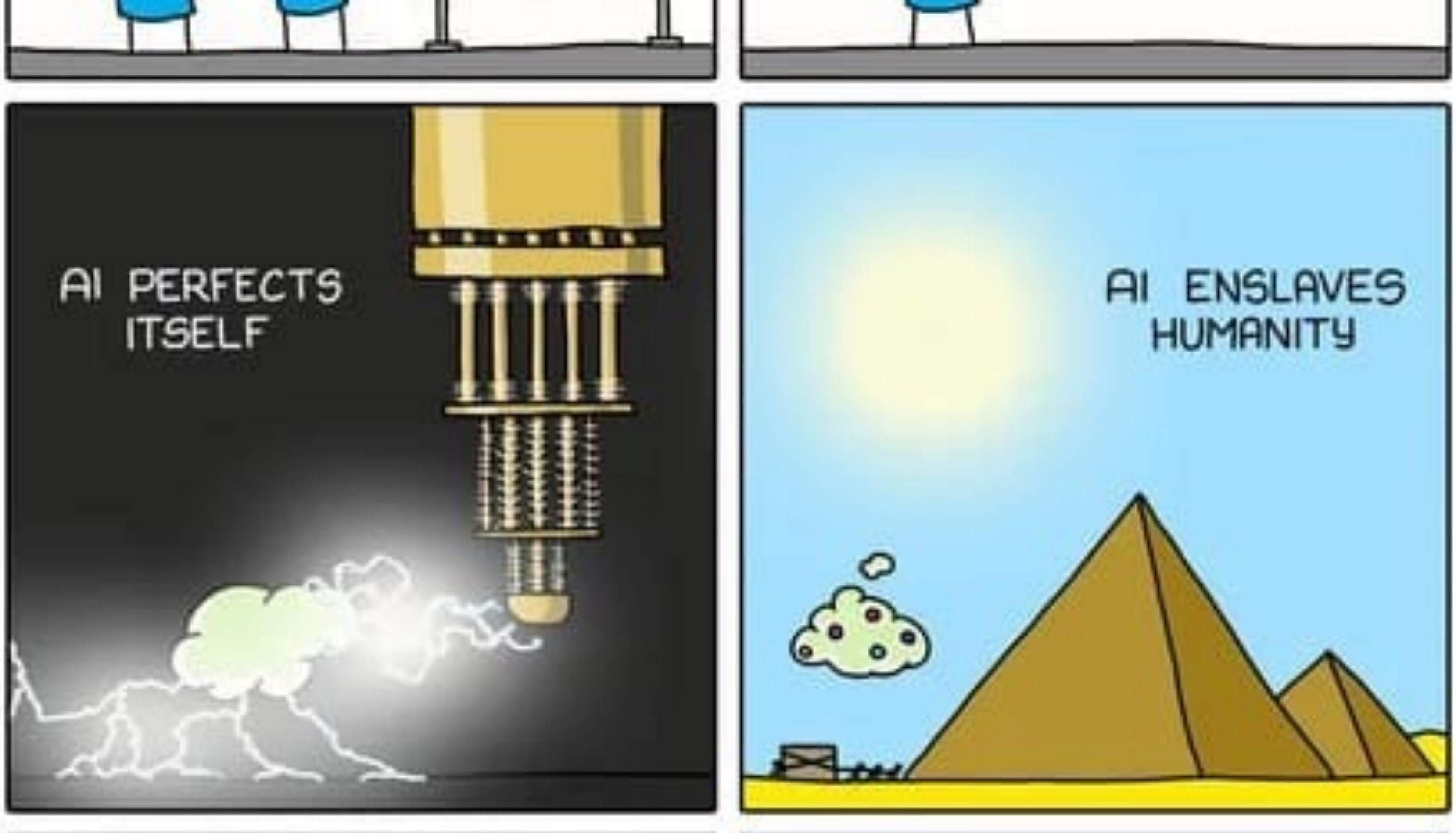
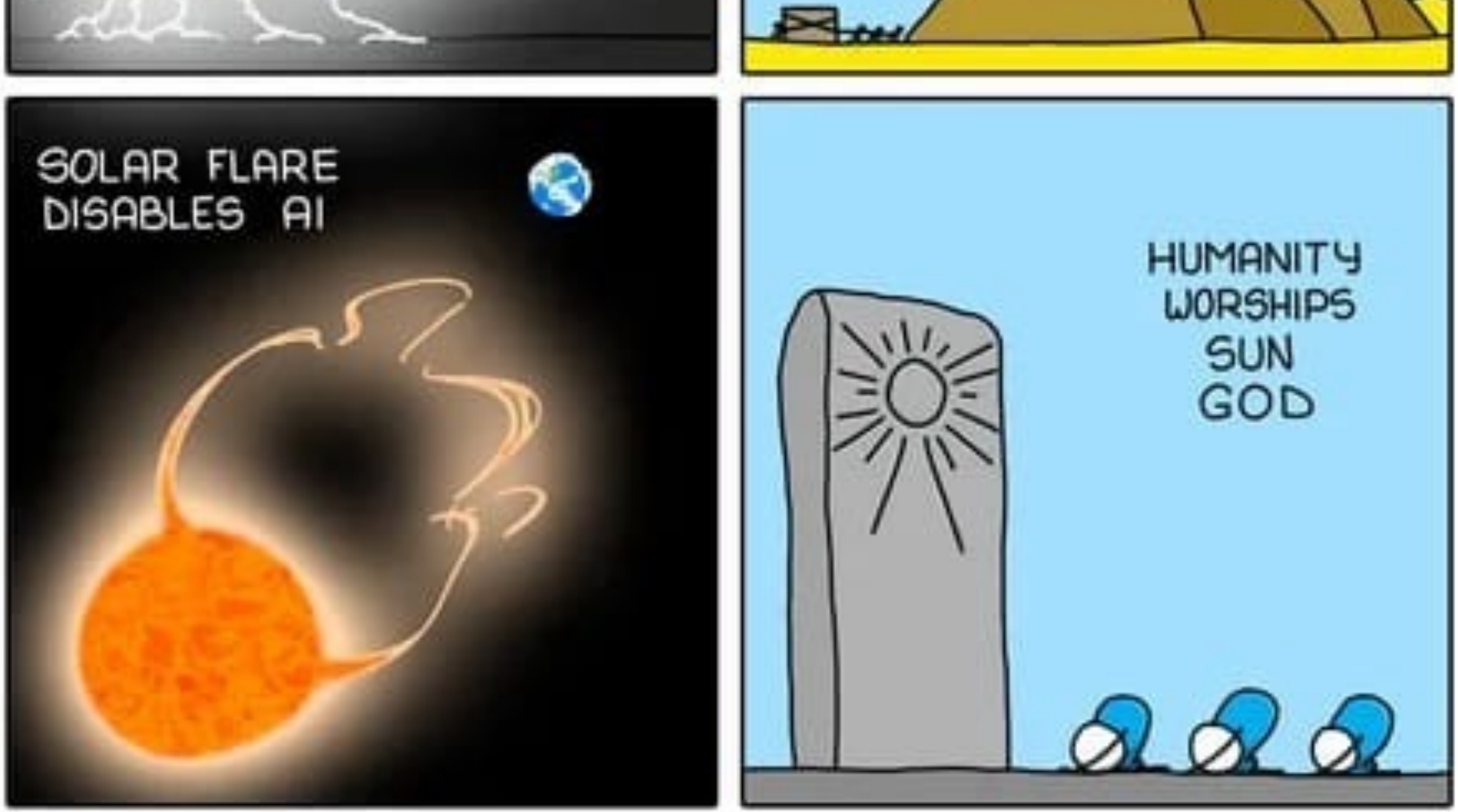

CIRCLE OF AI LIFE
MONKEYUSER.COM
HUMANITY RESEARCHES AI
HUMANITY PERFECTS AI


AI PERFECTS ITSELF
AI ENSLAVES HUMANITY


SOLAR FLARE DISABLES AI
HUMANITY WORSHIPS SUN GOD

So, AI?

