Source code

# Backend

package com.demo;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication

public class SpringBootBackend1Application {

public static void main(String[] args) {

SpringApplication.run(SpringBootBackend1Application.class, args);

}

}

1. **Quiz Controller**

package com.controllers;

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

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

import com.models.Quiz;

import com.models.Results;

import com.services.QuizService;

import java.util.List;

@RestController

@RequestMapping("/api/quizzes")

public class QuizController {

@Autowired

private QuizService quizService;

// Create a new quiz

@PostMapping

public Quiz createQuiz(@RequestBody Quiz quiz) {

return quizService.saveQuiz(quiz);

}

// Get all quizzes

@GetMapping

public List<Quiz> getAllQuizzes() {

return quizService.getAllQuizzes();

}

// Get quiz by ID

@GetMapping("/{id}")

public Quiz getQuizById(@PathVariable Long id) {

return quizService.getQuizById(id);

}

// Submit a result for a quiz

@PostMapping("/{quizId}/results")

public Results submitResult(@PathVariable Long quizId, @RequestBody Results result) {

return quizService.saveResult(quizId, result);

}

// Get result by ID

@GetMapping("/results/{id}")

public Results getResultById(@PathVariable Long id) {

return quizService.getResultById(id);

}

}

1. Question DTO

package com.dto;

public class QuestionDTO {

private Long id;

private String questionText;

private String optionA;

private String optionB;

private String optionC;

private String optionD;

public Long getId() {

return id;

}

public void setId(Long id) {

this.id = id;

}

public String getQuestionText() {

return questionText;

}

public void setQuestionText(String questionText) {

this.questionText = questionText;

}

public String getOptionA() {

return optionA;

}

public void setOptionA(String optionA) {

this.optionA = optionA;

}

public String getOptionB() {

return optionB;

}

public void setOptionB(String optionB) {

this.optionB = optionB;

}

public String getOptionC() {

return optionC;

}

public void setOptionC(String optionC) {

this.optionC = optionC;

}

public String getOptionD() {

return optionD;

}

public void setOptionD(String optionD) {

this.optionD = optionD;

}

public QuestionDTO(Long id, String questionText, String optionA, String optionB, String optionC, String optionD) {

super();

this.id = id;

this.questionText = questionText;

this.optionA = optionA;

this.optionB = optionB;

this.optionC = optionC;

this.optionD = optionD;

}

public QuestionDTO() {

super();

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

}

}

1. **Quiz DTO**

package com.dto;

import java.util.List;

public class QuizDTO {

private Long id;

private String title;

private String description;

private List<QuestionDTO> questions;

public Long getId() {

return id;

}

public void setId(Long id) {

this.id = id;

}

public String getTitle() {

return title;

}

public void setTitle(String title) {

this.title = title;

}

public String getDescription() {

return description;

}

public void setDescription(String description) {

this.description = description;

}

public List<QuestionDTO> getQuestions() {

return questions;

}

public void setQuestions(List<QuestionDTO> questions) {

this.questions = questions;

}

public QuizDTO(Long id, String title, String description, List<QuestionDTO> questions) {

super();

this.id = id;

this.title = title;

this.description = description;

this.questions = questions;

}

public QuizDTO() {

super();

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

}

}

1. **Result DTO**

package com.dto;

import java.util.List;

public class QuizDTO {

private Long id;

private String title;

private String description;

private List<QuestionDTO> questions;

public Long getId() {

return id;

}

public void setId(Long id) {

this.id = id;

}

public String getTitle() {

return title;

}

public void setTitle(String title) {

this.title = title;

}

public String getDescription() {

return description;

}

public void setDescription(String description) {

this.description = description;

}

public List<QuestionDTO> getQuestions() {

return questions;

}

public void setQuestions(List<QuestionDTO> questions) {

this.questions = questions;

}

public QuizDTO(Long id, String title, String description, List<QuestionDTO> questions) {

super();

this.id = id;

this.title = title;

this.description = description;

this.questions = questions;

}

public QuizDTO() {

super();

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

}

}

1. **Model Class Questions**

package com.dto;

import java.util.List;

public class QuizDTO {

private Long id;

private String title;

private String description;

private List<QuestionDTO> questions;

public Long getId() {

return id;

}

public void setId(Long id) {

this.id = id;

}

public String getTitle() {

return title;

}

public void setTitle(String title) {

this.title = title;

}

public String getDescription() {

return description;

}

public void setDescription(String description) {

this.description = description;

}

public List<QuestionDTO> getQuestions() {

return questions;

}

public void setQuestions(List<QuestionDTO> questions) {

this.questions = questions;

}

public QuizDTO(Long id, String title, String description, List<QuestionDTO> questions) {

super();

this.id = id;

this.title = title;

this.description = description;

this.questions = questions;

}

public QuizDTO() {

super();

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

}

}

1. **Model class Quiz**

package com.models;

import java.util.List;

import jakarta.persistence.CascadeType;

import jakarta.persistence.Entity;

import jakarta.persistence.GeneratedValue;

import jakarta.persistence.GenerationType;

import jakarta.persistence.Id;

import jakarta.persistence.OneToMany;

@Entity

public class Quiz {

@Id

@GeneratedValue(strategy = GenerationType.IDENTITY)

private Long id;

private String title;

private String description;

