Timber

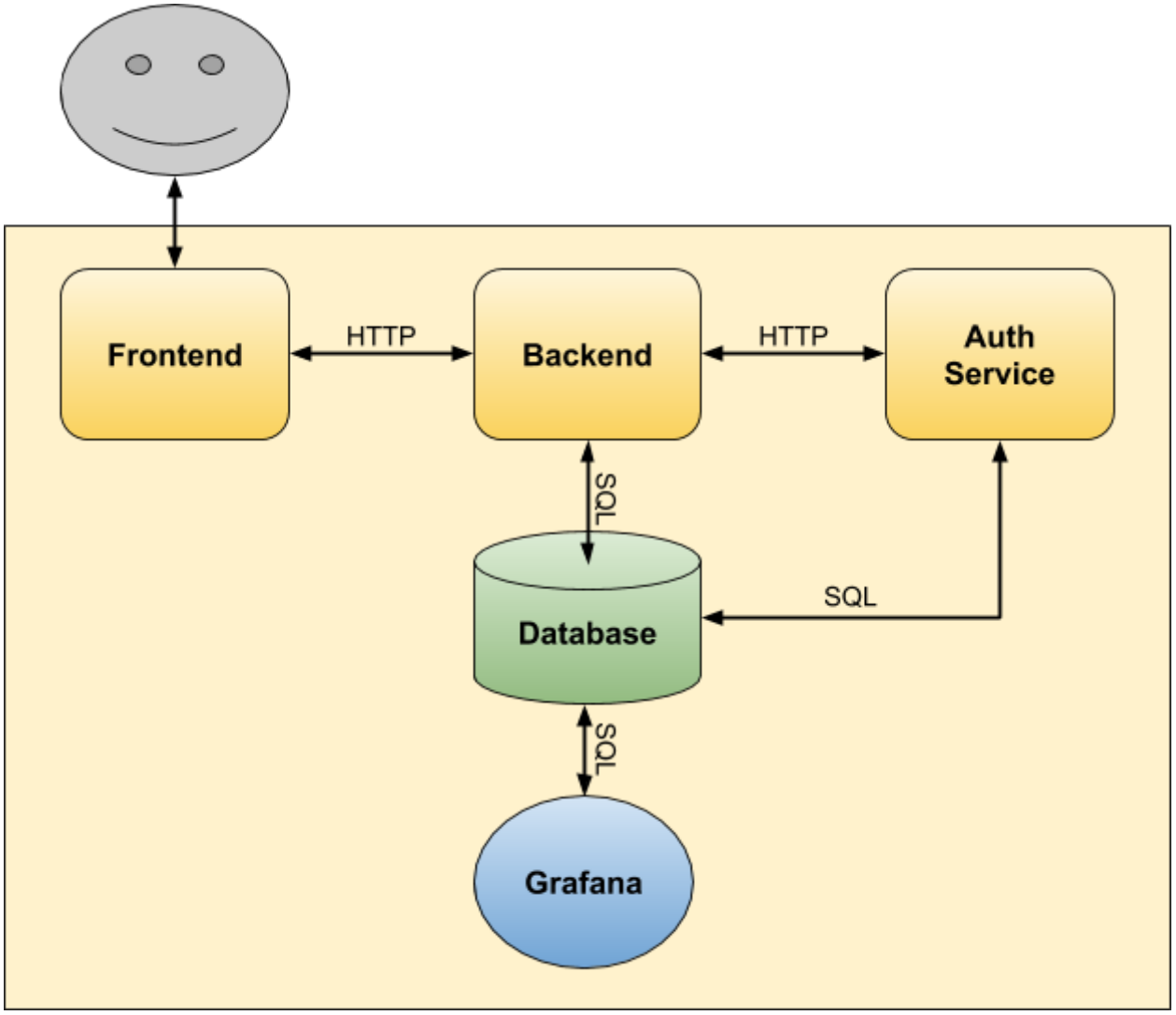
Timber service is a matrimonial service that can be used to create personal profiles and retrieve best matches for possible future partners. It's like Tinder, but crappier.