The Project

- DART Backend
- Flutter Frontend
- SQLite DB
- Two Containers

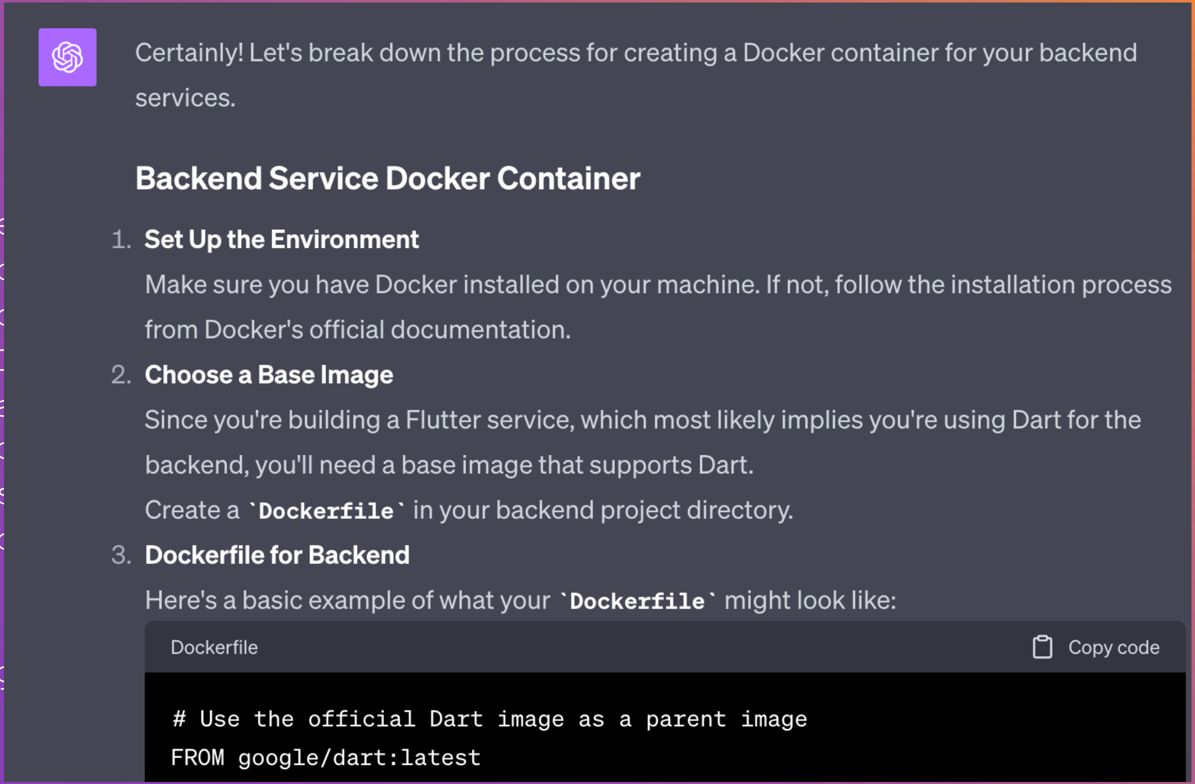
The Backend

Let’s start with some introduction!

Prompt

Dear ChatGPT, I want to creat
which will be separated in tw
containers: one serving my fr
serving my backend services. T
services container will have a
that it built with Flutter an
lightweight relational databas
container. The frontend servi
will serve a Flutter frontend

Let's start with you providin
instructions, needed to build
container.



Certainly! Let's break down the process for creating a Docker container for your backend services.

Backend Service Docker Container

1. **Set Up the Environment**
   Make sure you have Docker installed on your machine. If not, follow the installation process from Docker's official documentation.
2. **Choose a Base Image**
   Since you're building a Flutter service, which most likely implies you're using Dart for the backend, you'll need a base image that supports Dart.
   Create a `Dockerfile` in your backend project directory.
3. **Dockerfile for Backend**
   Here's a basic example of what your `Dockerfile` might look like:

```
# Use the official Dart image as a parent image
FROM google/dart:latest
```

It gave me a lot more…

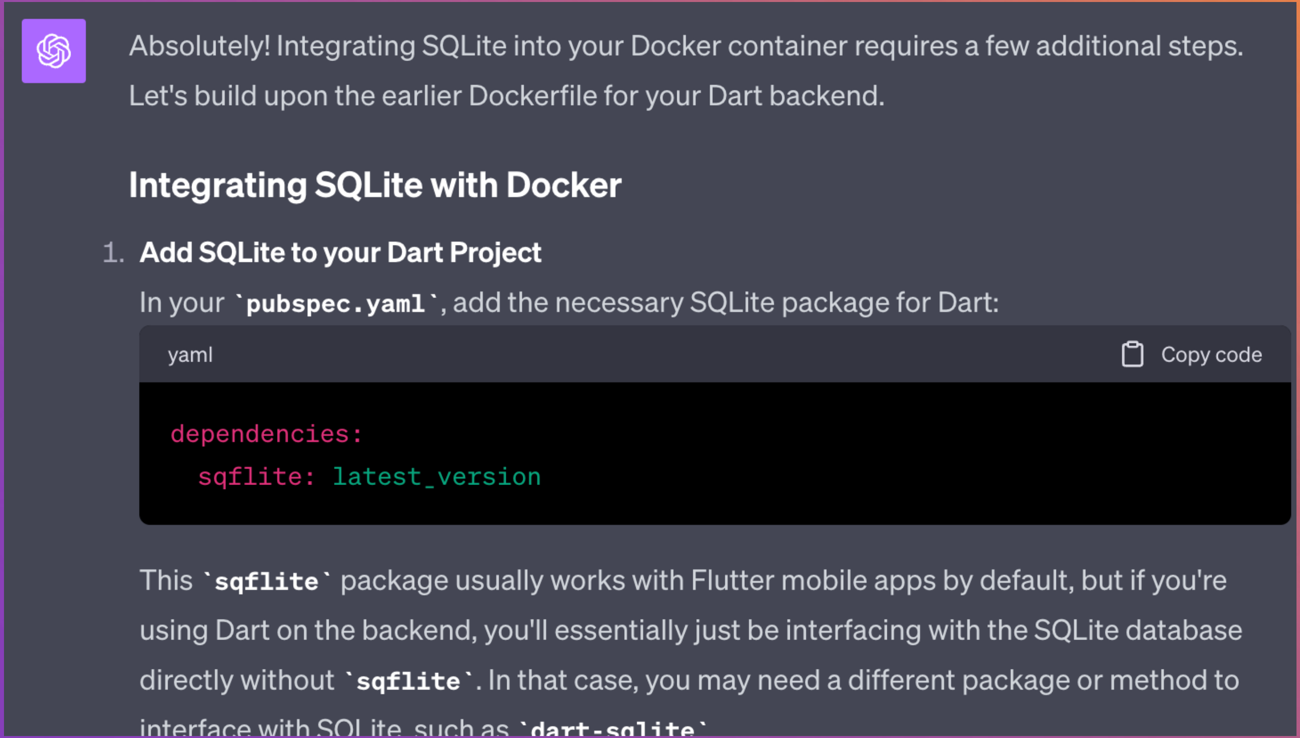
(and you will also get it as GitHub repo handover)

- Database suggestion;
- Instructions how to build the Dockerfile image and run it;
- Plenty of notes about what's the good design and why my suggestion deviates

However, I didn’t know how to include SQLite

Prompt:

`Please give me more detailed instructions about how to include SQLite in my Dockerfile`



Absolutely! Integrating SQLite into your Docker container requires a few additional steps. Let's build upon the earlier Dockerfile for your Dart backend.