@OneToMany(cascade = CascadeType.ALL)

private List<Questions> questions;

public Long getId() {

return id;

}

public void setId(Long id) {

this.id = id;

}

public String getTitle() {

return title;

}

public void setTitle(String title) {

this.title = title;

}

public String getDescription() {

return description;

}

public void setDescription(String description) {

this.description = description;

}

public List<Questions> getQuestions() {

return questions;

}

public void setQuestions(List<Questions> questions) {

this.questions = questions;

}

public Quiz(Long id, String title, String description, List<Questions> questions) {

super();

this.id = id;

this.title = title;

this.description = description;

this.questions = questions;

}

public Quiz() {

super();

// TODO Auto-generated constructor stub

}

}

1. **Model class Results**

package com.models;

import jakarta.persistence.Entity;

import jakarta.persistence.GeneratedValue;

import jakarta.persistence.GenerationType;

import jakarta.persistence.Id;

import jakarta.persistence.ManyToOne;

@Entity

public class Results {

@Id

@GeneratedValue(strategy = GenerationType.IDENTITY)

private Long id;

@ManyToOne

private Quiz quiz;

private int score;

private String userName;

public Long getId() {

return id;

}

public void setId(Long id) {

this.id = id;

}

public Quiz getQuiz() {

return quiz;

}

public void setQuiz(Quiz quiz) {

this.quiz = quiz;

}

public int getScore() {

return score;

}

public void setScore(int score) {

this.score = score;

}

public String getUserName() {

return userName;

}

public void setUserName(String userName) {

this.userName = userName;

}

public Results(Long id, Quiz quiz, int score, String userName) {

super();

this.id = id;

this.quiz = quiz;

this.score = score;

this.userName = userName;

}

public Results() {

super();

// TODO Auto-generated constructor stub

}

}

1. **Question Repositories**

package com.repositories;

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

import org.springframework.stereotype.Repository;

import com.models.Questions;

@Repository

public interface QuestionRepository extends JpaRepository<Questions, Long> {

}

1. **Quiz Repository**

package com.repositories;

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

import org.springframework.stereotype.Repository;

import com.models.Quiz;

@Repository

public interface QuizRepository extends JpaRepository<Quiz, Long> {

}

1. **Result Repository**

package com.repositories;

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

import org.springframework.stereotype.Repository;

import com.models.Results;

@Repository

public interface ResultRepository extends JpaRepository<Results, Long> {

}

1. **Quiz Service**

package com.services;

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

import org.springframework.stereotype.Service;

import com.dto.QuestionDTO;

import com.dto.QuizDTO;

import com.models.Questions;

import com.models.Quiz;

import com.models.Results;

import com.repositories.QuizRepository;

import com.repositories.ResultRepository;

import java.util.List;

import java.util.Optional;

import java.util.stream.Collectors;

@Service

public class QuizService {

@Autowired

private QuizRepository quizRepository;

@Autowired

private ResultRepository resultRepository;

public Quiz saveQuiz(Quiz quiz) {

return quizRepository.save(quiz);

}

public List<Quiz> getAllQuizzes() {

return quizRepository.findAll();

}

public Quiz getQuizById(Long id) {

return quizRepository.findById(id).orElseThrow(() -> new RuntimeException("Quiz not found"));

}

public QuizDTO convertToDTO(Quiz quiz) {

QuizDTO quizDTO = new QuizDTO();

quizDTO.setId(quiz.getId());

quizDTO.setTitle(quiz.getTitle());

quizDTO.setDescription(quiz.getDescription());

List<QuestionDTO> questionDTOs = quiz.getQuestions().stream()

.map(this::convertQuestionToDTO)

.collect(Collectors.toList());

quizDTO.setQuestions(questionDTOs);

return quizDTO;

}

private QuestionDTO convertQuestionToDTO(Questions question) {

QuestionDTO questionDTO = new QuestionDTO();

questionDTO.setId(question.getId());

questionDTO.setQuestionText(question.getQuestionText());

questionDTO.setOptionA(question.getOptionA());

questionDTO.setOptionB(question.getOptionB());

questionDTO.setOptionC(question.getOptionC());

questionDTO.setOptionD(question.getOptionD());

return questionDTO;

}

public Results saveResult(Long quizId, Results result) {

Quiz quiz = getQuizById(quizId);

result.setQuiz(quiz);

return resultRepository.save(result);

}

public Results getResultById(Long id) {

return resultRepository.findById(id).orElseThrow(() -> new RuntimeException("Result not found"));

}

}

1. **Result Service**

package com.services;

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

import org.springframework.stereotype.Service;

import com.models.Results;

import com.repositories.ResultRepository;

@Service

public class ResultService {

@Autowired

private ResultRepository resultRepository;

public Results saveResult(Results result) {

return resultRepository.save(result);

}

public Results getResultById(Long id) {

return resultRepository.findById(id).orElseThrow(() -> new RuntimeException("Result not found"));

}

}

1. **Application.properties**

spring.datasource.name=amit

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

spring.datasource.username=root

spring.datasource.password=Tatasky123

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

spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQL8Dialect

spring.jpa.hibernate.ddl-auto=create