Problem

To build a backend API for a mobile quiz application. The backend should serve the imaginary mobile applications with questions for the application. Each question contains 4 answers and some way of indicating the correct answer. We don't want just anyone to be able to query our API, so you are going to need to add some kind of authentication. Each game in the mobile app consists of 10 questions. The user has a maximum of 15 seconds to answer each question. You should be able to receive these statistics in the end of each game. You don't have to present the statistics in any way, but your data should be saved in a format that allows another developer to easily create stats.

Introduction

To build a backend API for a mobile quiz application, following api's can be consumed. The backend API's are secured with Spring Security and JWTs.

The below two api's are public:

http://localhost:8083/users/sign-up
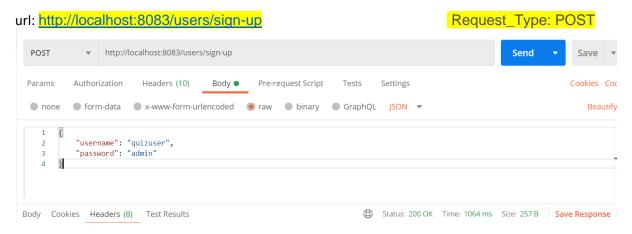http://localhost:8083/dologin

Whereas, the below endpoints are secured which has functionality for mobile quiz application.

http://localhost:8083/questions
http://localhost:8083/answers
http://localhost:8083/statistics

API DESCRIPTION

API - 1: SIGN-UP

Description: sign-up api is called to register username and password.

url: http://localhost:8083/users/sign-up   Request_Type: POST

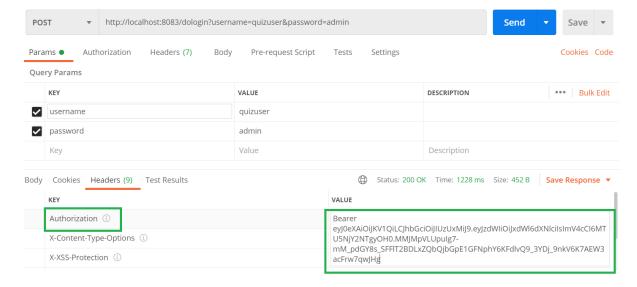### API - 2: LOGIN

Description: After registering (with sign-up api), Login API is invoked with username and password, JWT token is generated and received in the response of "Authorization" key of header section as shown in below figure. Generated JWT serves as authentication for accessing other backend api's.

url: http://localhost:8083/dologin   Request_Type: POST

| POST ▼ | http://localhost:8083/dologin?username=quizuser&password=admin | | **Send** ▼ | Save ▼ |

Params ●   Authorization   Headers (7)   Body   Pre-request Script   Tests   Settings   Cookies   Code

Query Params

KEY	VALUE	DESCRIPTION	•••	Bulk Edit
☑ username	quizuser			
☑ password	admin			
Key	Value	Description		

Body   Cookies   **Headers (9)**   Test Results   🌐 Status: 200 OK   Time: 1228 ms   Size: 452 B   Save Response ▼

KEY	VALUE
Authorization ⓘ	Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzUxMiJ9.eyJzdWIiOiJxdWl6dXNlciIsImV4cCI6MTU5NjY2NTgyOH0.MMJMpVLUpuIg7-mM_pdGY8s_SFFlT2BDLxZQbQjbGpE1GFNphY6KFdlvQ9_3YDj_9nkV6K7AEW3acFrw7qwJHg
X-Content-Type-Options ⓘ	
X-XSS-Protection ⓘ	

API - 3: /questions

Description: To retrieve quiz questions with four options. The generated JWT token has to be sent in authorization param of header section in the request to receive the response.
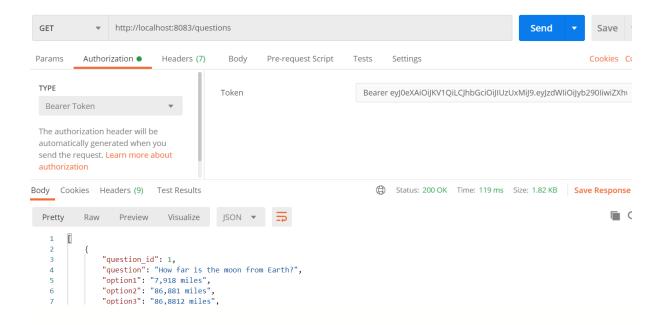
url: http://localhost:8083/questions   Request_Type: GET

