**Online Quiz Protal Using REST APIs**

**Source Code :**

**Pom.xml :**

<?xml version="1.0" encoding="UTF-8"?>

<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">

<modelVersion>4.0.0</modelVersion>

<parent>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-parent</artifactId>

<version>2.4.4</version>

<relativePath/> <!-- lookup parent from repository -->

</parent>

<groupId>com</groupId>

<artifactId>OnlineQuizPortal</artifactId>

<version>0.0.1-SNAPSHOT</version>

<name>OnlineQuizPortal</name>

<description>Demo project for Spring Boot</description>

<properties>

<java.version>17</java.version>

</properties>

<dependencies>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-data-jpa</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-web</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-devtools</artifactId>

<scope>runtime</scope>

<optional>true</optional>

</dependency>

<dependency>

<groupId>mysql</groupId>

<artifactId>mysql-connector-java</artifactId>

<scope>runtime</scope>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-test</artifactId>

<scope>test</scope>

</dependency>

</dependencies>

<build>

<plugins>

<plugin>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-maven-plugin</artifactId>

</plugin>

</plugins>

</build>

</project>

**Src/main/java :**

**com.demo :**

**OnlineQuizPortalApplication.java :**

**package** com.demo;

**import** org.springframework.boot.SpringApplication;

**import** org.springframework.boot.autoconfigure.SpringBootApplication;

**import** org.springframework.boot.autoconfigure.domain.EntityScan;

**import** org.springframework.data.jpa.repository.config.EnableJpaRepositories;

@SpringBootApplication(scanBasePackages = "com")

@EntityScan("com.bean")

@EnableJpaRepositories("com.repository")

**public** **class** OnlineQuizPortalApplication {

**public** **static** **void** main(String[] args) {

SpringApplication.*run*(OnlineQuizPortalApplication.**class**, args);

}

}

**com.bean :**

**Admin.java :**

**package** com.bean;

**import** javax.persistence.Entity;

**import** javax.persistence.Id;

**import** javax.persistence.Table;

**import** org.springframework.stereotype.Component;

@Component

@Entity

@Table(name="admin")

**public** **class** Admin {

@Id

**private** **int** id;

**private** String username;

**private** String password;

@Override

**public** String toString() {

**return** "Admin [id=" + id + ", username=" + username + ", password=" + password + "]";

}

**public** **int** getId() {

**return** id;

}

**public** **void** setId(**int** id) {

**this**.id = id;

}

**public** String getUsername() {

**return** username;

}

**public** **void** setUsername(String username) {

**this**.username = username;

}

**public** String getPassword() {

**return** password;

}

**public** **void** setPassword(String password) {

**this**.password = password;

}

}

**Question.java :**

**package** com.bean;

**import** javax.persistence.Entity;

**import** javax.persistence.GeneratedValue;

**import** javax.persistence.GenerationType;

**import** javax.persistence.Id;

**import** javax.persistence.Table;

**import** org.springframework.stereotype.Component;

@Component

@Entity

@Table(name="question")

**public** **class** Question {

@Id

@GeneratedValue(strategy = GenerationType.***IDENTITY***)

**private** **int** qid;

**private** String quest;

**private** String opt1;

**private** String opt2;

**private** String opt3;

**private** String opt4;

**private** **int** ans;

**public** **int** getQid() {

**return** qid;

}

**public** **void** setQid(**int** qid) {

**this**.qid = qid;

}

**public** String getQuest() {

**return** quest;

}

**public** **void** setQuest(String quest) {

**this**.quest = quest;

}

**public** String getOpt1() {

**return** opt1;

}

**public** **void** setOpt1(String opt1) {

**this**.opt1 = opt1;

}

**public** String getOpt2() {

**return** opt2;

}

**public** **void** setOpt2(String opt2) {

**this**.opt2 = opt2;

}

**public** String getOpt3() {

**return** opt3;

}

**public** **void** setOpt3(String opt3) {

**this**.opt3 = opt3;

}

**public** String getOpt4() {

**return** opt4;

}

**public** **void** setOpt4(String opt4) {

**this**.opt4 = opt4;

}

**public** **int** getAns() {

**return** ans;

}

**public** **void** setAns(**int** ans) {

**this**.ans = ans;

}

@Override

**public** String toString() {

**return** "Question [qid=" + qid + ", quest=" + quest + ", opt1=" + opt1 + ", opt2=" + opt2 + ", opt3=" + opt3

+ ", opt4=" + opt4 + ", ans=" + ans + "]";

