VLDB Summer School 2021 Labs

Introduction

This is the labs of VLDB Summer School 2021. The target is to build a distributed database.

There are several modules in a distributed database.

- TinyKV, the storage engine of the system.
- TinyScheduler, it is used to manager and schedule TinyKV cluster.
- TinySQL, the SQL layer of TinyKV engine.

Labs

There are 4 labs in this course.

- Lab 1, implement the storage and log layer in TinyKV.
- Lab 2, implement the transaction layer in TinyKV.
- Lab 3, implement the Percolator protocol.
- Lab 4, implement the SQL execution layer.
    - Lab 4-A, implement SQL protocol.
    - Lab 4-B, implement update executor.
    - Lab 4-C, implement select and projection executor.

The code is separated into 2 parts, TinyKV and TinyScheduler is in tinykv, and TinySQL is in tinysql.

You need to follow the order in the labs chapter. You may learn more from the README files in TinyKV and TinySQL.

Autograding

The details of classroom usage can be found in the classroom doc.

Autograding is a workflow which can automatically run test cases. However there are some

limitations in Github classroom, in order to make golang works and run it in our self-hosted machines, **you need to overwrite the workflow generated by Github classroom and commit it**.

```
cp scripts/classroom.yml .github/workflows/classroom.yml
```

If you don't use GitHub classroom, just fork this repo, work in your repo, test locally and send a email with your repository address to us after complete some or all the tasks.

Getting started

First, please clone the repository with git to get the source code of the project.

```
git clone https://github.com/vldbss-2021/vldb-2021-labs-{{username}}.git
```

Then make sure you have installed go >= 1.13 toolchains. You should also have installed `make`.
Now you can run `make` under `tinykv` or `tinysql` dir to check that everything is working as expected. You should see it runs successfully.

Deploy a cluster

Rather than a course, you can try TinyKV by deploying a real cluster, and interact with it through TinySQL.

Build

```
cd tinykv
make kv
```

It builds the binary of `tinykv-server` and `tinyscheduler-server` to `bin` dir.

```
cd tinysql
make server
```

It buillds the binary of `tinysql-server` to `bin` dir.

Deploy By Hand

Put the binary of `tinyscheduler-server`, `tinykv-server` and `tinysql-server` into a single dir. Under the binary dir, run the following commands:

```
mkdir -p data
```

```
./tinyscheduler-server
```

```
./tinykv-server -path=data
```

```
./tinysql-server --store=tikv --path="127.0.0.1:2379"
```

Deploy Use Cluster Command

See TinyUp.