

Assignment Documentation

1.Assumption

The use case requires building an OTP Application.

Incorporate the required skillset in the job description. The following technology is used to demonstrate the skill set.

- Dotnet Core
- ORM using Entity Framework
- Postgresql
- Docker

The task assignment is changed accordingly to fix the technology stack

- OTP is only valid for 5 seconds instead of 1 minute for development

2.Implementation

The codebase is published on Github version control for more observability.

Postgresql Model. A single table is created for simplicity. Ideally, the data will be normalized in a work project to eliminate redundancy and dependency.

```
DROP TABLE IF EXISTS Users cascade;

CREATE TABLE Users (
  id          INTEGER      GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY,
  name        TEXT,
  email       TEXT         UNIQUE,
  otp         TEXT,
  attempt     INTEGER,
  otpdate     timestamp with time zone
);

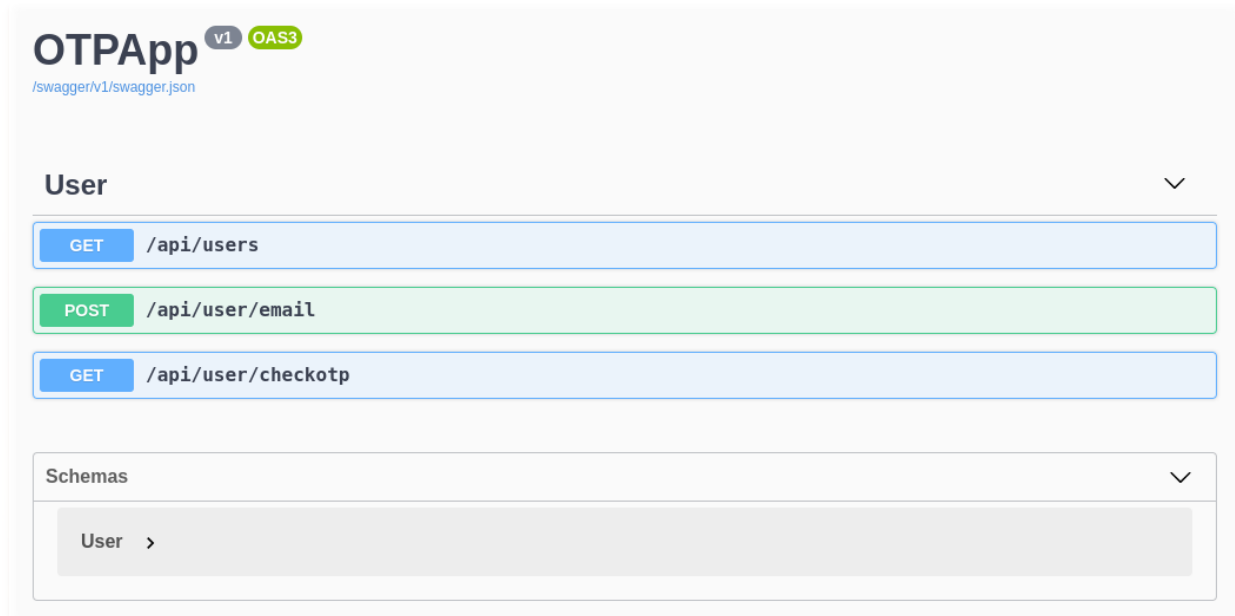
INSERT INTO Users (id, name, email) VALUES (1, 'James', 'tsuisauchi.dso.org.sg');
```

The ORM Models are scaffolds using the Database-First approach for rapid development for this assignment. The approach would be great if the team has expertise in the database and can utilize the Postgresql row-based authorization feature.

Using an Existing Database (Database-First)

The Npgsql EF Core provider also supports reverse-engineering a code model from an existing PostgreSQL database ("database-first"). To do so, use dotnet CLI to execute the following:

```
dotnet ef dbcontext scaffold "Host=my_host;Database=my_db;Username=my_user;Password=my_pw" Npgsql.EntityFrameworkCore.PostgreSQL
```



The endpoint are explained as follows

- /api/users: return all users
- /api/user/email: send 6 digit OTP for email with "dso.org.sg" suffix.
- /user/checkotp: Match OTP. It allows 10 tries and is only valid for 5 second.

The project is then containerized with a static IP address for postgresql so the project can be easily set up in a separate environment.

3. Testing

The testing is done using a python script since the endpoint is exposed.