}

}

**Quiz.java :**

**package** com.bean;

**import** javax.persistence.Entity;

**import** javax.persistence.GeneratedValue;

**import** javax.persistence.GenerationType;

**import** javax.persistence.Id;

**import** javax.persistence.JoinColumn;

**import** javax.persistence.ManyToOne;

**import** javax.persistence.Table;

**import** org.springframework.stereotype.Component;

@Component

@Entity

@Table(name="quiz")

**public** **class** Quiz {

@Id

@GeneratedValue(strategy = GenerationType.***IDENTITY***)

**private** **int** quid;

**private** String title;

**private** **int** quizno;

**private** String subject;

@ManyToOne

@JoinColumn(referencedColumnName = "qid")

**private** Question qid;

**public** **int** getQuizno() {

**return** quizno;

}

**public** **void** setQuizno(**int** quizno) {

**this**.quizno = quizno;

}

**public** **int** getQuid() {

**return** quid;

}

**public** **void** setQuid(**int** quid) {

**this**.quid = quid;

}

**public** String getTitle() {

**return** title;

}

**public** **void** setTitle(String title) {

**this**.title = title;

}

**public** String getSubject() {

**return** subject;

}

**public** **void** setSubject(String subject) {

**this**.subject = subject;

}

**public** Question getQid() {

**return** qid;

}

**public** **void** setQid(Question qid) {

**this**.qid = qid;

}

@Override

**public** String toString() {

**return** "Quiz [quid=" + quid + ", title=" + title + ", quizno=" + quizno + ", subject=" + subject + ", qid="

+ qid + "]";

}

}

**Result.java :**

**package** com.bean;

**public** **class** Result **implements** Comparable<Result>{

**private** String email;

**private** Integer marks;

**public** Result()

{

}

**public** Result(String email2, **int** mark) {

// **TODO** Auto-generated constructor stub]

**this**.email=email2;**this**.marks=mark;

}

**public** String getEmail() {

**return** email;

}

**public** **void** setEmail(String email) {

**this**.email = email;

}

**public** Integer getMarks() {

**return** marks;

}

**public** **void** setMarks(Integer marks) {

**this**.marks = marks;

}

@Override

**public** String toString() {

**return** "Result [email=" + email + ", marks=" + marks + "]";

}

@Override

**public** **int** compareTo(Result r) {

// **TODO** Auto-generated method stub

**int** comparemarks= r.getMarks();

**return** comparemarks-**this**.marks;

}

}

**Statistics.java :**

**package** com.bean;

**import** java.util.List;

**import** org.springframework.stereotype.Component;

@Component

**public** **class** Statistics {

**private** **int** users;

**private** List<Object> quiz;

**private** **int** questions;

@Override

**public** String toString() {

**return** "Statistics [users=" + users + ", quiz=" + quiz + ", questions=" + questions + "]";

}

**public** **int** getUsers() {

**return** users;

}

**public** **void** setUsers(**int** users) {

**this**.users = users;

}

**public** List<Object> getQuiz() {

**return** quiz;

}

**public** **void** setQuiz(List<Object> quiz) {

**this**.quiz = quiz;

}

**public** **int** getQuestions() {

**return** questions;

}

**public** **void** setQuestions(**int** questions) {

**this**.questions = questions;

}

}

**Test.java :**

**package** com.bean;

**import** javax.persistence.Entity;

**import** javax.persistence.GeneratedValue;

**import** javax.persistence.GenerationType;

**import** javax.persistence.Id;

**import** javax.persistence.JoinColumn;

**import** javax.persistence.ManyToOne;

**import** javax.persistence.Table;

**import** org.springframework.stereotype.Component;

@Component

@Entity

@Table(name="test")

**public** **class** Test {

@Id

@GeneratedValue(strategy = GenerationType.***IDENTITY***)

**private** **int** tid;

@ManyToOne

@JoinColumn(referencedColumnName = "uid")

**private** User userid;

@ManyToOne

@JoinColumn(referencedColumnName = "quid")

**private** Quiz quizid;

@ManyToOne

@JoinColumn(referencedColumnName = "qid")

