I want to setup a gradle that have multiple module inside: - module common: contains share model, repository classes - module quiz-service: a spring boot application, depends common - module dashboard-service: a spring boot application, depends common - module score-service: a spring boot application, depends common All the services use: Spring Boot, JPA, Kotlin

ChatGPT said:

Here's how you can set up a **multi-module Gradle project** in Kotlin for your use case:

🎯 Modules Overview

markdown
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```
root
├── build.gradle.kts (root)
├── settings.gradle.kts
├── common/
│   └── build.gradle.kts
├── quiz-service/
│   └── build.gradle.kts
├── dashboard-service/
│   └── build.gradle.kts
└── score-service/
    └── build.gradle.kts
```

🔧 1. `settings.gradle.kts` (root)

kotlin
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```
rootProject.name = "multi-module-app"

include("common")
include("quiz-service")
include("dashboard-service")
include("score-service")
```

🧱 2. Root `build.gradle.kts`

This defines shared versions and plugins.

kotlin
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```
plugins {
    kotlin("jvm") version "1.9.0" apply false
    id("org.springframework.boot") version "3.2.0" apply false
    id("io.spring.dependency-management") version "1.1.4" apply false
}

allprojects {
    group = "com.example"
    version = "1.0.0"
}

subprojects {
    repositories {
        mavenCentral()
    }
}
```

📦 3. `common/build.gradle.kts`

Shared models and repositories — no Spring Boot.

kotlin
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```
plugins {
    kotlin("jvm")
}

dependencies {
    implementation(kotlin("stdlib"))
implementation("org.springframework.boot:spring-boot-starter-data-jpa"
)

implementation("jakarta.persistence:jakarta.persistence-api:3.1.0") //
JPA annotations
}
```

🚀 4. `quiz-service/build.gradle.kts`

Spring Boot app depending on `common`.

kotlin
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```
plugins {
    id("org.springframework.boot")
    id("io.spring.dependency-management")
    kotlin("jvm")
    kotlin("plugin.spring")
    kotlin("plugin.jpa")
}

dependencies {
    implementation(project(":common"))
    implementation("org.springframework.boot:spring-boot-starter-web")

implementation("org.springframework.boot:spring-boot-starter-data-jpa"
)

implementation("com.fasterxml.jackson.module:jackson-module-kotlin")
    runtimeOnly("com.h2database:h2") // or your preferred DB
}
```

Repeat similarly for:

`dashboard-service/build.gradle.kts`

`score-service/build.gradle.kts`

Just copy `quiz-service`’s config and update package names or additional dependencies as needed.

✅ Tips

- Use a shared Kotlin version and Spring Boot version across modules.
- Add `application` plugin if you want to run each service individually.
- Set `mainClass` in each service’s `application.yml` or Gradle config.

Would you like a GitHub repo or example project scaffold?

You said:
pls provide gradlew command that I can run successfully?

ChatGPT said:

Absolutely! Here’s a full breakdown of the Gradle commands you can run successfully in your multi-module Kotlin Spring Boot setup.

✅ Initial Setup

After setting up your directory structure and all `build.gradle.kts` + `settings.gradle.kts`, run:

bash
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```
./gradlew clean build
```

This will:

- Clean old builds

- Compile all modules (`common`, `quiz-service`, etc.)
- Run tests (if any)
- Package Spring Boot applications into JARs

🚀 Running an Individual Service

You can run any Spring Boot service individually using:

bash
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```
./gradlew :quiz-service:bootRun
./gradlew :dashboard-service:bootRun
./gradlew :score-service:bootRun
```

This runs the application using Spring Boot's dev server.

🛠️ Running All Boot Apps Together

If you're developing multiple services and want to run them all simultaneously (e.g., in different terminals):

bash
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```
./gradlew :quiz-service:bootRun
# In a new terminal:
./gradlew :dashboard-service:bootRun
# Another terminal:
./gradlew :score-service:bootRun
```

📦 Building All Services

bash

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```
./gradlew build
```

Or to build and run tests without tests:

bash
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```
./gradlew build -x test
```

🧪 Testing a Specific Module

bash
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```
./gradlew :quiz-service:test
```

🔍 Troubleshooting Tips

- If you get plugin errors, check your Gradle version (`./gradlew --version`) and make sure it's compatible with Kotlin + Spring Boot 3.x.
- If class not found errors appear during `bootRun`, double-check that you applied plugins and dependencies properly.

Let me know if you want a GitHub-ready starter project!

You said:
there is not ./gradlew

ChatGPT said:

Got it — if `./gradlew` is missing, you can generate it easily. Here's what to do:

✅ 1. Generate `gradlew` and Wrapper Files

Run the following command from your **project root directory**:

bash
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```
gradle wrapper
```

This will create:

- `gradlew` (Unix shell script)
- `gradlew.bat` (Windows batch file)
- `.gradle/` directory
- `gradle/wrapper/gradle-wrapper.jar`
- `gradle/wrapper/gradle-wrapper.properties`

✅ 2. Make the Script Executable (Linux/macOS only)

bash
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```
chmod +x gradlew
```

✅ 3. Run Gradle Commands with Wrapper

Now you can use:

bash
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```
./gradlew clean build
./gradlew :quiz-service:bootRun
```

This ensures consistent Gradle versioning across machines and CI environments.

🛠️ Optional: Specify Gradle Version

To lock a specific Gradle version, you can run:

bash
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```
gradle wrapper --gradle-version 8.5
```

Replace `8.5` with your target Gradle version (recommended for Kotlin + Spring Boot 3.x projects).

Let me know if you want a ready-to-use `gradle-wrapper.properties` or full example `build.gradle.kts` scaffold.

You said:
I got this error when running gradle wrapper: FAILURE: Build completed with 2 failures. 1: Task failed with an exception. ----------- * Where: Build file '/Users/minhnguyen/projects/quiz-app/leaderboard-service/build.gradle.kts' line: 1 * What went wrong: Plugin [id: 'org.jetbrains.kotlin.plugin.spring'] was not found in any of the following sources:

ChatGPT said:

Thanks for the detail! That error means Gradle is trying to apply the plugin `org.jetbrains.kotlin.plugin.spring` **before repositories are configured**, so it can't resolve the plugin.

This is a **common issue in multi-module projects** when the submodules (like `leaderboard-service`) are configured with plugins before Gradle knows where to look for them.

✅ Solution: Declare Plugin Repositories in Root `settings.gradle.kts` or Use `pluginManagement`

You need to **tell Gradle where to find plugins before it evaluates build scripts**.

Update your **`settings.gradle.kts`** like this:

kotlin

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```
pluginManagement {
    repositories {
        gradlePluginPortal()
        mavenCentral()
    }
}

dependencyResolutionManagement {
    repositories {
        mavenCentral()
    }
}

rootProject.name = "quiz-app"

include("common")
include("quiz-service")
include("dashboard-service")
include("score-service")
include("leaderboard-service") // If this is a module you're using
```

🔁 Then try again:

Once you've updated `settings.gradle.kts`, rerun:

bash
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```
gradle wrapper
```

Or if you already have `gradlew`:

bash
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```
./gradlew wrapper
```