Integrating SQLite with Docker

1. **Add SQLite to your Dart Project**

   In your `pubspec.yaml`, add the necessary SQLite package for Dart:

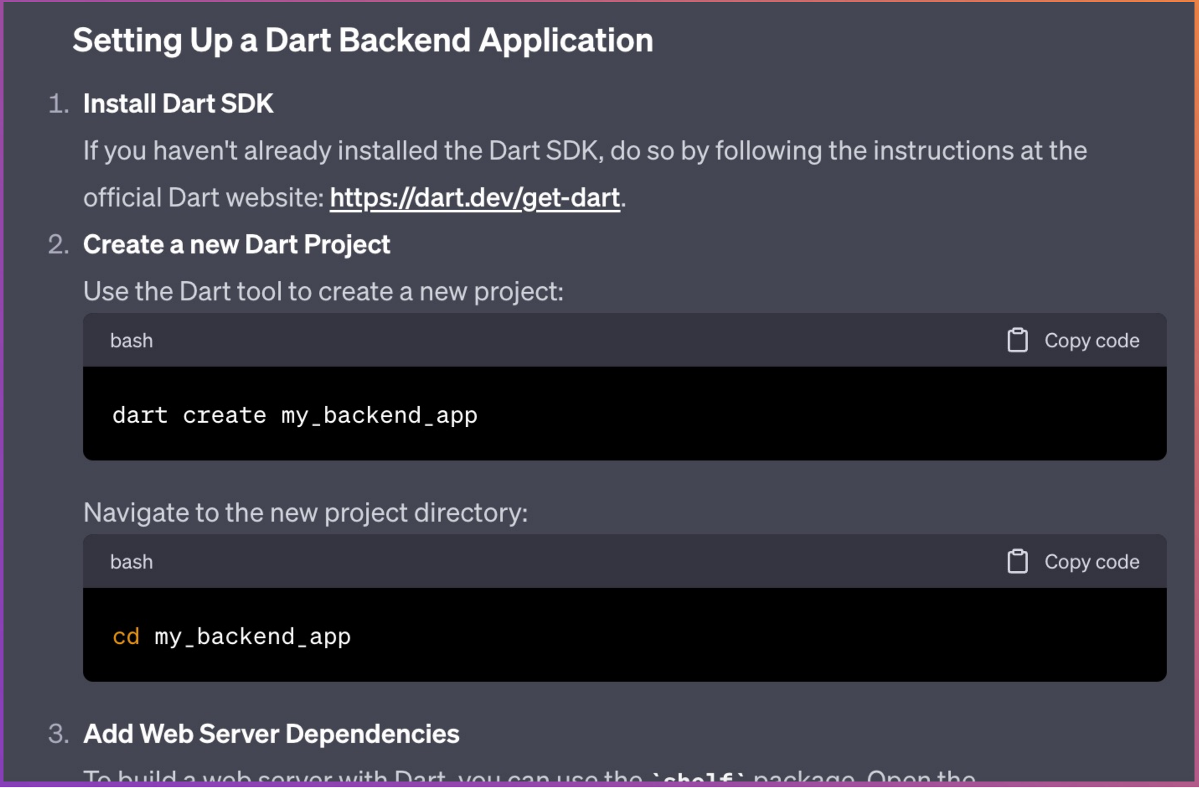
   ```yaml
   dependencies:
     sqflite: latest_version
   ```

   This `sqflite` package usually works with Flutter mobile apps by default, but if you're using Dart on the backend, you'll essentially just be interfacing with the SQLite database directly without `sqflite`. In that case, you may need a different package or method to interface with SQLite, such as `dart-sqlite`

..then I got some errors, because of missing my backend!

Prompt:

`Trying to build the Dockerfile gave me errors because of missing pubscpec.yaml. Give me the initial commands for building the backend app in Dart.`



Setting Up a Dart Backend Application

1. **Install Dart SDK**

   If you haven't already installed the Dart SDK, do so by following the instructions at the official Dart website: https://dart.dev/get-dart.

2. **Create a new Dart Project**

   Use the Dart tool to create a new project:

   ```bash
   dart create my_backend_app
   ```

   Navigate to the new project directory:

   ```bash
   cd my_backend_app
   ```

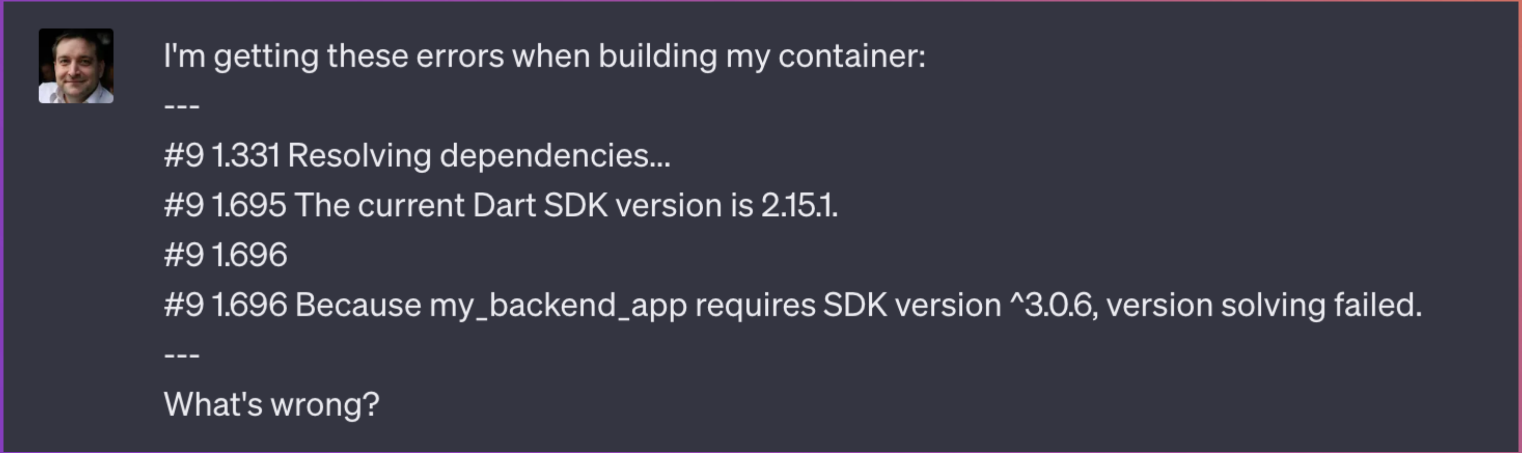
3. **Add Web Server Dependencies**

   To build a web server with Dart, you can use the `shelf` package. Open the

..then came the first hiccup!
The containerized `dart` was too old!

ChatGPT data is from 2022!
The proposed Dockerfile was with Dart 2, while the backend was for 3.0.x

I kept asking:

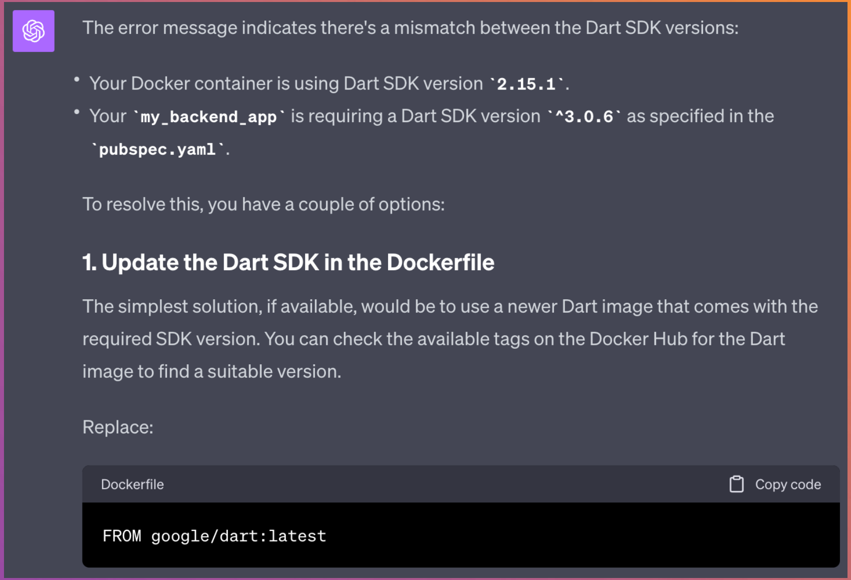


I'm getting these errors when building my container:

```
#9 1.331 Resolving dependencies...
#9 1.695 The current Dart SDK version is 2.15.1.
#9 1.696
#9 1.696 Because my_backend_app requires SDK version ^3.0.6, version solving failed.
```

What's wrong?

It answered
...and it was wrong!



The error message indicates there's a mismatch between the Dart SDK versions:

- Your Docker container is using Dart SDK version `` `2.15.1` ``.
- Your `` `my_backend_app` `` is requiring a Dart SDK version `` `^3.0.6` `` as specified in the `` `pubspec.yaml` ``.