**private** Question questionid;

**private** **int** testans;

**public** **int** getTid() {

**return** tid;

}

**public** **void** setTid(**int** tid) {

**this**.tid = tid;

}

**public** User getUserid() {

**return** userid;

}

**public** **void** setUserid(User userid) {

**this**.userid = userid;

}

**public** Quiz getQuizid() {

**return** quizid;

}

**public** **void** setQuizid(Quiz quizid) {

**this**.quizid = quizid;

}

**public** Question getQuestionid() {

**return** questionid;

}

**public** **void** setQuestionid(Question questionid) {

**this**.questionid = questionid;

}

**public** **int** getTestans() {

**return** testans;

}

**public** **void** setTestans(**int** testans) {

**this**.testans = testans;

}

@Override

**public** String toString() {

**return** "Test [tid=" + tid + ", userid=" + userid + ", quid=" + quizid + ", questionid=" + questioned + ", testans=" + testans + "]";

}

}

**User.java :**

**package** com.bean;

**import** java.io.Externalizable;

**import** java.io.IOException;

**import** java.io.ObjectInput;

**import** java.io.ObjectOutput;

**import** javax.persistence.Entity;

**import** javax.persistence.GeneratedValue;

**import** javax.persistence.GenerationType;

**import** javax.persistence.Id;

**import** javax.persistence.Table;

**import** org.springframework.stereotype.Component;

@Component

@Entity

@Table(name="user")

**public** **class** User **implements** Externalizable {

@Id

@GeneratedValue(strategy = GenerationType.***IDENTITY***)

**private** **int** uid;

**private** String emailid;

**private** String password;

**private** **long** phno;

**public** **int** getUid() {

**return** uid;

}

**public** **void** setUid(**int** uid) {

**this**.uid = uid;

}

**public** String getEmailid() {

**return** emailid;

}

**public** **void** setEmailid(String emailid) {

**this**.emailid = emailid;

}

**public** String getPassword() {

**return** password;

}

**public** **void** setPassword(String password) {

**this**.password = password;

}

**public** **long** getPhno() {

**return** phno;

}

**public** **void** setPhno(**long** phno) {

**this**.phno = phno;

}

@Override

**public** **void** writeExternal(ObjectOutput out) **throws** IOException {

// **TODO** Auto-generated method stub

}

@Override

**public** **void** readExternal(ObjectInput in) **throws** IOException, ClassNotFoundException {

// **TODO** Auto-generated method stub

}

}

**com.controller :**

**MainController.java :**

**package** com.controller;

**import** java.util.List;

**import** org.springframework.beans.factory.annotation.Autowired;

**import** org.springframework.http.MediaType;

**import** org.springframework.web.bind.annotation.GetMapping;

**import** org.springframework.web.bind.annotation.PostMapping;

**import** org.springframework.web.bind.annotation.RequestBody;

**import** org.springframework.web.bind.annotation.RequestMapping;

**import** org.springframework.web.bind.annotation.RestController;

**import** com.bean.Admin;

**import** com.bean.Question;

**import** com.bean.Quiz;

**import** com.bean.Result;

**import** com.bean.Statistics;

**import** com.bean.Test;

**import** com.bean.User;

**import** com.service.AdminSer;

**import** com.service.UserSer;

@RestController

@RequestMapping(value = "/quizapp", produces = "application/json")

**public** **class** MainController {

@Autowired

UserSer us;

@Autowired

AdminSer as;

//http://localhost:8136/quizapp/userLogin

@PostMapping(value="userLogin", consumes = MediaType.***APPLICATION\_JSON\_VALUE***)

**public** String userLogin(@RequestBody User u)

{

**return** us.userLogin(u.getEmailid(), u.getPassword());

}

//http://localhost:8136/quizapp/userRegister

@PostMapping(value="userRegister", consumes = MediaType.***APPLICATION\_JSON\_VALUE***)

**public** String userRegiter(@RequestBody User u)

{

**return** us.userRegister(u);

}

//http://localhost:8136/quizapp/adminLogin

@PostMapping(value="adminLogin", consumes = MediaType.***APPLICATION\_JSON\_VALUE***)

**public** String adminLogin(@RequestBody Admin u)

{

**return** as.adminLogin(u);

}

//http://localhost:8136/quizapp/adminupdate

@PostMapping(value="adminupdate", consumes = MediaType.***APPLICATION\_JSON\_VALUE***)

**public** String adminUpdate(@RequestBody Admin u)

{

**return** as.adminupdate(u);

}

//http://localhost:8136/quizapp/addQuestions

@PostMapping(value="addQuestions", consumes = MediaType.***APPLICATION\_JSON\_VALUE***, produces = MediaType.***APPLICATION\_JSON\_VALUE***)

**public** String addQuestion(@RequestBody Question q)

{

**return** as.addQuestion(q);

}

//http://localhost:8136/quizapp/addQuiz

@PostMapping(value="addQuiz", consumes = MediaType.***APPLICATION\_JSON\_VALUE***)