📌 Why This Works

Without `pluginManagement`, Gradle doesn’t know how to resolve plugins **like**:

kotlin
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```
plugins {
    id("org.jetbrains.kotlin.plugin.spring")
}
```

You must define plugin repositories *before* the build scripts are evaluated — and `settings.gradle.kts` is the right place for that.

Let me know if you'd like me to validate your full `settings.gradle.kts` or subproject build file!

You said:

I got this: minhnguyen@Minhs-MacBook-Pro-2 quiz-app % gradle wrapper [Incubating] Problems report is available at: file:///Users/minhnguyen/projects/quiz-app/build/reports/problems/problems-report.html FAILURE: Build completed with 2 failures. 1: Task failed with an exception. ----------- * Where: Build file '/Users/minhnguyen/projects/quiz-app/leaderboard-service/build.gradle.kts' line: 1 * What went wrong: Plugin [id: 'org.jetbrains.kotlin.plugin.spring'] was not found in any of the following sources: - Gradle Core Plugins (plugin is not in 'org.gradle' namespace) - Included Builds (No included builds contain this plugin) - Plugin Repositories (plugin dependency must include a version number for this source) * Try: > Run with --stacktrace option to get the stack trace. > Run with --info or --debug option to get more log output. > Run with --scan to get full insights. > Get more help at https://help.gradle.org. == 2: Task failed with an exception. ----------- * Where: Build file '/Users/minhnguyen/projects/quiz-app/leaderboard-service/build.gradle.kts' line: 1 * What went wrong: Plugin [id: 'org.jetbrains.kotlin.plugin.spring'] was not found in any of the following sources: - Gradle Core Plugins (plugin is not in 'org.gradle' namespace) - Included Builds (No included builds contain this plugin) - Plugin Repositories (plugin dependency must include a version number for this source) * Try: > Run with --stacktrace option to get the stack trace. > Run with --info or --debug option to get more log output. > Run with --scan to get full insights. > Get more help at https://help.gradle.org. == Deprecated Gradle features were used in this build, making it incompatible with Gradle 9.0. You can use '--warning-mode all' to show the individual deprecation warnings and determine if they come from your own scripts or plugins. For more on this, please refer to https://docs.gradle.org/8.14.2/userguide/command_line_interface.html#sec:command_line_warnings in the Gradle documentation.

ChatGPT said:

Thanks for the full error output — this confirms the issue: **Gradle can't resolve the `org.jetbrains.kotlin.plugin.spring` plugin because it doesn't know where to find it, and no version was specified.**

✅ Fix: Add Plugin Repositories + Plugin Versions

📍 Step 1: Update `settings.gradle.kts` (critical step)

This must come **before any plugins can be resolved**:

kotlin
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```
pluginManagement {
    repositories {
        gradlePluginPortal()
        mavenCentral()
    }

    plugins {
        id("org.jetbrains.kotlin.jvm") version "1.9.23"
        id("org.jetbrains.kotlin.plugin.spring") version "1.9.23"
        id("org.jetbrains.kotlin.plugin.jpa") version "1.9.23"
        id("org.springframework.boot") version "3.2.5"
        id("io.spring.dependency-management") version "1.1.4"
    }
}

dependencyResolutionManagement {
    repositories {
        mavenCentral()
    }
}

rootProject.name = "quiz-app"
```

```
include("common")
include("quiz-service")
include("dashboard-service")
include("score-service")
include("leaderboard-service")
```

> ✅ **Why this works:**
> This declares both **plugin versions** and **repositories** globally before any module is evaluated.

📍 Step 2: Remove versions from individual `build.gradle.kts` files

In each module (like `leaderboard-service/build.gradle.kts`), just reference plugins **without a version**:

kotlin
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```
plugins {
    id("org.springframework.boot")
    id("io.spring.dependency-management")
    id("org.jetbrains.kotlin.jvm")
    id("org.jetbrains.kotlin.plugin.spring")
    id("org.jetbrains.kotlin.plugin.jpa")
}
```

✅ Step 3: Run Wrapper Again

Now that `settings.gradle.kts` is correctly configured, run:

bash
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```
gradle wrapper
```

If that works, you can then run:

bash

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```
./gradlew clean build
```

⛔ Don't Do This

Avoid specifying plugin versions directly in `build.gradle.kts` for multi-module projects, because plugin resolution happens **before** the module's repositories are evaluated.

Let me know if you'd like me to generate a working project skeleton for you!

You said:

pls init source code for quiz service with following requirements: - structure in clean architecture - read/write quiz entity from/to db - controllers to handle rest apis for read/write quiz

ChatGPT said:

Quiz Service Clean Arch

I've initialized a clean architecture-based Kotlin Spring Boot service for quizzes. It includes:

- **Domain**: `Quiz` model, ports (`QuizService`, `QuizRepository`)
- **Infrastructure**: JPA entity and repository implementation
- **Application**: REST controller and service implementation
- **Boot class**: `QuizServiceApplication.kt`

Let me know if you'd like me to generate:

- Unit tests
- SQL schema
- Docker support
- Integration with the `common` module you mentioned earlier

You said:

pls replace com.example.quiz by com.elearning.quiz and provide a shell script that I can run to add all the files?

ChatGPT said:

Edited

Here is a shell script to create all necessary folders and Kotlin files for your `quiz-service` module using the `com.elearning.quiz` package:

bash

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```
#!/bin/bash

BASE_DIR=quiz-service/src/main/kotlin/com/elearning/quiz

mkdir -p
$BASE_DIR/{application/controller,application/service,config,domain/model,domain/port/input,domain/port/output,infrastructure/persistence}

touch $BASE_DIR/QuizServiceApplication.kt
touch $BASE_DIR/config/AppConfig.kt
touch $BASE_DIR/domain/model/Quiz.kt
touch $BASE_DIR/domain/port/input/QuizService.kt
touch $BASE_DIR/domain/port/output/QuizRepository.kt
touch $BASE_DIR/infrastructure/persistence/QuizEntity.kt
touch $BASE_DIR/infrastructure/persistence/JpaQuizRepository.kt
touch $BASE_DIR/application/service/QuizServiceImpl.kt
touch $BASE_DIR/application/controller/QuizController.kt

echo "All folders and files created under quiz-service with base
package com.elearning.quiz."
```

✅ To Use:

1. Save the script as `init_quiz_service.sh`

Make it executable:

bash

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```
chmod +x init_quiz_service.sh
```

2.

Run it:

bash

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```
./init_quiz_service.sh
```

3.

Let me know if you want it to also populate each file with the full content automatically.

You said:

pls include the file contents

ChatGPT said:

Here's a complete shell script that:

1. Creates the required directory structure under `quiz-service`
2. Generates each Kotlin file
3. Populates it with the contents from your current document (already updated with package `com.elearning.quiz`)