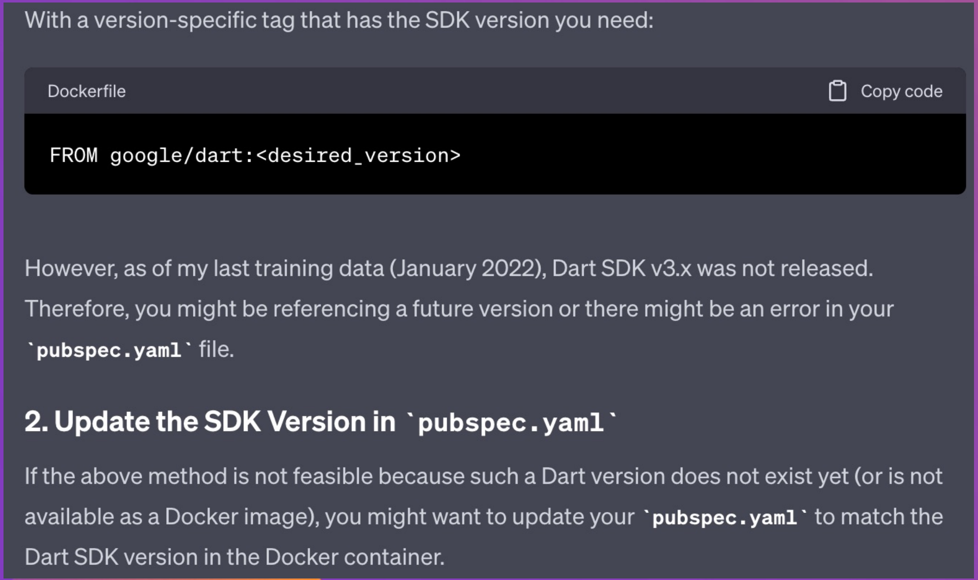
To resolve this, you have a couple of options:

1. Update the Dart SDK in the Dockerfile

The simplest solution, if available, would be to use a newer Dart image that comes with the required SDK version. You can check the available tags on the Docker Hub for the Dart image to find a suitable version.

Replace:

```
FROM google/dart:latest
```



With a version-specific tag that has the SDK version you need:

```
FROM google/dart:<desired_version>
```

However, as of my last training data (January 2022), Dart SDK v3.x was not released. Therefore, you might be referencing a future version or there might be an error in your `` `pubspec.yaml` `` file.

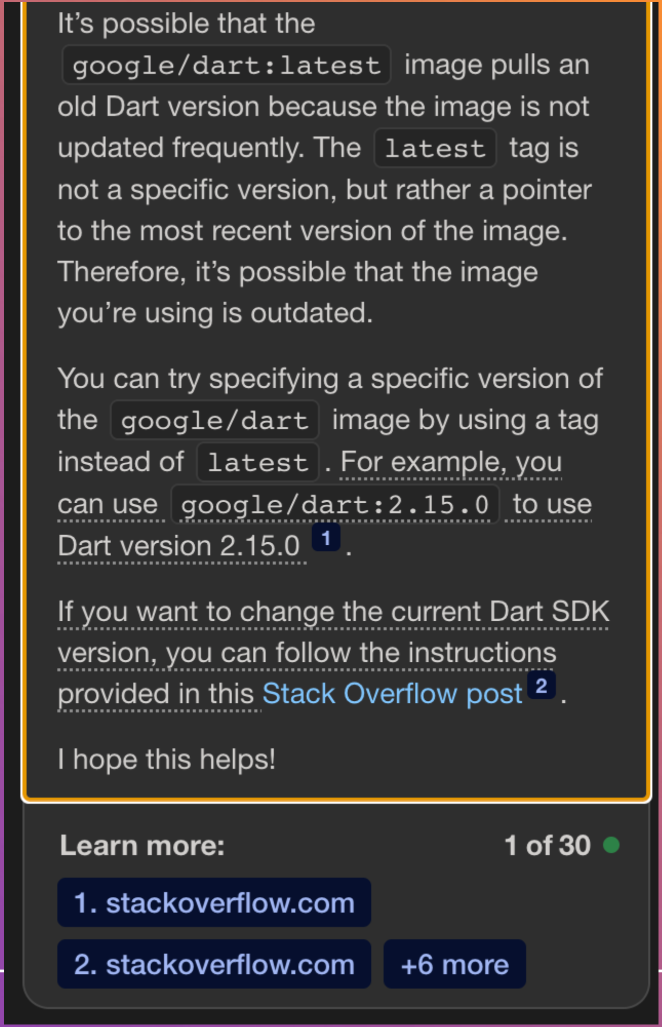
2. Update the SDK Version in `` `pubspec.yaml` ``

If the above method is not feasible because such a Dart version does not exist yet (or is not available as a Docker image), you might want to update your `` `pubspec.yaml` `` to match the Dart SDK version in the Docker container.

I was on my own here!
Well, not exactly.
I had Bing AI here to help!

..and Bing, too, gloriously failed:

I had to put my Senior Developer hat…



It's possible that the `google/dart:latest` image pulls an old Dart version because the image is not updated frequently. The `latest` tag is not a specific version, but rather a pointer to the most recent version of the image. Therefore, it's possible that the image you're using is outdated.

You can try specifying a specific version of the `google/dart` image by using a tag instead of `latest`. For example, you can use `google/dart:2.15.0` to use Dart version 2.15.0[1].

If you want to change the current Dart SDK version, you can follow the instructions provided in this Stack Overflow post[2].

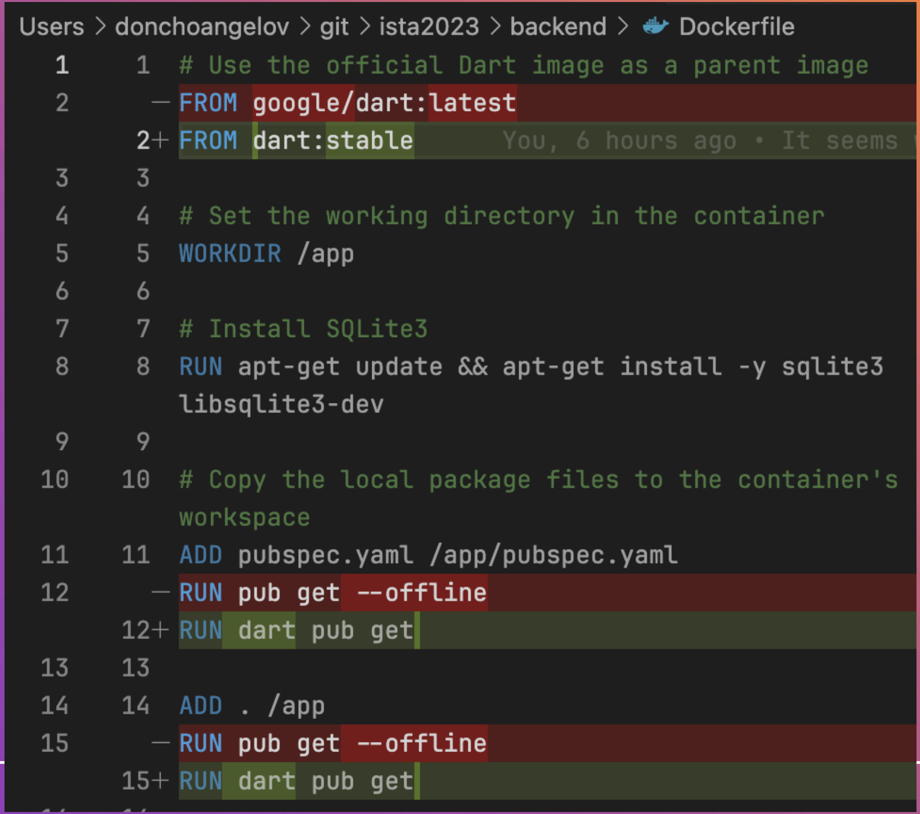
I hope this helps!

..and after some reading and research...

...one of the links in the Bing AI result took me to the solution!

(Bing AI is also ChatGPT-based)

It still came as a help from the AI, but it was not "that" straight-forward!