**public** String addQuiz(@RequestBody Quiz q)

{

**return** as.addQuiz(q);

}

//http://localhost:8136/quizapp/viewAllQuiz

@GetMapping(value="viewAllQuiz", produces= MediaType.***APPLICATION\_JSON\_VALUE***)

**public** List<Quiz> viewAllQuiz()

{

**return** as.viewAllQuiz();

}

//http://localhost:8136/dbquizapp/quizinfo

@GetMapping(value="quizinfo", produces= MediaType.***APPLICATION\_JSON\_VALUE***)

**public** Statistics quizinfo()

{

**return** as.quizInfo();

}

//http://localhost:8136/quizapp/viewQuiz

@GetMapping(value="viewQuiz", produces= MediaType.***APPLICATION\_JSON\_VALUE***)

**public** List<Object> viewQuiz()

{

**return** us.viewAllQuiz();

}

//http://localhost:8136/quizapp/takeTest

@PostMapping(value="takeTest", consumes = MediaType.***APPLICATION\_JSON\_VALUE***)

**public** String takeTest(@RequestBody Test t)

{

**return** us.takeTest(t);

}

//http://localhost:8136/quizapp/getAllTest

@GetMapping(value="getAllTest", produces= MediaType.***APPLICATION\_JSON\_VALUE***)

**public** List<Test> getAllTest()

{

**return** us.getTestList();

}

//http://localhost:8136/quizapp/getresult

@GetMapping(value="getresult", produces= MediaType.***APPLICATION\_JSON\_VALUE***)

**public** List<Result> getresult()

{

**return** us.result();

}

//http://localhost:8136/quizapp/getAdminResult

@GetMapping(value="getAdminResult", produces= MediaType.***APPLICATION\_JSON\_VALUE***)

**public** List<Result> getAdminResult()

{

**return** us.result();

}

}

**Com.repository :**

**AdminRepo :**

**package** com.repository;

**import** org.springframework.data.jpa.repository.JpaRepository;

**import** com.bean.Admin;

**public** **interface** AdminRepo **extends** JpaRepository<Admin, Integer> {

}

**Questionrepo.java :**

**package** com.repository;

**import** org.springframework.data.jpa.repository.JpaRepository;

**import** org.springframework.stereotype.Repository;

**import** com.bean.Question;

@Repository

**public** **interface** Questionrepo **extends** JpaRepository<Question, Integer> {

}

**Quizrepo.java :**

**package com.repository;**

**import java.util.List;**

**import org.springframework.data.jpa.repository.JpaRepository;**

**import org.springframework.data.jpa.repository.Query;**

**import org.springframework.stereotype.Repository;**

**import com.bean.Quiz;**

**@Repository**

**public interface Quizrepo extends JpaRepository<Quiz, Integer>{**

**@Query("SELECT DISTINCT q.title, COUNT(DISTINCT q.quizno) FROM Quiz q GROUP BY q.title,q.quizno")**

**public List<Object> listOfQuiz();**

**}**

**Testrepo.java :**

**package** com.repository;

**import** java.util.List;

**import** org.springframework.data.jpa.repository.JpaRepository;

**import** org.springframework.data.jpa.repository.Query;

**import** com.bean.Test;

**public** **interface** Testrepo **extends** JpaRepository<Test, Integer>{

@Query("Select t from Test as t group by t.userid")

List<Test> getIndividual();

}

**Userrepo.java :**

**package** com.repository;

**import** org.springframework.data.jpa.repository.JpaRepository;

**import** org.springframework.stereotype.Repository;

**import** com.bean.User;

@Repository

**public** **interface** Userrepo **extends** JpaRepository<User, Integer>{

**public** User findByEmailid(String emailid);

}

**Com.service :**

**AdminSer :**

**package** com.service;

**import** java.util.List;

**import** org.springframework.beans.factory.annotation.Autowired;

**import** org.springframework.stereotype.Service;

**import** com.bean.Admin;

**import** com.bean.Question;

**import** com.bean.Quiz;

**import** com.bean.Result;

**import** com.bean.Statistics;

**import** com.bean.User;

**import** com.repository.AdminRepo;

**import** com.repository.Questionrepo;

**import** com.repository.Quizrepo;

**import** com.repository.Userrepo;

@Service

**public** **class** AdminSer {

@Autowired

Questionrepo qr;

@Autowired

Quizrepo qur;

@Autowired

Userrepo ur;

@Autowired

Statistics stat;

@Autowired

AdminRepo adr;