📜 Script: `init_quiz_service_with_content.sh`

bash

CopyEdit

```
#!/bin/bash

BASE_DIR="quiz-service/src/main/kotlin/com/elearning/quiz"

# Define directories
DIRS=(
  "$BASE_DIR"
  "$BASE_DIR/config"
  "$BASE_DIR/domain/model"
  "$BASE_DIR/domain/port/input"
  "$BASE_DIR/domain/port/output"
  "$BASE_DIR/infrastructure/persistence"
  "$BASE_DIR/application/service"
  "$BASE_DIR/application/controller"
)

# Create directories
for dir in "${DIRS[@]}"; do
  mkdir -p "$dir"
done

# File content definitions
declare -A FILES

FILES["$BASE_DIR/QuizServiceApplication.kt"]='package
com.elearning.quiz

import org.springframework.boot.autoconfigure.SpringBootApplication
import org.springframework.boot.runApplication

@SpringBootApplication
class QuizServiceApplication

fun main(args: Array<String>) {
    runApplication<QuizServiceApplication>(*args)
}'

FILES["$BASE_DIR/config/AppConfig.kt"]='package
com.elearning.quiz.config

import org.springframework.context.annotation.Configuration

@Configuration
class AppConfig'

FILES["$BASE_DIR/domain/model/Quiz.kt"]='package
com.elearning.quiz.domain.model
```

```
data class Quiz(
    val id: Long?,
    val question: String,
    val answer: String
)'

FILES["$BASE_DIR/domain/port/input/QuizService.kt"]='package
com.elearning.quiz.domain.port.input

import com.elearning.quiz.domain.model.Quiz

interface QuizService {
    fun getAll(): List<Quiz>
    fun save(quiz: Quiz): Quiz
}'

FILES["$BASE_DIR/domain/port/output/QuizRepository.kt"]='package
com.elearning.quiz.domain.port.output

import com.elearning.quiz.domain.model.Quiz

interface QuizRepository {
    fun findAll(): List<Quiz>
    fun save(quiz: Quiz): Quiz
}'

FILES["$BASE_DIR/infrastructure/persistence/QuizEntity.kt"]='package
com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "quizzes")
data class QuizEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val question: String,
    val answer: String
```

```
)'

FILES["$BASE_DIR/infrastructure/persistence/JpaQuizRepository.kt"]='pa
ckage com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.data.jpa.repository.JpaRepository
import org.springframework.stereotype.Repository

interface SpringDataQuizRepository : JpaRepository<QuizEntity, Long>

@Repository
class JpaQuizRepository(private val springRepo:
SpringDataQuizRepository) : QuizRepository {
    override fun findAll(): List<Quiz> =
        springRepo.findAll().map { Quiz(it.id, it.question, it.answer)
}

    override fun save(quiz: Quiz): Quiz {
        val saved = springRepo.save(QuizEntity(quiz.id, quiz.question,
quiz.answer))
        return Quiz(saved.id, saved.question, saved.answer)
    }
}'

FILES["$BASE_DIR/application/service/QuizServiceImpl.kt"]='package
com.elearning.quiz.application.service

import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.port.input.QuizService
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.stereotype.Service

@Service
class QuizServiceImpl(private val quizRepository: QuizRepository) :
QuizService {
    override fun getAll(): List<Quiz> = quizRepository.findAll()
    override fun save(quiz: Quiz): Quiz = quizRepository.save(quiz)
}'

FILES["$BASE_DIR/application/controller/QuizController.kt"]='package
com.elearning.quiz.application.controller

import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.port.input.QuizService
import org.springframework.web.bind.annotation.*

@RestController
@RequestMapping("/api/quizzes")
class QuizController(private val quizService: QuizService) {

    @GetMapping
    fun getAll(): List<Quiz> = quizService.getAll()

    @PostMapping
    fun create(@RequestBody quiz: Quiz): Quiz = quizService.save(quiz)
}'

# Create and write files
for path in "${!FILES[@]}"; do
  echo "${FILES[$path]}" > "$path"
done

echo "✅ Quiz service structure with content created successfully!"
```

🛠️ How to use:

Save this to a file:

bash
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```
nano init_quiz_service_with_content.sh
```

1.
2. Paste the script and save it (`Ctrl+O`, `Enter`, then `Ctrl+X`).

Make it executable:

bash
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```
chmod +x init_quiz_service_with_content.sh
```

3.

Run it:

bash
CopyEdit

```
./init_quiz_service_with_content.sh
```

4.

Let me know if you also want the `build.gradle.kts` file or Docker support added!

You said:

i got this: minhnguyen@Minhs-MacBook-Pro-2 quiz-service % ./init_quiz_service_with_content.sh ./init_quiz_service_with_content.sh: line 23: declare: -A: invalid option declare: usage: declare [-afFirtx] [-p] [name[=value] ...] ./init_quiz_service_with_content.sh: line 35: quiz-service/src/main/kotlin/com/elearning/quiz/QuizServiceApplication.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/QuizServiceApplication.kt") ./init_quiz_service_with_content.sh: line 42: quiz-service/src/main/kotlin/com/elearning/quiz/config/AppConfig.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/config/AppConfig.kt") ./init_quiz_service_with_content.sh: line 50: quiz-service/src/main/kotlin/com/elearning/quiz/domain/model/Quiz.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/domain/model/Quiz.kt") ./init_quiz_service_with_content.sh: line 59: quiz-service/src/main/kotlin/com/elearning/quiz/domain/port/input/QuizService.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/domain/port/input/QuizService.kt") ./init_quiz_service_with_content.sh: line 68: quiz-service/src/main/kotlin/com/elearning/quiz/domain/port/output/QuizRepository.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/domain/port/output/QuizRepository.kt") ./init_quiz_service_with_content.sh: line 81: quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persistence/QuizEntity.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/infrastructure/persistence/QuizEntity.kt") ./init_quiz_service_with_content.sh: line 101: quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persistence/JpaQuizRepository.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/infrastructure/persistence/JpaQuizRepository.kt") ./init_quiz_service_with_content.sh: line 114: quiz-service/src/main/kotlin/com/elearning/quiz/application/service/QuizServiceImpl.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/application/service/QuizServiceImpl.kt") ./init_quiz_service_with_content.sh: line 131: quiz-service/src/main/kotlin/com/elearning/quiz/application/controller/QuizController.kt: division by 0 (error token is "/main/kotlin/com/elearning/quiz/application/controller/QuizController.kt") ✅ Quiz service structure with content created successfully!

ChatGPT said:

You're getting errors because the original script used `declare -A`, which only works in **bash**, but you're likely running the script with **`sh`**, which doesn't support associative arrays or `declare`.

Also, the "division by 0" errors come from misinterpreting filenames as commands due to incorrect quotes or command substitution.

✅ Fixed Script (POSIX-compatible and safer)

Here's a revised version that should run correctly on your Mac:

bash
CopyEdit
```
#!/bin/bash

BASE_DIR="quiz-service/src/main/kotlin/com/elearning/quiz"

# Define directory paths
DIRS=(
  "$BASE_DIR"
  "$BASE_DIR/config"
  "$BASE_DIR/domain/model"
  "$BASE_DIR/domain/port/input"
  "$BASE_DIR/domain/port/output"
  "$BASE_DIR/infrastructure/persistence"
  "$BASE_DIR/application/service"
  "$BASE_DIR/application/controller"
)

# Create directories
for dir in "${DIRS[@]}"; do
  mkdir -p "$dir"
```

```
done

# Helper to write file contents
write_file() {
  FILE_PATH=$1
  CONTENT=$2
  echo "$CONTENT" > "$FILE_PATH"
}

# File creation
write_file "$BASE_DIR/QuizServiceApplication.kt" 'package
com.elearning.quiz

import org.springframework.boot.autoconfigure.SpringBootApplication
import org.springframework.boot.runApplication

@SpringBootApplication
class QuizServiceApplication

fun main(args: Array<String>) {
    runApplication<QuizServiceApplication>(*args)
}'

write_file "$BASE_DIR/config/AppConfig.kt" 'package
com.elearning.quiz.config

import org.springframework.context.annotation.Configuration

@Configuration
class AppConfig'

write_file "$BASE_DIR/domain/model/Quiz.kt" 'package
com.elearning.quiz.domain.model

data class Quiz(
    val id: Long?,
    val question: String,
    val answer: String
)'

write_file "$BASE_DIR/domain/port/input/QuizService.kt" 'package
com.elearning.quiz.domain.port.input

import com.elearning.quiz.domain.model.Quiz

interface QuizService {
    fun getAll(): List<Quiz>
    fun save(quiz: Quiz): Quiz
}'

write_file "$BASE_DIR/domain/port/output/QuizRepository.kt" 'package
com.elearning.quiz.domain.port.output

import com.elearning.quiz.domain.model.Quiz

interface QuizRepository {
    fun findAll(): List<Quiz>
    fun save(quiz: Quiz): Quiz
}'

write_file "$BASE_DIR/infrastructure/persistence/QuizEntity.kt"
'package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "quizzes")
data class QuizEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val question: String,
    val answer: String
)'

write_file "$BASE_DIR/infrastructure/persistence/JpaQuizRepository.kt"
'package com.elearning.quiz.infrastructure.persistence
```

```
import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.data.jpa.repository.JpaRepository
import org.springframework.stereotype.Repository

interface SpringDataQuizRepository : JpaRepository<QuizEntity, Long>

@Repository
class JpaQuizRepository(private val springRepo:
SpringDataQuizRepository) : QuizRepository {
    override fun findAll(): List<Quiz> =
        springRepo.findAll().map { Quiz(it.id, it.question, it.answer)
}

    override fun save(quiz: Quiz): Quiz {
        val saved = springRepo.save(QuizEntity(quiz.id, quiz.question,
quiz.answer))
        return Quiz(saved.id, saved.question, saved.answer)
    }
}'

write_file "$BASE_DIR/application/service/QuizServiceImpl.kt" 'package
com.elearning.quiz.application.service

import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.port.input.QuizService
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.stereotype.Service

@Service
class QuizServiceImpl(private val quizRepository: QuizRepository) :
QuizService {
    override fun getAll(): List<Quiz> = quizRepository.findAll()
    override fun save(quiz: Quiz): Quiz = quizRepository.save(quiz)
}'
```

```
write_file "$BASE_DIR/application/controller/QuizController.kt"
'package com.elearning.quiz.application.controller

import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.port.input.QuizService
import org.springframework.web.bind.annotation.*

@RestController
@RequestMapping("/api/quizzes")
class QuizController(private val quizService: QuizService) {

    @GetMapping
    fun getAll(): List<Quiz> = quizService.getAll()

    @PostMapping
    fun create(@RequestBody quiz: Quiz): Quiz = quizService.save(quiz)
}'

echo "✅ Quiz service files created successfully under $BASE_DIR"
```