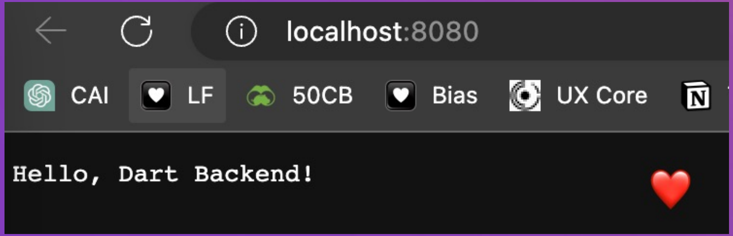


Users > donchoangelov > git > ista2023 > backend > Dockerfile

```
# Use the official Dart image as a parent image
— FROM google/dart:latest
+ FROM dart:stable        You, 6 hours ago • It seems

# Set the working directory in the container
WORKDIR /app

# Install SQLite3
RUN apt-get update && apt-get install -y sqlite3
libsqlite3-dev

# Copy the local package files to the container's
workspace
ADD pubspec.yaml /app/pubspec.yaml
— RUN pub get --offline
+ RUN dart pub get

ADD . /app
— RUN pub get --offline
+ RUN dart pub get
```

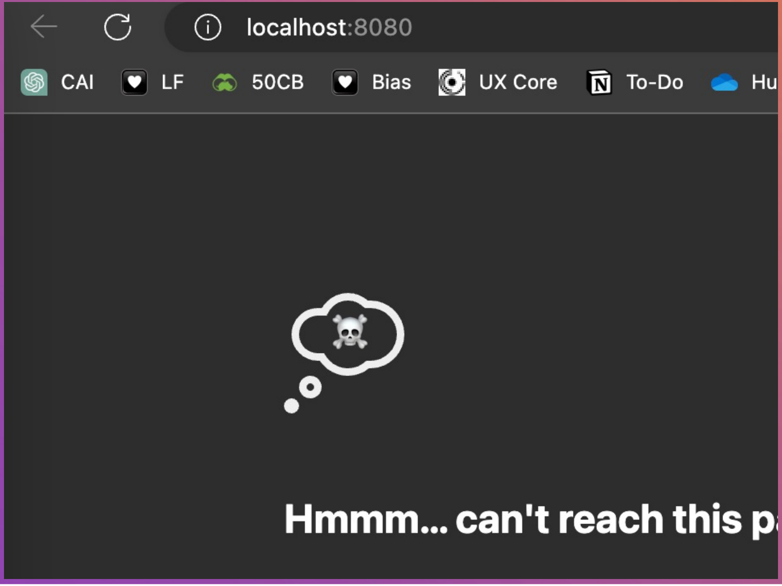
I got a build! And a container! Hurray! However:

My Dev environment:



Hello, Dart Backend!

My containerized backend:



Hmmm... can't reach this p

…but I'm just with basic Docker knowledge! Help, ChatGPT!

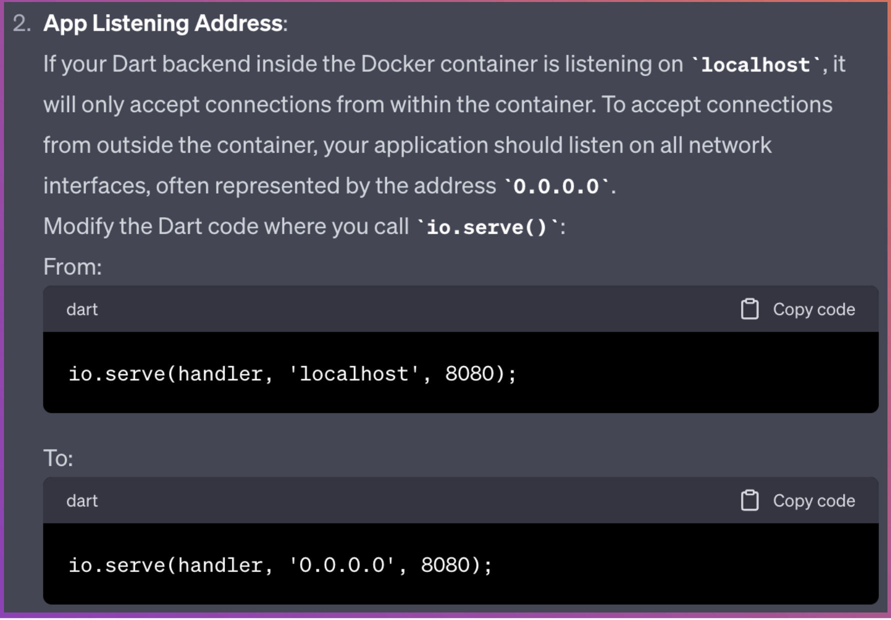
Prompt

it says "docker run -p 8080:8080 your-backend-image-name

Serving at http://localhost:8080"

But I cannot open anything at http://localhost:8080

Response (the 2nd part):



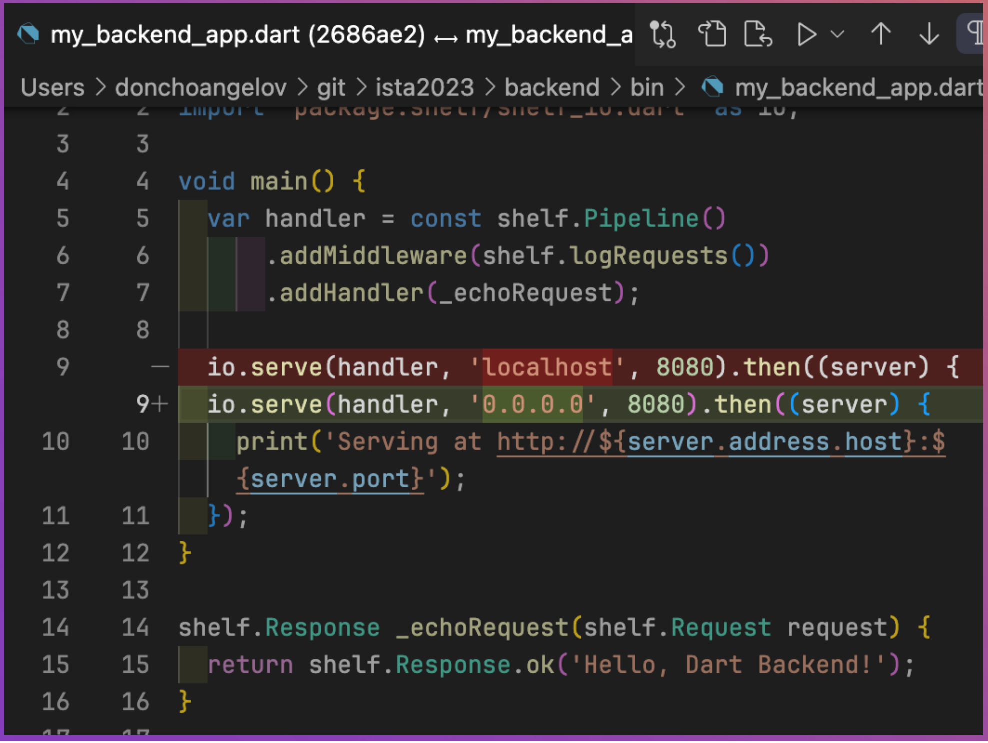
2. **App Listening Address**:
   If your Dart backend inside the Docker container is listening on `` `localhost` ``, it will only accept connections from within the container. To accept connections from outside the container, your application should listen on all network interfaces, often represented by the address `` `0.0.0.0` ``.
   Modify the Dart code where you call `` `io.serve()` ``:
   From:

```dart
io.serve(handler, 'localhost', 8080);
```