Response:

```
[
    {
        "question_id": 1,
        "question": "How far is the moon from Earth?",
        "option1": "7,918 miles",
        "option2": "86,881 miles",
        "option3": "86,8812 miles",
        "option4": "86,891 miles"
    },
    {
        "question_id": 2,
        "question": "What is 65 times 52?",
        "option1": "117",
        "option2": "3120",
        "option3": "3380",
        "option4": "3520"
    },
    {
        "question_id": 3,
        "question": "Who are the actors in The Internship?",
        "option1": "Ben Stiller",
        "option2": "5,778 K",
        "option3": "12,130 K",
        "option4": "Vince Vaughn, Owen Wilson"
    },
    {
        "question_id": 4,
        "question": "What is the capital of Spain?",
```

```json
        "option1": "Berlin",
        "option2": "Merlin",
        "option3": "Madrid",
        "option4": "San Juan"
    },
    {
        "question_id": 5,
        "question": "What are the school colors of the University of Texas at Austin?",
        "option1": "Black, Red",
        "option2": "Black, Redy",
        "option3": "White, Burnt Orange",
        "option4": "Black, White"
    },
    {
        "question_id": 6,
        "question": "What is 70 degrees Fahrenheit in Celsius?",
        "option1": "1,233 K",
        "option2": "5,778 K",
        "option3": "21.1111",
        "option4": "101,300 K"
    },
    {
        "question_id": 7,
        "question": "When was Mahatma Gandhi born?",
        "option1": "October 2, 1869",
        "option2": "October 2, 1855",
        "option3": "October 2, 1800",
        "option4": "October 2, 1860"
    },
    {
        "question_id": 8,
        "question": "How far is the moon from Earth?",
        "option1": "7,918 miles",
        "option2": "86,881 miles",
        "option3": "86,8812 miles",
        "option4": "86,891 miles"
    },
    {
        "question_id": 9,
        "question": "What is 65 times 52?",
        "option1": "117",
        "option2": "3120",
        "option3": "3380",
        "option4": "3520"
    },
    {
        "question_id": 10,
        "question": "How tall is Mount Everest?",
        "option1": "6,683 ft",
        "option2": "7,918 ft",
        "option3": "19,341 ft",
        "option4": "29,029 ft"
    }
]
```

| GET | ▼ | http://localhost:8083/questions | | Send | ▼ | Save | |

Params | Authorization ● | Headers (7) | Body | Pre-request Script | Tests | Settings | Cookies | C

TYPE

Bearer Token ▼

Token | Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzUxMiJ9.eyJzdWIiOiJyb290IiwiZXhw

The authorization header will be automatically generated when you send the request. Learn more about authorization

Body | Cookies | Headers (9) | Test Results | 🌐 Status: 200 OK | Time: 119 ms | Size: 1.82 KB | Save Response

Pretty | Raw | Preview | Visualize | JSON ▼ | ⇄

```
1  [
2    {
3      "question_id": 1,
4      "question": "How far is the moon from Earth?",
5      "option1": "7,918 miles",
6      "option2": "86,881 miles",
7      "option3": "86,8812 miles",
```

API - 4: /answers

Description: To submit the question with answer the following api has to be used. The generated JWT token has to be sent in authorization param of header section in the request to receive the response. Before successful response is sent to the user, the posted answers will be evaluated in asynchronous call and updated against each game in the database.

url: http://localhost:8083/answers   **Request_Type:** POST

Request:

```
[{
"gameID": 1,
"questionID": 1,
"optionNo": 3,
"islifeLineUsed": false,
"answeredTimeInSeconds": 10
},
{
"gameID": 1,
"questionID": 2,
"optionNo": 2,
"islifeLineUsed": true,
"answeredTimeInSeconds": 15
},
{
"gameID": 1,
"questionID": 3,
"optionNo": 3,
"islifeLineUsed": false,
"answeredTimeInSeconds": 15
},
{
"gameID": 1,
"questionID": 4,
"optionNo": 2,
"islifeLineUsed": false,
```

```
    "answeredTimeInSeconds": 10
},
{
"gameID": 1,
"questionID": 5,
"optionNo": 3,
"islifeLineUsed": false,
"answeredTimeInSeconds": 10
},
{
"gameID": 1,
"questionID": 6,
"optionNo": 2,
"islifeLineUsed": false,
"answeredTimeInSeconds": 10
},
{
"gameID": 1,
"questionID": 7,
"optionNo": 3,
"islifeLineUsed": false,
"answeredTimeInSeconds": 10
},
{
"gameID": 1,
"questionID": 8,
"optionNo": 2,
"islifeLineUsed": false,
"answeredTimeInSeconds": 15
},{
"gameID": 1,
"questionID": 8,
"optionNo": 3,
"islifeLineUsed": false,
"answeredTimeInSeconds": 10
},
{
"gameID": 1,
"questionID": 9,
"optionNo": 2,
"islifeLineUsed": false,
"answeredTimeInSeconds": 15
},
{
"gameID": 1,
"questionID": 10,
"optionNo": 2,
"islifeLineUsed": false,
"answeredTimeInSeconds": 25
}]
```

Response:

```
{
    "stringCode": "200",
    "stringMessage": "Answers submitted successfully"
}
```