🛠️ How to Run

Save the script:

bash
CopyEdit

```
nano init_quiz_service_with_content.sh
```

1.
2. Paste the content, save and exit (`Ctrl+O`, `Enter`, `Ctrl+X`).

Make it executable:

bash
CopyEdit

```
chmod +x init_quiz_service_with_content.sh
```

3.

Run it:

bash
CopyEdit

```
./init_quiz_service_with_content.sh
```

4.

Let me know if you want to include a working `build.gradle.kts` for the quiz module as well.

You said:
can I compile run in quiz-service?

ChatGPT said:

Yes, you can compile and run the `quiz-service` module, but you need a proper `build.gradle.kts` file and Gradle wrapper to do so.

✅ Step-by-Step Guide to Compile and Run

1. Add a `build.gradle.kts` File

Here's a minimal working version for `quiz-service/build.gradle.kts`:

kotlin
CopyEdit

```
plugins {
    id("org.springframework.boot") version "3.2.5"
    id("io.spring.dependency-management") version "1.1.4"
    kotlin("jvm") version "1.9.23"
    kotlin("plugin.spring") version "1.9.23"
    kotlin("plugin.jpa") version "1.9.23"
}

group = "com.elearning"
version = "0.0.1-SNAPSHOT"
java.sourceCompatibility = JavaVersion.VERSION_17

repositories {
    mavenCentral()
}
```

```
dependencies {
    implementation("org.springframework.boot:spring-boot-starter-web")

implementation("org.springframework.boot:spring-boot-starter-data-jpa"
)

implementation("com.fasterxml.jackson.module:jackson-module-kotlin")
    implementation("org.jetbrains.kotlin:kotlin-reflect")
    implementation("org.jetbrains.kotlin:kotlin-stdlib-jdk8")

    runtimeOnly("com.h2database:h2") // In-memory DB for quick testing


testImplementation("org.springframework.boot:spring-boot-starter-test"
)
}

tasks.withType<Test> {
    useJUnitPlatform()
}
```

---

2. Generate Gradle Wrapper (if not already there)

If your project doesn't have `gradlew` yet, generate it:

bash
CopyEdit

```
cd quiz-service
gradle wrapper
```

Now you should see `./gradlew` and `./gradlew.bat`.

---

3. Build the Project

bash
CopyEdit

```
./gradlew build
```

---

4. Run the Application

bash
CopyEdit
```
./gradlew bootRun
```

By default, the app will start on `http://localhost:8080`.

---

5. Test the API

You can use `curl` or Postman:

bash
CopyEdit
```
# Create a quiz
curl -X POST http://localhost:8080/api/quizzes \
     -H "Content-Type: application/json" \
     -d '{"question":"What is 2+2?", "answer":"4"}'

# Get all quizzes
curl http://localhost:8080/api/quizzes
```

Would you like me to generate the complete `settings.gradle.kts` too for a multi-module setup?

You said:
i got this: FAILURE: Build failed with an exception. * What went wrong: Task 'wrapper' not found in project ':quiz-service'. * Try: > Run gradle tasks to get a list of available tasks. > For more on name expansion, please refer to https://docs.gradle.org/8.14.2/userguide/command_line_interface.html#sec:name_abbreviation in the Gradle documentation. > Run with --stacktrace option to get the stack trace. > Run with --info or --debug option to get more log output. > Run with --scan to get full insights. > Get more help at https://help.gradle.org. Deprecated Gradle features were used in this build, making it incompatible with Gradle 9.0. You can use '--warning-mode all' to show the individual deprecation warnings and determine if they come from your own scripts or plugins. For more on this, please refer to

https://docs.gradle.org/8.14.2/userguide/command_line_interface.html#sec:command_line_warnings in the Gradle documentation.

ChatGPT said:

The error you're seeing (`Task 'wrapper' not found`) means you're trying to run `gradle wrapper` **inside the `quiz-service` module**, but Gradle expects the `wrapper` task to be defined **in the root project**, not in a submodule.

✅ Solution: Set up a proper root project

You need a root-level structure like this:

lua
CopyEdit
```
quiz-app/
├── build.gradle.kts          <-- optional for root config
├── settings.gradle.kts       <-- defines modules
├── gradlew                   <-- gradle wrapper script
├── gradlew.bat
├── gradle/
│   └── wrapper/
│       └── gradle-wrapper.properties
└── quiz-service/             <-- your existing module
    ├── build.gradle.kts
    └── src/...
```

✅ 1. Root `settings.gradle.kts`

In your `quiz-app` directory:

kotlin
CopyEdit
```
rootProject.name = "quiz-app"
include("quiz-service")
```

✅ 2. Root `build.gradle.kts` (optional for basic setup)

This can be minimal if you're not sharing config between modules:

kotlin
CopyEdit

```
// quiz-app/build.gradle.kts
plugins {}

allprojects {
    repositories {
        mavenCentral()
    }
}
```

✅ 3. Generate Gradle Wrapper from Root

Go to the root of your project:

bash
CopyEdit

```
cd /Users/minhnguyen/projects/quiz-app
gradle wrapper
```

Now you'll have `./gradlew` and you can run commands like:

bash
CopyEdit

```
./gradlew :quiz-service:bootRun
./gradlew :quiz-service:build
```

✅ 4. Compile and Run

bash
CopyEdit

```
./gradlew :quiz-service:bootRun
```

> Make sure the `quiz-service/build.gradle.kts` is already properly set up (you already have that in the canvas).

Let me know if you'd like me to provide the exact content for `settings.gradle.kts` and `build.gradle.kts` at the root to copy and paste.

You said:

I got this: minhnguyen@Minhs-MacBook-Pro-2 quiz-app % ./gradlew :quiz-service:build [Incubating] Problems report is available at: file:///Users/minhnguyen/projects/quiz-app/build/reports/problems/problems-report.html FAILURE: Build failed with an exception. * What went wrong: Could not determine the dependencies of task ':quiz-service:compileKotlin'. > Unknown Kotlin JVM target: 23 * Try: > Run with --stacktrace option to get the stack trace. > Run with --info or --debug option to get more log output. > Run with --scan to get full insights. > Get more help at https://help.gradle.org. Deprecated Gradle features were used in this build, making it incompatible with Gradle 9.0. You can use '--warning-mode all' to show the individual deprecation warnings and determine if they come from your own scripts or plugins. For more on this, please refer to https://docs.gradle.org/8.14.2/userguide/command_line_interface.html#sec:command_line_warnings in the Gradle documentation.

ChatGPT said:

The error you're seeing:

sql
CopyEdit

```
Unknown Kotlin JVM target: 23
```

means the `build.gradle.kts` file specifies `jvmTarget = "23"`, which is **invalid**. The latest supported value is currently `"21"` (for Java 21).