   To:

```dart
io.serve(handler, '0.0.0.0', 8080);
```

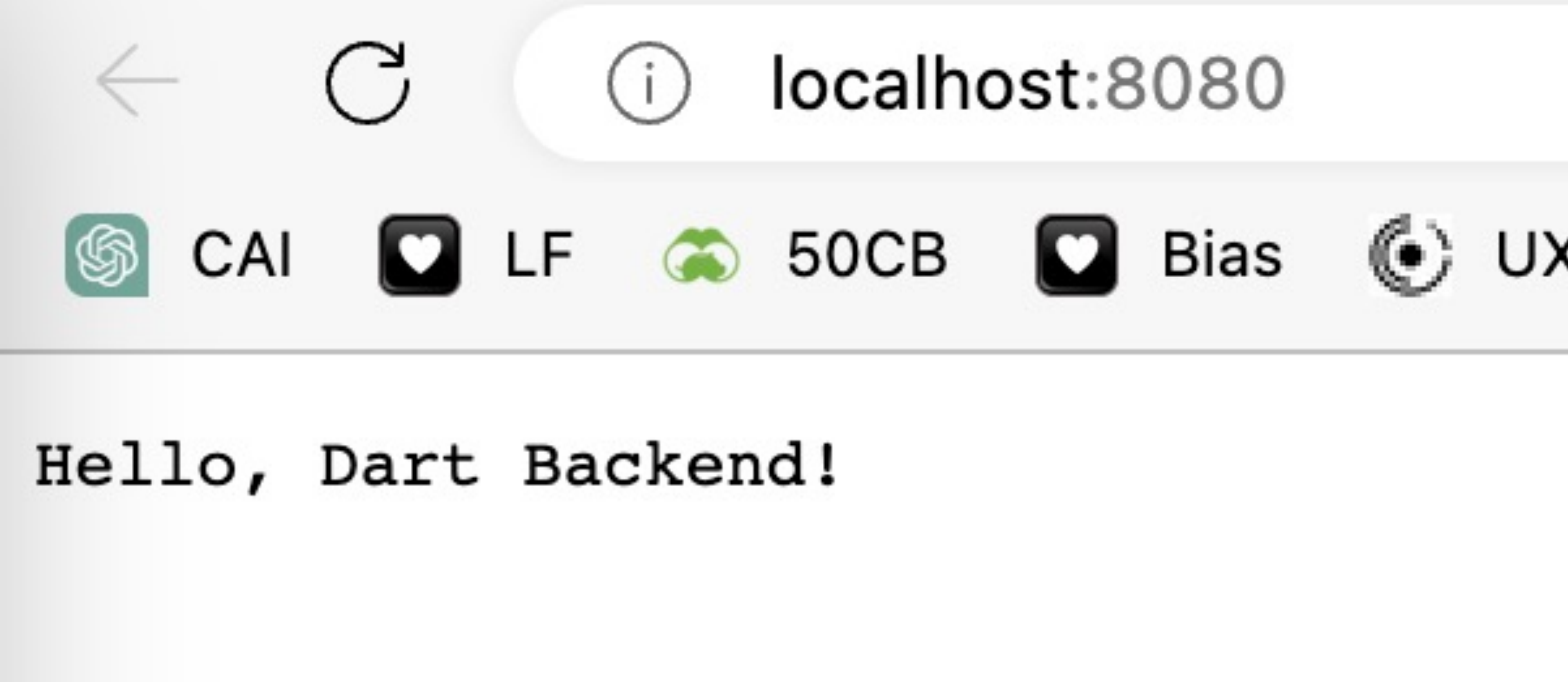
I did what it told me, and…



my_backend_app.dart (2686ae2) ⟷ my_backend_a

Users > donchoangelov > git > ista2023 > backend > bin > my_backend_app.dart

```
void main() {
  var handler = const shelf.Pipeline()
      .addMiddleware(shelf.logRequests())
      .addHandler(_echoRequest);

-  io.serve(handler, 'localhost', 8080).then((server) {
+  io.serve(handler, '0.0.0.0', 8080).then((server) {
    print('Serving at http://${server.address.host}:${server.port}');
  });
}

shelf.Response _echoRequest(shelf.Request request) {
  return shelf.Response.ok('Hello, Dart Backend!');
}
```



```
Hello, Dart Backend!
```

…and then I realized:

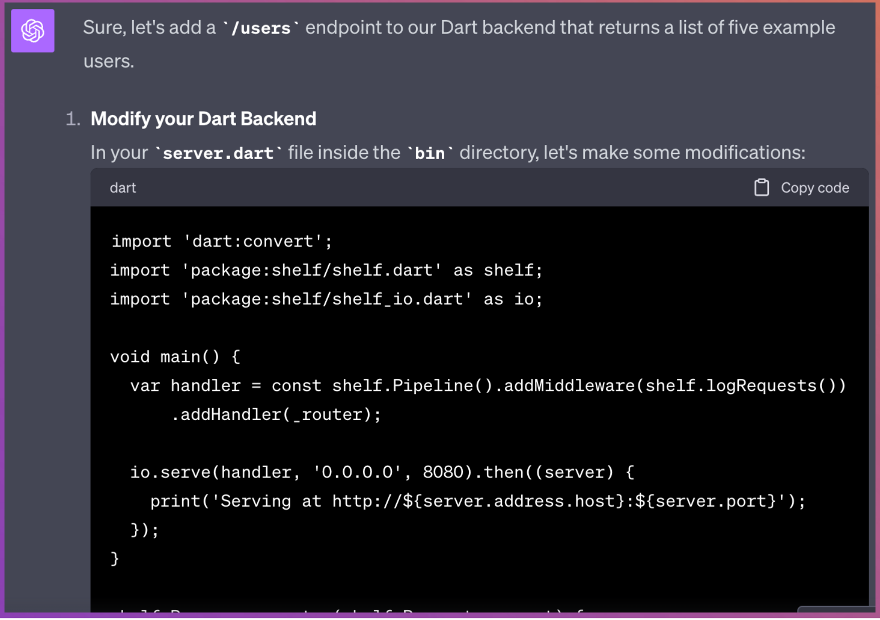
I have only 25 minutes presentation!

…so I ditched my SQLite plans in favor for simple `/users` backend stub!

Prompt

`Let's add `/users` backend API, which will be a testing stub for list of users, providing five example users with a fixed data.`

Response:



Sure, let's add a `/users` endpoint to our Dart backend that returns a list of five example users.

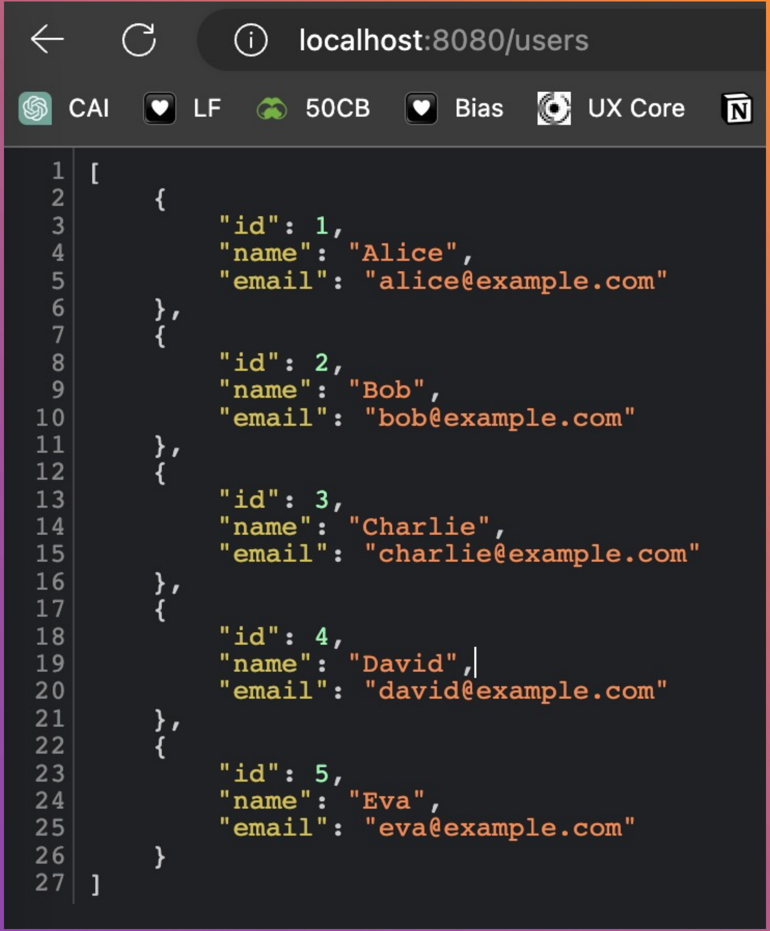
1. **Modify your Dart Backend**

   In your `server.dart` file inside the `bin` directory, let's make some modifications:

```dart
import 'dart:convert';
import 'package:shelf/shelf.dart' as shelf;
import 'package:shelf/shelf_io.dart' as io;

void main() {
  var handler = const shelf.Pipeline().addMiddleware(shelf.logRequests())
      .addHandler(_router);

  io.serve(handler, '0.0.0.0', 8080).then((server) {
    print('Serving at http://${server.address.host}:${server.port}');
  });
}
```