Description: This api is used to retrieve statistics report of each game with JWT token. The response will be retrieved by passing game id. The following data will be used can be utilized in the client to show the stats. The response will have isanswercorrect field to show whether answer is correctly answered or not against each question and shows how much time is taken to answer.

url: http://localhost:8083/statistics/1   Request_Type: GET

Response:

```
[
    {
        "id": 32,
        "user_id": 0,
        "game_id": 1,
        "question_id": 1,
        "optionNo": 3,
        "isanswercorrect": true,
        "islifelineused": false,
        "answeredTimeInSeconds": 10
    },
    {
        "id": 33,
        "user_id": 0,
        "game_id": 1,
        "question_id": 2,
        "optionNo": 2,
        "isanswercorrect": false,
        "islifelineused": true,
        "answeredTimeInSeconds": 15
    },
    {
        "id": 34,
        "user_id": 0,
        "game_id": 1,
        "question_id": 3,
        "optionNo": 3,
        "isanswercorrect": false,
        "islifelineused": false,
        "answeredTimeInSeconds": 5
    },
    {
        "id": 35,
        "user_id": 0,
        "game_id": 1,
        "question_id": 4,
        "optionNo": 2,
        "isanswercorrect": false,
        "islifelineused": false,
        "answeredTimeInSeconds": 5
    },
    {
        "id": 36,
        "user_id": 0,
        "game_id": 1,
        "question_id": 5,
        "optionNo": 3,
```

```json
        "isanswercorrect": true,
        "islifelineused": false,
        "answeredTimeInSeconds": 5
    },
    {
        "id": 37,
        "user_id": 0,
        "game_id": 1,
        "question_id": 6,
        "optionNo": 2,
        "isanswercorrect": false,
        "islifelineused": false,
        "answeredTimeInSeconds": 0
    },
    {
        "id": 38,
        "user_id": 0,
        "game_id": 1,
        "question_id": 7,
        "optionNo": 3,
        "isanswercorrect": false,
        "islifelineused": false,
        "answeredTimeInSeconds": 0
    },
    {
        "id": 39,
        "user_id": 0,
        "game_id": 1,
        "question_id": 8,
        "optionNo": 2,
        "isanswercorrect": true,
        "islifelineused": false,
        "answeredTimeInSeconds": 0
    },
    {
        "id": 40,
        "user_id": 0,
        "game_id": 1,
        "question_id": 8,
        "optionNo": 3,
        "isanswercorrect": true,
        "islifelineused": false,
        "answeredTimeInSeconds": 0
    },
    {
        "id": 41,
        "user_id": 0,
        "game_id": 1,
        "question_id": 9,
        "optionNo": 2,
        "isanswercorrect": false,
        "islifelineused": false,
        "answeredTimeInSeconds": 0
    },
    {
        "id": 42,
        "user_id": 0,
        "game_id": 1,
```

```json
        "question_id": 10,
        "optionNo": 2,
        "isanswercorrect": false,
        "islifelineused": false,
        "answeredTimeInSeconds": 0
    }
]
```

Untitled Request   💬 Commen

| GET ▼ | http://localhost:8083/statistics/1 | **Send** ▼ | Sav |

Params   Authorization ●   **Headers (7)**   Body   Pre-request Script   Tests   Settings   Cookie

Headers   🚫 Hide auto-generated headers

KEY	VALUE	DESCRIPTION	••• Bulk Edit Preset
☑ Authorization ⓘ	Bearer Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzUxN		
☑ Postman-Token ⓘ	<calculated when request is sent>		
☑ Host ⓘ	<calculated when request is sent>		
☑ User-Agent ⓘ	PostmanRuntime/7.26.2		

Body   Cookies   Headers (9)   Test Results   🌐 Status: 200 OK   Time: 199 ms   Size: 1.76 KB   Save Resp

Pretty   Raw   Preview   Visualize   JSON ▼

```json
3        "id": 32,
4        "user_id": 0,
5        "game_id": 1,
6        "question_id": 1,
7        "optionNo": 3,
8        "isanswercorrect": true,
9        "islifelineused": false,
```

Technologies Used:

- Java
- Spring-boot,
- REST
- MySQL

DB Schema:

applicationuser
- 🔑 id INT
- ◇ username VARCHAR(32)
- *1 more...*

Indexes ▶

questions
- 🔑 id INT
- ◇ qvalue VARCHAR(100)

Indexes ▶

game
- 🔑 id INT
- ◇ user_id INT
- ◇ question_id INT
- ◇ optionNo INT
- ◇ islifelineused TINYINT(1)
- ◇ isanswercorrect TINYINT(1)
- ◇ game_id INT
- ◇ answeredTimeInSeconds INT

Indexes ▶

answer
- 🔑 id INT
- ◇ question_id INT
- ◇ option_1 VARCHAR(25)
- ◇ option_2 VARCHAR(25)
- ◇ option_3 VARCHAR(25)
- ◇ option_4 VARCHAR(25)
- ◇ correctanswer INT

Indexes ▶