SQUARE

User documentation

I. Some information

It's a project written in JAVA using Quarkus framework . Due to portability of JAVA, it will work on all OS but we have only use linux for development and testing. Also it's required a POSTGRESQL database.
This project was structured as following folders:

- apps: contains all jar which can be specify in deploy request
- docker-images: contains dockerfile build dynamically by square
- lib-client: contain executable of square-client project
- square: contains sources of Square REST API
- square-client: contains sources of a lib which are embedded in all of deployed container
- docs: contains some documentation's files like javadoc, swagger which describe REST endpoint.

This repository contains also some files like schema or conception's diagrams.

II. Install dependencies

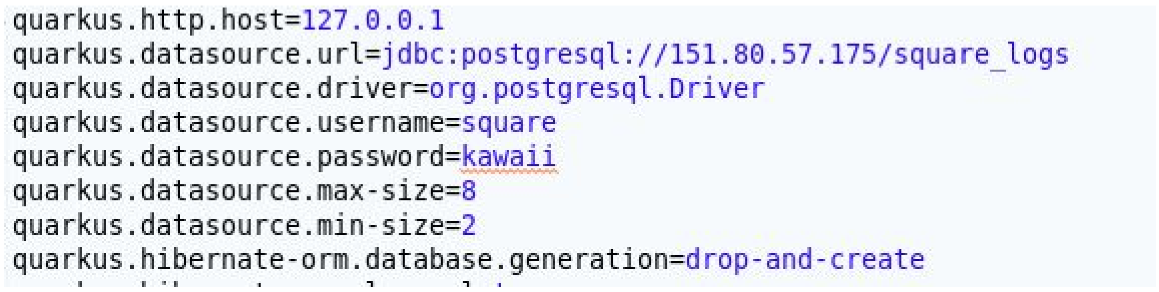
To work correctly, some packages are needed like docker-cli, maven and JDK 11 or later.
First, pull project repository from gitlab with following url and go to the folder, this is url: ***https://gitlab.com/esipe-info2019/dacosta-koffi.git***
We provide a shell script to make this job. Before run script, grant execution rights on this file using ***chmod u+x script.sh*** and run it with ***./script.sh***. Some instructions needs super user authorization so run it with adequate user account.
This script will install all needed dependencies and set up your ***JAVA_HOME***.

III. Build, package and run project

- Square

It's a REST API which is used by the user to make some action like run docker, get a list of current running docker, get logs of x last minutes, etc...

First go to ***square*** folder, open the project with your favorite editor and change database credential (url, username, password) with your database credentials in the file : ***src/main/resources/application.properties***.



```
quarkus.http.host=127.0.0.1
quarkus.datasource.url=jdbc:postgresql://151.80.57.175/square_logs
quarkus.datasource.driver=org.postgresql.Driver
quarkus.datasource.username=square
quarkus.datasource.password=kawaii
quarkus.datasource.max-size=8
quarkus.datasource.min-size=2
quarkus.hibernate-orm.database.generation=drop-and-create
```

After that, the same file replace host value ***127.0.0.1*** by your IP.

Now run ***./mvnw package***, it will create an executable of square projet in ***target*** folder named ***square-1.0-SNAPSHOT-runner.jar*** .

Copy ***target/square-1.0-SNAPSHOT-runner.jar*** to root folder of the repository
as square.jar and go to root folder.

Now make sure that postgres service is started and database is ready and run ***java -jar square.jar*** to start the REST API.

- Square-client

Square-client is a small project which will add in each docker a container.

It's a monitoring app running inside docker to send logs produced by app and notify Square API if an app is killed.

Go to ***square-client*** folder and run ***mvn package*** to build, and package an executable of square-client. After that, copy the executable named ***square-client-1.0-SNAPSHOT-jar-with-dependencies.jar*** from ***target*** folder of the current folder into the folder named ***lib-client*** which is located at the root of repository.