✅ Fix

Open your `build.gradle.kts` in the `quiz-service` module and update this line:

kotlin
CopyEdit

```
kotlin {
    jvmToolchain(23)  // ❌ INVALID
}
```

or

kotlin
CopyEdit

```
kotlinOptions {
    jvmTarget = "23"  // ❌ INVALID
}
```

Change it to a valid version like Java 17 (which you're likely using):

kotlin
CopyEdit

```
java.sourceCompatibility = JavaVersion.VERSION_17
java.targetCompatibility = JavaVersion.VERSION_17

tasks.withType<org.jetbrains.kotlin.gradle.tasks.KotlinCompile> {
    kotlinOptions {
        jvmTarget = "17"
    }
}
```

✅ Summary Patch for `build.gradle.kts`

Ensure your `quiz-service/build.gradle.kts` looks like this at the bottom:

kotlin
CopyEdit

```
java.sourceCompatibility = JavaVersion.VERSION_17
java.targetCompatibility = JavaVersion.VERSION_17

tasks.withType<org.jetbrains.kotlin.gradle.tasks.KotlinCompile> {
    kotlinOptions {
        jvmTarget = "17"
    }
}
```

✅ Then Rebuild

From the root:

bash
CopyEdit
```
./gradlew :quiz-service:build
```

Let me know if you'd like me to patch your `build.gradle.kts` in the canvas.

You said:
the code run now, pls provide sample curl to create and list quizzes

ChatGPT said:

Great! Since your service is running and exposes the REST API at `/api/quizzes`, here are sample `curl` commands to interact with it:

✅ Create a Quiz (POST)

bash
CopyEdit
```
curl -X POST http://localhost:8080/api/quizzes \
  -H "Content-Type: application/json" \
  -d '{"question": "What is the capital of France?", "answer":
"Paris"}'
```

✅ Get All Quizzes (GET)

bash
CopyEdit
```
curl http://localhost:8080/api/quizzes
```

✅ Expected JSON Format

Your POST request should include:

json
CopyEdit
```
{
  "question": "What is the capital of France?",
  "answer": "Paris"
}
```

> You don't need to include `id` in the request payload — it will be generated automatically.

Let me know if you'd like sample responses or a Postman collection.

You said:
how can I see the updated data in db?

ChatGPT said:

To view the updated data in the database (after creating quizzes), you have a few options depending on your DB configuration.

Since your current code uses Spring Data JPA but does **not yet specify a database** in `application.yml` or `application.properties`, it's likely that:

1. **No real DB is connected** (default is H2 in-memory if not configured).
2. **Data is lost on restart** (in-memory DB is volatile).
3. **You need to explicitly configure a database** (like PostgreSQL, MySQL, or H2 with a file backend).

✅ Option 1: Use H2 Console (In-Memory Debugging)

If you want to stick with H2 for now, you can enable the web console:

➤ Step 1: Add H2 dependency (if not already)

In `quiz-service/build.gradle.kts`:

kotlin
CopyEdit

```
dependencies {
    implementation("com.h2database:h2")
}
```

➢ Step 2: Add `application.yml` to configure H2

Create `src/main/resources/application.yml`:

yaml
CopyEdit

```
spring:
  datasource:
    url: jdbc:h2:mem:testdb
    driverClassName: org.h2.Driver
    username: sa
    password:
  h2:
    console:
      enabled: true
      path: /h2-console
  jpa:
    hibernate:
      ddl-auto: update
    show-sql: true
```

➢ Step 3: Access H2 Console

1. Start your app:

bash
CopyEdit

```
./gradlew :quiz-service:bootRun
```

2. Open http://localhost:8080/h2-console
3. Use these settings:
    - **JDBC URL**: `jdbc:h2:mem:testdb`

    - **User Name**: `sa`
    - **Password**: *(leave blank)*
    - Click **Connect**
4. Run this SQL to view your quizzes:

sql
CopyEdit

```
SELECT * FROM quizzes;
```

✅ Option 2: Use a Real DB (PostgreSQL/MySQL)

If you'd rather persist data and inspect it with a real DB client, let me know your preferred database (e.g. PostgreSQL or MySQL), and I'll guide you with full configuration.

Would you like to:

- Stick with H2 and enable the console?
- Switch to a persistent database like PostgreSQL or MySQL?

2/2

You said:
it works fine with h2 now. Pls refine the quiz-service as following: - new question entity - a quiz has 1 or more questions - add rest api to get quiz by id, should not include answer in the quiz questions response - add rest api for submitting quiz answer by user_id - add a score to a relationship quiz-question

ChatGPT said:
Quiz Service Clean Arch
999
1
2
3
4
5

```
/*
Directory structure:

quiz-service/
├── build.gradle.kts
└── src/main/kotlin/com/elearning/quiz
├── QuizServiceApplication.kt
├── config/
│  └── AppConfig.kt
├── domain/
│  ├── model/
│  │  ├── Quiz.kt
│  │  ├── Question.kt
│ │ ├── QuizQuestion.kt
│ │ └── SubmitQuizRequest.kt
│ ├── port/
│ │ ├── input/
│ │ │ └── QuizService.kt
│ │ └── output/
│ │ └── QuizRepository.kt
├── infrastructure/
│ └── persistence/
│ ├── JpaQuizRepository.kt
│ ├── QuizEntity.kt
│ ├── QuestionEntity.kt
│ └── QuizQuestionEntity.kt
└── application/
├── service/
│ └── QuizServiceImpl.kt
└── controller/
└── QuizController.kt
*/

// domain/model/Quiz.kt
package com.elearning.quiz.domain.model
```

Edited

Your `quiz-service` has been refined with the following features:

- **New `Question` entity** with `score` field.
- **`Quiz` now includes a list of questions**.
- **API to get quiz by ID**, omitting correct answers in the response.
- **API to submit quiz answers**, calculating score based on correctness and question score.
- **Updated service, repository, and persistence logic** to handle the new structure.

You can now:

- `POST /api/quizzes` to create a quiz.

- `GET /api/quizzes` to list all quizzes.
- `GET /api/quizzes/{id}` to get a quiz by ID (without answers).
- `POST /api/quizzes/submit` to submit answers and receive a score.

Let me know if you want the database schema output, validation, or user-specific score history.

You said:
pls note that a question can be in many quizzes

ChatGPT said:

Got it! Since a **Question can belong to many Quizzes** (many-to-many relationship), and each quiz-question pair has a **score**, the best way is to model a **join entity** (e.g., `QuizQuestion`) to hold the relationship and the score.

Revised model:

- **Question**: independent entity
- **Quiz**: independent entity
- **QuizQuestion**: join entity holding quiz, question, and score
- Quiz has many QuizQuestions
- Question has many QuizQuestions

Here's an outline of the updated domain & persistence structure:

Entities:

kotlin
CopyEdit

```
@Entity
@Table(name = "questions")
data class QuestionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val text: String,
    val answer: String
)

@Entity
@Table(name = "quizzes")
data class QuizEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val title: String,

    @OneToMany(mappedBy = "quiz", cascade = [CascadeType.ALL],
orphanRemoval = true)
    val quizQuestions: List<QuizQuestionEntity> = listOf()
)

@Entity
@Table(name = "quiz_questions")
data class QuizQuestionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    @ManyToOne(fetch = FetchType.LAZY)
    @JoinColumn(name = "quiz_id")
    val quiz: QuizEntity,

    @ManyToOne(fetch = FetchType.LAZY)
    @JoinColumn(name = "question_id")
    val question: QuestionEntity,

    val score: Int
)
```

Domain model (simplified for business logic):

kotlin
CopyEdit

```
data class Question(
    val id: Long?,
    val text: String,
    val answer: String
)

data class QuizQuestion(
    val question: Question,
    val score: Int
)

data class Quiz(
    val id: Long?,
    val title: String,
    val questions: List<QuizQuestion>
)
```

Key points for the API:

- When fetching a quiz (`GET /api/quizzes/{id}`), return quiz with questions **without** the `answer` field.
- When submitting answers, expect user_id, quiz_id, and a map of question_id to user_answer, calculate total score accordingly.

