Chương 1

Prepare

Introduction tools, libraries, languages with using in this project

1.1 Design DB schema and generate SQL code with dbdiagram.io

Website link: https://dbdiagram.io/
In this document i will using this script:

```
Table "users" {
  "id" integer [pk]
  "username" varchar
  "role" varchar
  "created_at" timestamptz [not null, default: 'now()']
}

Table "posts" {
  "id" integer [pk]
  "title" varchar
  "body" text [note: 'Content of the post']
  "user_id" integer
  "status" varchar
  "created_at" timestamptz [not null, default: 'now()']
}

Ref:"users"."id" < "posts"."user_id"
```

1.2 Tools

Tools which will used on this document: **Go**, **VSCode**, **Docker**, **Make**, **Sqlc**

1.3 Database (Postgresql)

Using docker to start a database and dbeaver using like database editor Pull postgres image this script will use postgres version 16-alpine:

```
$ docker pull postgres
```

Run Postgres database

```
$ docker run --name postgres16 -p 5432:5432 -e POSTGRES_USER=root -e POSTGRES_PASSWORD=secret -d
    postgres:16-alpine
```

List running docker images:

```
docker ps
```

List all docker images:

```
$ docker ps -a
```

Stop running image:

```
$ docker stop [image_name]
```

Start a docker image:

```
$ docker start [image_name]
```

Connect to postgres database by terminal:

```
$ docker exec -it postgres16 psql -U [user] [database_ name]
$ docker exec -it postgres16 psql -U root the_post
```

1.4   Migrate

1.4.1   Introduction & Install

Tool: golang-migrate
Help init tables, first records, ... to database
Link: https://github.com/golang-migrate/migrate
Install CLI:
MacOS

```
$ brew install golang-migrate
```

Window
using scopp

```
$ scoop install migrate
```

1.4.2   Usage

Create migrate down and up

```
$ migrate create -ext sql -dir db/migration -seg init_schema
```

In file init_schema.up contain script for init database, example:

```sql
CREATE TABLE "users" (
  "id" integer PRIMARY KEY,
  "username" varchar,
  "role" varchar,
  "created_at" timestamptz NOT NULL DEFAULT (now())
);

CREATE TABLE "posts" (
  "id" integer PRIMARY KEY,
  "title" varchar,
  "body" text,
  "user_id" integer,
  "status" varchar,
  "created_at" timestamptz NOT NULL DEFAULT (now())
);

COMMENT ON COLUMN "posts"."body" IS 'Content of the post';

ALTER TABLE "posts" ADD FOREIGN KEY ("user_id") REFERENCES "users" ("id");
```

Run it using script:

```
$ migrate -path db/migration -database
    "postgresql://root:secret@localhost:5432/the_post?sslmode=disable" -verbose up
```

Note: Don't forget start postgres database image from docker

in init_schema.down contain script for remove database, example:

```
DROP TABLE IF EXISTS users
DROP TABLE IF EXISTS posts
```

Run it using script:

```
migrate -path db/migration -database
    "postgresql://root:secret@localhost:5432/the_post?sslmode=disable" -verbose down
```