GitHub: https://github.com/teodorpopescu/timber

1. Overview

The service is composed of 5 microservices, all deployed as dockers:

1. **Backend** - which offers a RESTful API which can be used to request data from the service (like people that you might be interested in) and add/modify personal data
2. **Authentication service** - which offers a RESTful API which can be used to manage user's authentication credentials and retrieve/verify temporary access tokens to the server
3. **Frontend** - which can either be a website interface or a CLI interface that can be used to communicate with the server via its RESTful API
4. **SQL database** - which is used to store user's personal data and login credentials
5. **Grafana** - monitoring service which will be responsible of showing to the admins that number of users and other significant information



2. Microservices description

a. Backend

The purpose of this service is two fold:

- Manage the user information
- Find suitable matches for each user

This service has the following RESTful API:

I. `/user` endpoint:

- GET (headers: `username` and `token`)
  Get the data stored for the given username, in JSON format
  => Returns `200 [json]` or `403 User missing`
  or `401 Bad username or token`

- POST (headers: `username` and `token`; body is a form with `firstname`, `lastname`, `age` and `sex`)
  Create a new user that will use the given password
  => Returns `201 User created` or `403 User already exists`

- PUT (headers: `username` and `token`; body is a form that can contain one or more of `firstname`, `lastname`, `age` and `sex`)
  Update the data of the given user
  => Returns `200 User update` or `403 User missing`
  or `401 Bad username or token` or `400 Invalid [attribute]`

- DELETE (headers: `username` and `token`)
  Delete the given user
  => Returns `200 User deleted` or `403 User missing`
  or `401 Bad username or token`

II. `/findMatch` endpoint:

- GET (headers: `username` and `token`; body is a form that can contain one or more of `olderThan` and `youngerThan`)
  Find all the matches for the current user that corresponds to their preferences
  => Returns `200 [json]` or `401 Bad username or token`

III. `/everything` endpoint (debug purpose - should be disabled)

- GET (no headers)
  Return the content of the authentication table from the database in JSON format
  => Returns `200 [json]`

Note: All the operations can also return `400 Invalid username`, `400 Invalid token` or `500 Internal server error`.

DockerHub: https://hub.docker.com/r/tpopescu0710/timber-backend

b. Authenticator (the authentication service)

The purpose of this service is to:

- Manage the credentials by storing them in encrypted salted format (using AES) that will add a layer of security to our application
- Provide token management, that can be used to authenticate operations made by a user without them needing to send the password in each request. This tokens also expires, which will be a built-in log out mechanism that also provides an extra layer of security

This service has the following RESTful API interface:

`/user` endpoint:

- POST (headers: `username` and `password`)
  Create a new user that will use the given password
  => Returns `201 User created` or `403 User already exists`

- PUT (headers: `username`, `password` and `new_password`)
  Update the password of the given user
  => Returns `200 Password update` or `400 New password missing` or `403 User missing` or `401 Bad username or password`

- DELETE (headers: `username` and `password`)
  Delete the given user
  => Returns `200 User deleted` or `401 Bad username or password` or `403 User missing`

`/getToken` endpoint:

- GET (headers: `username` and `password`)
  Get an authentication token that can be used as a parameter in order to authorize the operations that will be made by the given user. This token will expire after some time (~30 minutes)
  => Returns `200 [token]` or `401 Bad username or password`

`/checkToken` endpoint:

- GET (headers: `username` and `token`)
  Verify the validity of the given token
  => Returns `200 Valid token` or `401 Invalid token`

`/everything` endpoint (debug purpose - should be disabled)

- GET (no headers)
  Return the content of the authentication table from the database in JSON format
  => Returns `200 [json]`

Note: All the operations can also return `400 Invalid username`, `400 Invalid password` or `500 Internal server error`.

DockerHub: https://hub.docker.com/r/tpopescu0710/timber-authenticator

c. Frontend

The frontend interface should be fairly intuitive.
DockerHub: https://hub.docker.com/r/tpopescu0710/timber-client

d. SQL Database

The database has the following tables:

I. `Authentication` table, which stores (`Username`, `Password`, `Salt`), where password is encrypted
II. `Users` table, which stores (`Username`, `FirstName`, `LastName`, `Age`, `Sex`)

e. Grafana (the monitoring service)

The Grafana monitoring service contains only one dashboard: the total number of users.