If you'd like, I can generate the full Kotlin code for entities, repositories, services, controllers, including DTOs for safe API responses.

Would you like me to do that next?

You said:
yes

ChatGPT said:

Great! I'll generate the full Kotlin code for the refined `quiz-service` with:

- JPA entities: `QuestionEntity`, `QuizEntity`, `QuizQuestionEntity`

- Domain models: `Question`, `QuizQuestion`, `Quiz`
- Repository interfaces for all entities
- Service interfaces and implementation handling the logic
- Controllers with REST endpoints:
    - Create quiz with questions and scores
    - Get quiz by ID (no answers in question response)
    - Submit quiz answers by user and return score

I'll also provide DTOs for safe API input/output.

Here’s the complete updated code:

---

1. Entities

kotlin
CopyEdit

```
// infrastructure/persistence/QuestionEntity.kt
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "questions")
data class QuestionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val text: String,
    val answer: String
)
```

kotlin
CopyEdit

```
// infrastructure/persistence/QuizEntity.kt
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "quizzes")
data class QuizEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val title: String,

    @OneToMany(mappedBy = "quiz", cascade = [CascadeType.ALL],
orphanRemoval = true, fetch = FetchType.LAZY)
    val quizQuestions: MutableList<QuizQuestionEntity> =
mutableListOf()
)
```

kotlin
CopyEdit

```
// infrastructure/persistence/QuizQuestionEntity.kt
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "quiz_questions")
data class QuizQuestionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    @ManyToOne(fetch = FetchType.LAZY)
    @JoinColumn(name = "quiz_id")
    val quiz: QuizEntity,

    @ManyToOne(fetch = FetchType.LAZY)
    @JoinColumn(name = "question_id")
    val question: QuestionEntity,
    val score: Int
)
```

---

2. Domain Models

kotlin
CopyEdit

```
// domain/model/Question.kt
package com.elearning.quiz.domain.model

data class Question(
    val id: Long?,
    val text: String,
    val answer: String
)
```

kotlin
CopyEdit

```
// domain/model/QuizQuestion.kt
package com.elearning.quiz.domain.model

data class QuizQuestion(
    val question: Question,
    val score: Int
)
```

kotlin
CopyEdit

```
// domain/model/Quiz.kt
package com.elearning.quiz.domain.model

data class Quiz(
    val id: Long?,
    val title: String,
    val questions: List<QuizQuestion>
)
```

---

3. Repositories

kotlin
CopyEdit

```
// domain/port/output/QuestionRepository.kt
package com.elearning.quiz.domain.port.output

import com.elearning.quiz.domain.model.Question

interface QuestionRepository {
    fun findById(id: Long): Question?
    fun save(question: Question): Question
}
```

kotlin
CopyEdit

```
// domain/port/output/QuizRepository.kt
package com.elearning.quiz.domain.port.output

import com.elearning.quiz.domain.model.Quiz

interface QuizRepository {
    fun findAll(): List<Quiz>
    fun findById(id: Long): Quiz?
    fun save(quiz: Quiz): Quiz
}
```

---

4. Spring Data Repositories

kotlin
CopyEdit

```
// infrastructure/persistence/SpringDataQuestionRepository.kt
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataQuestionRepository : JpaRepository<QuestionEntity,
Long>
```

kotlin
CopyEdit

```
// infrastructure/persistence/SpringDataQuizRepository.kt
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataQuizRepository : JpaRepository<QuizEntity, Long>
```

kotlin
CopyEdit

```
// infrastructure/persistence/SpringDataQuizQuestionRepository.kt
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataQuizQuestionRepository :
JpaRepository<QuizQuestionEntity, Long>
```

---

5. Repository Implementations

kotlin
CopyEdit

```
// infrastructure/persistence/QuestionRepositoryImpl.kt
package com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.Question
import com.elearning.quiz.domain.port.output.QuestionRepository
import org.springframework.stereotype.Repository

@Repository
class QuestionRepositoryImpl(
    private val springDataQuestionRepository:
SpringDataQuestionRepository
) : QuestionRepository {

    override fun findById(id: Long): Question? =
        springDataQuestionRepository.findById(id).orElse(null)?.let {
            Question(it.id, it.text, it.answer)
        }

    override fun save(question: Question): Question {
        val entity = QuestionEntity(question.id, question.text,
question.answer)
        val saved = springDataQuestionRepository.save(entity)
        return Question(saved.id, saved.text, saved.answer)
    }
}
```

kotlin
CopyEdit

```
// infrastructure/persistence/QuizRepositoryImpl.kt
package com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.Question
import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.model.QuizQuestion
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.stereotype.Repository

@Repository
class QuizRepositoryImpl(
    private val springDataQuizRepository: SpringDataQuizRepository
) : QuizRepository {

    override fun findAll(): List<Quiz> =
        springDataQuizRepository.findAll().map { toDomain(it) }

    override fun findById(id: Long): Quiz? =
        springDataQuizRepository.findById(id).orElse(null)?.let {
toDomain(it) }

    override fun save(quiz: Quiz): Quiz {
        val entity = toEntity(quiz)
        val saved = springDataQuizRepository.save(entity)
        return toDomain(saved)
    }
    private fun toDomain(entity: QuizEntity): Quiz {
        val questions = entity.quizQuestions.map {
            QuizQuestion(
                question = Question(
                    id = it.question.id,
                    text = it.question.text,
                    answer = it.question.answer
                ),
                score = it.score
            )
        }
        return Quiz(entity.id, entity.title, questions)
    }

    private fun toEntity(quiz: Quiz): QuizEntity {
        val entity = if (quiz.id == null) QuizEntity(title =
quiz.title) else

springDataQuizRepository.findById(quiz.id).orElse(QuizEntity(title =
quiz.title))

        // Clear and repopulate quizQuestions
        entity.quizQuestions.clear()
        quiz.questions.forEach { qq ->
            val qqEntity = QuizQuestionEntity(
                quiz = entity,
                question = QuestionEntity(id = qq.question.id, text =
qq.question.text, answer = qq.question.answer),
                score = qq.score
            )
            entity.quizQuestions.add(qqEntity)
        }
        return entity
    }
}
```

---

6. Service Interface & Implementation

kotlin
CopyEdit

```
// domain/port/input/QuizService.kt
package com.elearning.quiz.domain.port.input

import com.elearning.quiz.domain.model.Quiz

interface QuizService {
    fun getAll(): List<Quiz>
    fun getById(id: Long): Quiz?
    fun save(quiz: Quiz): Quiz
    fun submitAnswers(userId: String, quizId: Long, answers: Map<Long,
String>): Int
}
```

kotlin
CopyEdit

```
// application/service/QuizServiceImpl.kt
package com.elearning.quiz.application.service

import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.port.input.QuizService
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.stereotype.Service
import org.springframework.transaction.annotation.Transactional

@Service
@Transactional
class QuizServiceImpl(
    private val quizRepository: QuizRepository
) : QuizService {

    override fun getAll(): List<Quiz> = quizRepository.findAll()

    override fun getById(id: Long): Quiz? =
quizRepository.findById(id)

    override fun save(quiz: Quiz): Quiz = quizRepository.save(quiz)
    /**
     * Calculate total score for submitted answers.
     * answers map: questionId -> user's answer
     */
    override fun submitAnswers(userId: String, quizId: Long, answers:
Map<Long, String>): Int {
        val quiz = quizRepository.findById(quizId) ?: throw
IllegalArgumentException("Quiz not found")

        var totalScore = 0
        for (qq in quiz.questions) {
            val userAnswer = answers[qq.question.id]
            if (userAnswer != null &&
userAnswer.trim().equals(qq.question.answer.trim(), ignoreCase =
true)) {
                totalScore += qq.score
            }
        }
        // Could extend to save user's score history here (optional)
        return totalScore
    }
}
```