…test with `dart run`,
build the container,
run it, and…

So, I pronounced my backend as "READY"



```
[
        {
                "id": 1,
                "name": "Alice",
                "email": "alice@example.com"
        },
        {
                "id": 2,
                "name": "Bob",
                "email": "bob@example.com"
        },
        {
                "id": 3,
                "name": "Charlie",
                "email": "charlie@example.com"
        },
        {
                "id": 4,
                "name": "David",
                "email": "david@example.com"
        },
        {
                "id": 5,
                "name": "Eva",
                "email": "eva@example.com"
        }
]
```

The Frontend

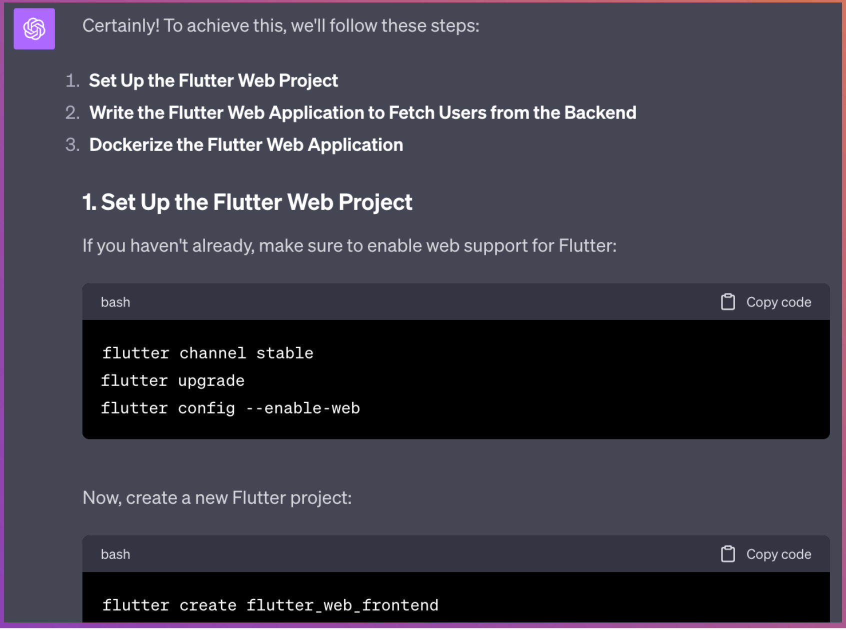
Pretty Much Straightforward Prompt

Prompt

Good! Now we should create the Frontend. I want the frontend to run on a different container, and connect with the backend container throughout the already exposed API.

Please, write the frontend by using Flutter and taking into account it'll produce a web application only.

Response:



Certainly! To achieve this, we'll follow these steps:

1. **Set Up the Flutter Web Project**
2. **Write the Flutter Web Application to Fetch Users from the Backend**
3. **Dockerize the Flutter Web Application**

1. Set Up the Flutter Web Project

If you haven't already, make sure to enable web support for Flutter:

```bash
flutter channel stable
flutter upgrade
flutter config --enable-web
```

Now, create a new Flutter project:

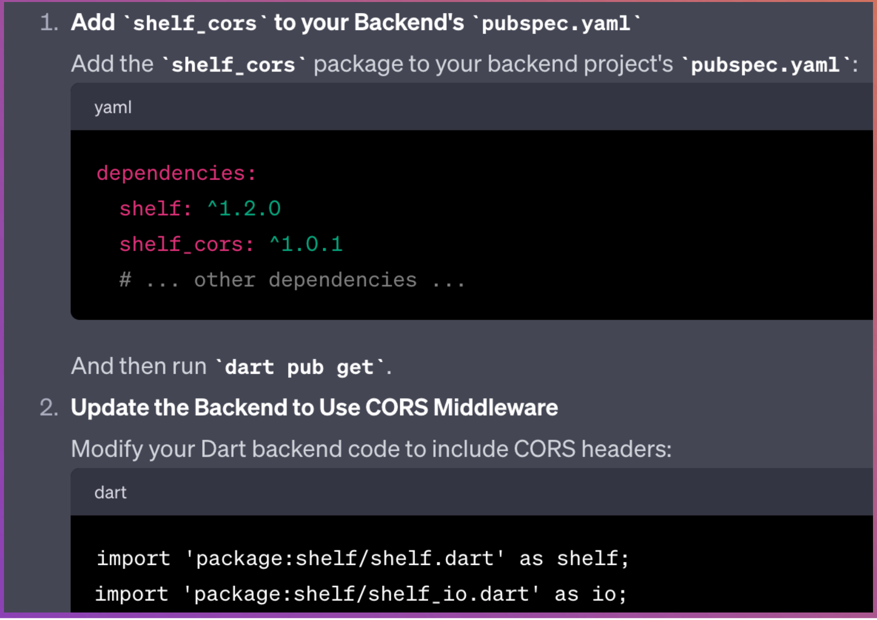
```bash
flutter create flutter_web_frontend
```

…and then it came the CORS middle(night)ware…

Prompt

```
I'm getting this error in my console when
trying to access the backend:
---
Access to XMLHttpRequest at
'http://localhost:8080/users' from origin
'http://localhost:64817' has been blocked
by CORS policy: No 'Access-Control-Allow-
Origin' header is present on the requested
resource.
---
How to fix it?
```

Response:



1. **Add `shelf_cors` to your Backend's `pubspec.yaml`**

   Add the `shelf_cors` package to your backend project's `pubspec.yaml`:

   yaml

   ```yaml
   dependencies:
     shelf: ^1.2.0
     shelf_cors: ^1.0.1
     # ... other dependencies ...
   ```

   And then run `dart pub get`.

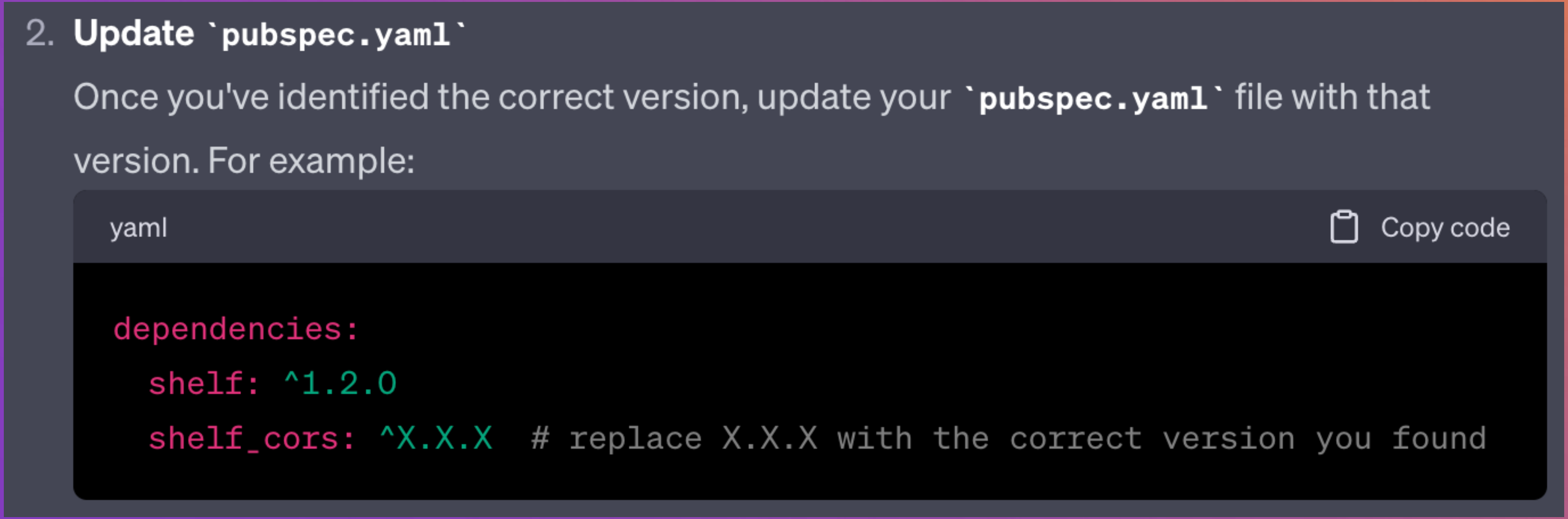
2. **Update the Backend to Use CORS Middleware**

   Modify your Dart backend code to include CORS headers:

   dart

   ```dart
   import 'package:shelf/shelf.dart' as shelf;
   import 'package:shelf/shelf_io.dart' as io;
   ```

ChatGPT was outdated (again)!