IV. Usage

Now, you can use your favorite http request client's tool (ex: Postman, curl ...) to interact with Square REST API.

This part will describe all of the endpoints and requests format to interact with API.

All endpoints consumes and produces JSON only, so please configure your client tool to use ***"application/json"*** as ***Content-Type***.

All endpoint in blue are GET methods, and GREEN are POST methods.

All POST request which not respect request sample will return a 400 http status to indicate that it's a bad request. In case of valid request, status code request http code will be 201.

All GET request return 200 as status code to indicate success.

Illegal argument status code (422) are return if your request have a right format but argument is not good. For example, if you ask to stop a docker with id 1 but no one have this id.

There are three main endpoints:

- /app/* : use to manage instances
  - /app/deploy: this endpoint is used to start a docker's container with a specified application which must present in the apps folder described in the first part.
    This is a valid request example:
    ```
    {
        "app": "todomvc:8082"
    }
    ```
    Return either an empty json if some error occurred during deploy or if the app specified is not present in the ***apps*** folder but a json containing all information concerned the

deployed application like id, docker-instance, service-port, app name.

```
{
    "id": 201,
    "app": "todomvc:8082",
    "port": 8082,
    "service-port": 15201,
    "docker-instance": "todomvc-12"
  }
```

- /app/list: get list of current running application
- /app/stop: use to stop a specified application by using id received after a deploy request. Example of valid request:

  ```
  {
      "id": 201
   }
  ```

  Return either an empty json if some error occurred during the stop process or a json containing some information concerned the application at it stop like elapsed time.

  example: {

  ```
      "id": 201,
      "app": "todomvc:8082",
      "port": 8082,
      "service-port": 15201,
      "docker-instance": "todomvc-12",
      "elapsed-time": "4m37s"
    }
  ```

- /logs/*: use to get logs of deployed apps
  - /logs/:time: get all logs between now and *time* last minutes. *time* must be an integer between 0 and INTEGER_MAX value.
  - /logs/:time/:filter: get all logs between now and *time* last minutes for specified *filter*.
    filter can be an id, a docker-instance or an app field value received after a deploy request

An example of a response is:

```
[
    {
     "id": 201,
     "app": "todomvc:8082",
```

```
        "port": 8082,
        "service-port": 15201,
        "docker-instance": "todomvc-12",
        "message": "ceci est un message de log",
        "timestamp": "2019-10-15T23:58:00.000Z"
      }
]
```

- /auto-scale/*: use to manage auto scaling service
  - /auto-scale/update: endpoint use to set up an auto-scale configuration.

    An example of valid request:

    ```
    {
        "todomvc:8082": 2,
        "demo:8083": 1
     }
    ```

    This request set the following configuration: for an app named *todomvc:8082*, 2 instances must be running at the same time and for *demo:8083*, only 1 instance is needed.

    Return a json containing information about action needed for applications which have a scaling constraint, for example:

    ```
    {
          "todomvc:8082": "no action",
          "demo:8083": "need to stop 1 instance(s)"
    }
    ```

  - /auto-scale/status: use to get action which will perform by auto scaling service for current running instances.

    An example of response is:

    ```
            {
                  "todomvc:8082": "no action",
                  "demo:8083": "need to stop 1 instance(s)"
             }
    ```

  - /auto-scale/stop: use to stop auto scaling service, it returns a scaling config performed by scaling service before stop.

    An example of response is:

    ```
     {
    ```

```
        "todomvc:8082": 2,
        "demo:8083": 1
}
```

In addition to previous listed endpoints, there are two hidden endpoints used to receive some information from lib-client embedded inside of each docker container.

- /container-log/send-log: normally you don't need to trigger it manually, it only trigger dynamically by lib-client to send logs of a running application.
- /container-log/status: it's used by *lib-client* to notify if an application running inside docker is killed.

At bonus, you can use /healthcheck endpoint to check if square REST API is currently alive or not.