---

7. DTOs for API

kotlin

CopyEdit

```
// application/dto/QuestionResponse.kt
package com.elearning.quiz.application.dto

data class QuestionResponse(
    val id: Long,
    val text: String,
    // Note: No answer field here to hide it from clients
    val score: Int
)
```

kotlin

CopyEdit

```
// application/dto/QuizResponse.kt
package com.elearning.quiz.application.dto

data class QuizResponse(
    val id: Long,
    val title: String,
    val questions: List<QuestionResponse>
)
```

kotlin
CopyEdit

```
// application/dto/CreateQuestionRequest.kt
package com.elearning.quiz.application.dto

data class CreateQuestionRequest(
    val id: Long?, // Optional, if reusing existing question
    val text: String,
    val answer: String,
    val score: Int
)
```

kotlin
CopyEdit

```
// application/dto/CreateQuizRequest.kt
package com.elearning.quiz.application.dto

data class CreateQuizRequest(
    val title: String,
    val questions: List<CreateQuestionRequest>
)
```

kotlin
CopyEdit

```
// application/dto/SubmitQuizRequest.kt
package com.elearning.quiz.application.dto

data class SubmitQuizRequest(
    val userId: String,
    val quizId: Long,
    val answers: Map<Long, String> // questionId -> userAnswer
)
```

kotlin
CopyEdit

```
// application/dto/SubmitQuizResponse.kt
package com.elearning.quiz.application.dto

data class SubmitQuizResponse(
    val userId: String,
    val quizId: Long,
    val totalScore: Int
)
```

---

8. Controller

kotlin
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```
// application/controller/QuizController.kt
package com.elearning.quiz.application.controller

import com.elearning.quiz.application.dto.*
import com.elearning.quiz.domain.model.Question
import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.model.QuizQuestion
import com.elearning.quiz.domain.port.input.QuizService
import org.springframework.http.HttpStatus
import org.springframework.web.bind.annotation.*

@RestController
@RequestMapping("/api/quizzes")
class QuizController(private val quizService: QuizService) {

    @GetMapping
    fun getAll(): List<QuizResponse> =
        quizService.getAll().map { it.toResponse() }

    @GetMapping("/{id}")
    fun getById(@PathVariable id: Long): QuizResponse {
        val quiz = quizService.getById(id) ?: throw
ResourceNotFoundException("Quiz $id not found")
        return quiz.toResponse()
    }

    @PostMapping
    @ResponseStatus(HttpStatus.CREATED)
    fun create(@RequestBody req: CreateQuizRequest): QuizResponse {
        val quiz = req.toDomain()
        val saved = quizService.save(quiz)
        return saved.toResponse()
    }

    @PostMapping("/submit")
    fun submit(@RequestBody req: SubmitQuizRequest):
SubmitQuizResponse {
        val totalScore = quizService.submitAnswers(req.userId,
req.quizId, req.answers)
        return SubmitQuizResponse(req.userId, req.quizId, totalScore)
    }

    // Helpers to convert between domain and DTO
    private fun CreateQuizRequest.toDomain(): Quiz =
        Quiz(
            id = null,
            title = this.title,
            questions = this.questions.map {
                QuizQuestion(
                    question = Question(it.id, it.text, it.answer),
                    score = it.score
                )
            }
        )

    private fun Quiz.toResponse(): QuizResponse =
        QuizResponse(
            id = this.id ?: -1,
            title = this.title,
            questions = this.questions.map {
                QuestionResponse(
                    id = it.question.id ?: -1,
                    text = it.question.text,
                    score = it.score
                )
            }
        )
}

// Simple exception handler (you can enhance with @ControllerAdvice if
you want)
@ResponseStatus(HttpStatus.NOT_FOUND)
class ResourceNotFoundException(message: String) :
RuntimeException(message)
```

---

9. Summary

- Questions and quizzes are separate entities.
- Quiz-question relation stores the score for that question in the quiz.
- Answers are hidden when returning quizzes.
- Submitting answers returns the total score for the user.

If you want, I can help you create a shell script to add all these files to your project, or generate sample cURL commands for creating quizzes, fetching quizzes, and submitting answers.

Just say the word!

You said:
yes, pls create a shell script to add all these files to your project

ChatGPT said:

Sure! Here's a shell script that creates the folder structure and writes all the provided Kotlin files into your `quiz-service` project.

Save this as `setup_quiz_service.sh` in your project root and run it. It will create/overwrite the files.

---

bash
CopyEdit

```bash
#!/bin/bash

set -e

echo "Creating directories..."
mkdir -p quiz-service/src/main/kotlin/com/elearning/quiz/domain/model
mkdir -p quiz-service/src/main/kotlin/com/elearning/quiz/domain/port/input
mkdir -p quiz-service/src/main/kotlin/com/elearning/quiz/domain/port/output
mkdir -p quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persistence
mkdir -p quiz-service/src/main/kotlin/com/elearning/quiz/application/service
mkdir -p quiz-service/src/main/kotlin/com/elearning/quiz/application/controller
mkdir -p quiz-service/src/main/kotlin/com/elearning/quiz/application/dto

echo "Writing entities..."

cat > quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persistence/QuestionEntity.kt <<EOF
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "questions")
```

```
data class QuestionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val text: String,
    val answer: String
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persist
ence/QuizEntity.kt <<EOF
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "quizzes")
data class QuizEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val title: String,

    @OneToMany(mappedBy = "quiz", cascade = [CascadeType.ALL],
orphanRemoval = true, fetch = FetchType.LAZY)
    val quizQuestions: MutableList<QuizQuestionEntity> =
mutableListOf()
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persist
ence/QuizQuestionEntity.kt <<EOF
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "quiz_questions")
```

```
data class QuizQuestionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    @ManyToOne(fetch = FetchType.LAZY)
    @JoinColumn(name = "quiz_id")
    val quiz: QuizEntity,

    @ManyToOne(fetch = FetchType.LAZY)
    @JoinColumn(name = "question_id")
    val question: QuestionEntity,

    val score: Int
)
EOF

echo "Writing domain models..."

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/domain/model/Question.
kt <<EOF
package com.elearning.quiz.domain.model

data class Question(
    val id: Long?,
    val text: String,
    val answer: String
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/domain/model/QuizQuest
ion.kt <<EOF
package com.elearning.quiz.domain.model

data class QuizQuestion(
    val question: Question,
    val score: Int
```

```
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/domain/model/Quiz.kt
<<EOF
package com.elearning.quiz.domain.model

data class Quiz(
    val id: Long?,
    val title: String,
    val questions: List<QuizQuestion>
)
EOF

echo "Writing domain ports..."

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/domain/port/output/Que
stionRepository.kt <<EOF
package com.elearning.quiz.domain.port.output

import com.elearning.quiz.domain.model.Question

interface QuestionRepository {
    fun findById(id: Long): Question?
    fun save(question: Question): Question
}
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/domain/port/output/Qui
zRepository.kt <<EOF
package com.elearning.quiz.domain.port.output

import com.elearning.quiz.domain.model.Quiz

interface QuizRepository {
    fun findAll(): List<Quiz>
    fun findById(id: Long): Quiz?
    fun save(quiz: Quiz): Quiz
}
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/domain/port/input/Quiz
Service.kt <<EOF
package com.elearning.quiz.domain.port.input

import com.elearning.quiz.domain.model.Quiz

interface QuizService {
    fun getAll(): List<Quiz>
    fun getById(id: Long): Quiz?
    fun save(quiz: Quiz): Quiz
    fun submitAnswers(userId: String, quizId: Long, answers: Map<Long,
String>): Int
}
EOF

echo "Writing Spring Data repositories..."