**public** String adminLogin(Admin u)

{

Admin ad= adr.findById(1).get();

**if**(u.getUsername().equals(ad.getUsername())&&u.getPassword().equals(ad.getPassword()))

{

**return** "Welcome admin";

}

**else**

{

**return** "invalid Credentials";

}

}

**public** String adminupdate(Admin a)

{

Admin ad= adr.findById(1).get();

ad.setUsername(a.getUsername());

ad.setPassword(a.getUsername());

adr.saveAndFlush(ad);

**return** "Updated";

}

**public** String addQuestion(Question q)

{

**if**(q!=**null**)

{

qr.save(q);

**return** "question added";

}

**else**

{

**return** "failed to add";

}

}

**public** String addQuiz(Quiz q)

{

**if**(q!=**null**)

{

qur.save(q);

**return** "quiz added";

}

**else**

{

**return** "failed to add";

}

}

**public** List<Quiz> viewAllQuiz()

{

**return** qur.findAll();

}

**public** Statistics quizInfo()

{

stat.setUsers(ur.findAll().size());

stat.setQuestions(qr.findAll().size());

stat.setQuiz(qur.listOfQuiz());

**return** stat;

}

**UserSer :**

package com.service;

import java.util.ArrayList;

import java.util.Collections;

import java.util.List;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.stereotype.Service;

import com.bean.Result;

import com.bean.Test;

import com.bean.User;

import com.repository.Quizrepo;

//import com.repository.Resultrepo;

import com.repository.Testrepo;

import com.repository.Userrepo;

@Service

public class UserSer {

List<Result> finalList=new ArrayList<>();

@Autowired

Userrepo ur;

@Autowired

Quizrepo qr;

@Autowired

Testrepo tr;

@Autowired

// Resultrepo resrepo;

// @Autowired

User u;

@Autowired

Test t;

Result r= new Result();

public String userLogin(String email,String password)

{

u=ur.findByEmailid(email);

if(u!=null)

{

if(u.getEmailid().equals(email)&&u.getPassword().equals(password))

{

return "login sucessfull";

}

else

{

return "invalid credentials";

}

}

else

{

return "User not found";

}

}

public String userRegister(User u)

{

if(ur.findByEmailid(u.getEmailid())==null)

{

ur.save(u);

return "registered";

}

else

{

return "User already exists";

}

}

public List<Object> viewAllQuiz()

{

return qr.listOfQuiz();

}

public String takeTest(Test t)

{

if(t!=null)

{

tr.save(t);

return "submitted";

}

else

{

return "submission failed";

}

}

public List<Test> getTestList()

{

return tr.findAll();

}

public List<Result> result() {

List<Test> obj = tr.findAll();

List<User> u = ur.findAll();

List<Result> finalList = new ArrayList<>();

for (User user : u) {

int mark = 0;

String email = user.getEmailid();

System.out.println(email);

for (Test ob : obj) {

if (user.getUid() == ob.getUserid().getUid()) {

if (ob.getTestans() == ob.getQuestionid().getAns()) {

mark++;

}

System.out.println("inside: " + mark);

}

}

System.out.println("outside: " + mark);

// Check if the user's email already exists in finalList

boolean userExists = false;

for (Result result : finalList) {

if (result.getEmail().equals(email)) {

result.setMarks(mark);

userExists = true;

break;

}

}

// If the user's email does not exist, add a new entry to finalList

if (!userExists) {

finalList.add(new Result(email, mark));

}

}

System.out.println("final: " + finalList);

Collections.sort(finalList);

return finalList;

}

}

**Src/main/resources :**

**Application.properties :**

Spring.application.name=Online\_Quiz

spring.jpa.hibernate.ddl-auto=update

spring.datasource.url=jdbc:mysql://localhost:3306/quizapp

spring.datasource.username=root

spring.datasource.password=rootroot@123

spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver

spring.jpa.show-sql: true

spring.jpa.properties.hibernate.format\_sql=true

logging.level.org.hibernate.SQL=DEBUG

logging.level.org.hibernate.type=TRACE

server.port=8136

**Src/test/java :**

**Com.demo :**

**OnlineQuizPortalApplicationTests.java :**

**package** com.demo;

**import** org.junit.jupiter.api.Test;

**import** org.springframework.boot.test.context.SpringBootTest;

@SpringBootTest

**class** OnlineQuizPortalApplicationTests {

@Test

**void** contextLoads() {

}

}

**GITHUB LINK :**

<https://github.com/PVRevanth2k/Online_Quiz_Portal_Using_REST_APIs.git>