2. **Update `pubspec.yaml`**

   Once you've identified the correct version, update your `pubspec.yaml` file with that version. For example:

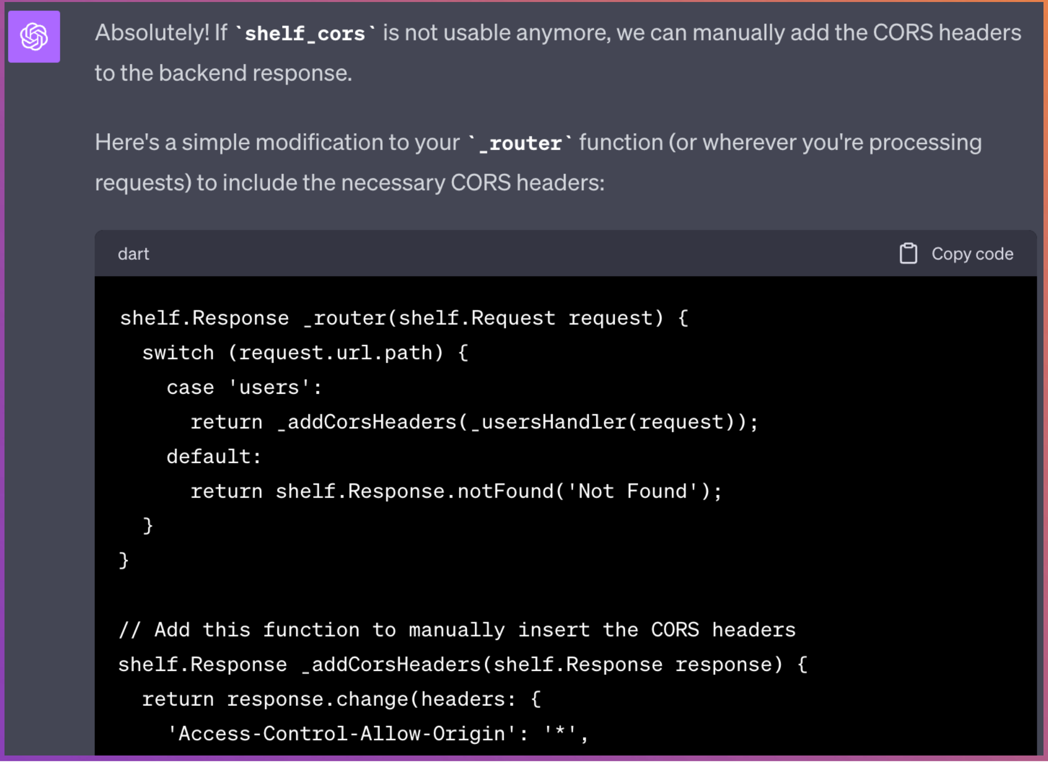
```yaml
dependencies:
  shelf: ^1.2.0
  shelf_cors: ^X.X.X  # replace X.X.X with the correct version you found
```

…but I was insistent!

Prompt

It seems that the shelf_cors package is unusable anymore. Is there any other way to do it?

Response:



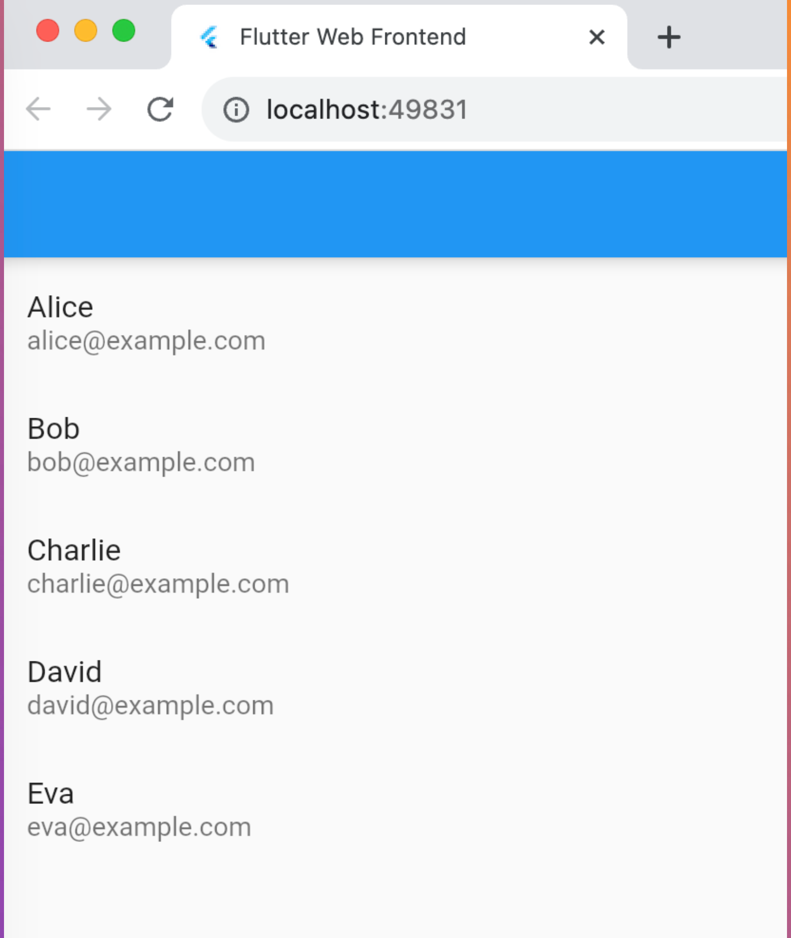
Absolutely! If `shelf_cors` is not usable anymore, we can manually add the CORS headers to the backend response.

Here's a simple modification to your `_router` function (or wherever you're processing requests) to include the necessary CORS headers:

```dart
shelf.Response _router(shelf.Request request) {
  switch (request.url.path) {
    case 'users':
      return _addCorsHeaders(_usersHandler(request));
    default:
      return shelf.Response.notFound('Not Found');
  }
}

// Add this function to manually insert the CORS headers
shelf.Response _addCorsHeaders(shelf.Response response) {
  return response.change(headers: {
    'Access-Control-Allow-Origin': '*',
```

...and finally, a running frontend!

Then I pronounced the Frontend as "READY"



Alice
alice@example.com

Bob
bob@example.com

Charlie
charlie@example.com

David
david@example.com

Eva
eva@example.com

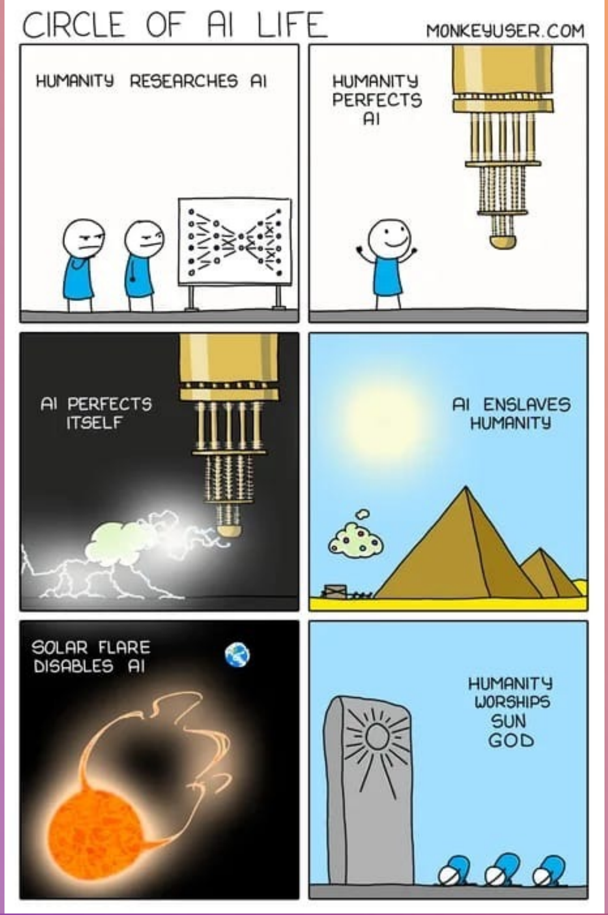
12

What Next?

Select AI of your taste

Learn prompts and use it daily

Own your destiny



Handoffs | Q&A

https://tinyurl.com/DAista2023

https://about.me/donangel