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persist
ence/SpringDataQuestionRepository.kt <<EOF
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataQuestionRepository : JpaRepository<QuestionEntity,
Long>
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persist
ence/SpringDataQuizRepository.kt <<EOF
```

```
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataQuizRepository : JpaRepository<QuizEntity, Long>
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persist
ence/SpringDataQuizQuestionRepository.kt <<EOF
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataQuizQuestionRepository :
JpaRepository<QuizQuestionEntity, Long>
EOF

echo "Writing repository implementations..."

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persist
ence/QuestionRepositoryImpl.kt <<EOF
package com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.Question
import com.elearning.quiz.domain.port.output.QuestionRepository
import org.springframework.stereotype.Repository

@Repository
class QuestionRepositoryImpl(
    private val springDataQuestionRepository:
SpringDataQuestionRepository
) : QuestionRepository {

    override fun findById(id: Long): Question? =
        springDataQuestionRepository.findById(id).orElse(null)?.let {
            Question(it.id, it.text, it.answer)
        }

    override fun save(question: Question): Question {
        val entity = QuestionEntity(question.id, question.text,
question.answer)
        val saved = springDataQuestionRepository.save(entity)
        return Question(saved.id, saved.text, saved.answer)
    }
}
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/infrastructure/persist
ence/QuizRepositoryImpl.kt <<EOF
package com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.Question
import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.model.QuizQuestion
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.stereotype.Repository

@Repository
class QuizRepositoryImpl(
    private val springDataQuizRepository: SpringDataQuizRepository
) : QuizRepository {

    override fun findAll(): List<Quiz> =
        springDataQuizRepository.findAll().map { toDomain(it) }

    override fun findById(id: Long): Quiz? =
        springDataQuizRepository.findById(id).orElse(null)?.let {
toDomain(it) }

    override fun save(quiz: Quiz): Quiz {
        val entity = toEntity(quiz)
        val saved = springDataQuizRepository.save(entity)
        return toDomain(saved)
    }

    private fun toDomain(entity: QuizEntity): Quiz {
        val questions = entity.quizQuestions.map {
            QuizQuestion(
                question = Question(
                    id = it.question.id,
                    text = it.question.text,
                    answer = it.question.answer
                ),
                score = it.score
            )
        }
        return Quiz(entity.id, entity.title, questions)
    }

    private fun toEntity(quiz: Quiz): QuizEntity {
        val entity = if (quiz.id == null) QuizEntity(title =
quiz.title) else

springDataQuizRepository.findById(quiz.id).orElse(QuizEntity(title =
quiz.title))

        entity.quizQuestions.clear()
        quiz.questions.forEach { qq ->
            val qqEntity = QuizQuestionEntity(
                quiz = entity,
                question = QuestionEntity(id = qq.question.id, text =
qq.question.text, answer = qq.question.answer),
                score = qq.score
            )
            entity.quizQuestions.add(qqEntity)
        }
        return entity
    }
}
EOF
```

```
echo "Writing service implementation..."

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/application/service/Qu
izServiceImpl.kt <<EOF
package com.elearning.quiz.application.service

import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.port.input.QuizService
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.stereotype.Service
import org.springframework.transaction.annotation.Transactional

@Service
@Transactional
class QuizServiceImpl(
    private val quizRepository: QuizRepository
) : QuizService {

    override fun getAll(): List<Quiz> = quizRepository.findAll()

    override fun getById(id: Long): Quiz? =
quizRepository.findById(id)

    override fun save(quiz: Quiz): Quiz = quizRepository.save(quiz)

    override fun submitAnswers(userId: String, quizId: Long, answers:
Map<Long, String>): Int {
        val quiz = quizRepository.findById(quizId) ?: throw
IllegalArgumentException("Quiz not found")

        var totalScore = 0
        for (qq in quiz.questions) {
            val userAnswer = answers[qq.question.id]
            if (userAnswer != null &&
userAnswer.trim().equals(qq.question.answer.trim(), ignoreCase =
true)) {
                totalScore += qq.score
            }
        }
        return totalScore
    }
}
EOF

echo "Writing DTOs..."

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/application/dto/Questi
onResponse.kt <<EOF
package com.elearning.quiz.application.dto

data class QuestionResponse(
    val id: Long,
    val text: String,
    val score: Int
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/application/dto/QuizRe
sponse.kt <<EOF
package com.elearning.quiz.application.dto

data class QuizResponse(
    val id: Long,
    val title: String,
    val questions: List<QuestionResponse>
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/application/dto/Create
QuestionRequest.kt <<EOF
package com.elearning.quiz.application.dto
```

```
data class CreateQuestionRequest(
    val id: Long?,
    val text: String,
    val answer: String,
    val score: Int
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/application/dto/Create
QuizRequest.kt <<EOF
package com.elearning.quiz.application.dto

data class CreateQuizRequest(
    val title: String,
    val questions: List<CreateQuestionRequest>
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/application/dto/Submit
QuizRequest.kt <<EOF
package com.elearning.quiz.application.dto

data class SubmitQuizRequest(
    val userId: String,
    val quizId: Long,
    val answers: Map<Long, String>
)
EOF

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/application/dto/Submit
QuizResponse.kt <<EOF
package com.elearning.quiz.application.dto

data class SubmitQuizResponse(
    val userId: String,
    val quizId: Long,
    val totalScore: Int
)
EOF

echo "Writing controller..."

cat >
quiz-service/src/main/kotlin/com/elearning/quiz/application/controller
/QuizController.kt <<EOF
package com.elearning.quiz.application.controller

import com.elearning.quiz.application.dto.*
import com.elearning.quiz.domain.model.Question
import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.model.QuizQuestion
import com.elearning.quiz.domain.port.input.QuizService
import org.springframework.http.ResponseEntity
import org.springframework.web.bind.annotation.*

@RestController
@RequestMapping("/quizzes")
class QuizController(
    private val quizService: QuizService
) {

    @GetMapping
    fun getAll(): List<QuizResponse> =
        quizService.getAll().map { quiz ->
            QuizResponse(
                id = quiz.id ?: 0,
                title = quiz.title,
                questions = quiz.questions.map { qq ->
                    QuestionResponse(
                        id = qq.question.id ?: 0,
                        text = qq.question.text,
                        score = qq.score
                    )
                }
            )
        }

    @GetMapping("/{id}")
    fun getById(@PathVariable id: Long): ResponseEntity<QuizResponse>
{
        val quiz = quizService.getById(id) ?: return
ResponseEntity.notFound().build()
        val response = QuizResponse(
            id = quiz.id ?: 0,
            title = quiz.title,
            questions = quiz.questions.map { qq ->
                QuestionResponse(
                    id = qq.question.id ?: 0,
                    text = qq.question.text,
                    score = qq.score
                )
            }
        )
        return ResponseEntity.ok(response)
    }

    @PostMapping
    fun createQuiz(@RequestBody request: CreateQuizRequest):
QuizResponse {
        val quiz = Quiz(
            id = null,
            title = request.title,
            questions = request.questions.map { q ->
                QuizQuestion(
                    question = Question(q.id, q.text, q.answer),
                    score = q.score
                )
            }
        )
        val saved = quizService.save(quiz)
        return QuizResponse(
            id = saved.id ?: 0,
            title = saved.title,
            questions = saved.questions.map { qq ->
                QuestionResponse(
                    id = qq.question.id ?: 0,
                    text = qq.question.text,
                    score = qq.score
                )
            }
        )
    }

    @PostMapping("/submit")
    fun submitQuiz(@RequestBody request: SubmitQuizRequest):
SubmitQuizResponse {
        val score = quizService.submitAnswers(request.userId,
request.quizId, request.answers)
        return SubmitQuizResponse(request.userId, request.quizId,
score)
    }
}
EOF

echo "All files created successfully."
```

Run:

bash
CopyEdit

```
chmod +x setup_quiz_service.sh
./setup_quiz_service.sh
```

Let me know if you want me to help add Gradle or Maven config next!

You said:

pls help provide postman script that I can import to Postman to test the rest apis?

ChatGPT said:

Here’s a complete **Postman collection JSON** you can import to test your `quiz-service` REST APIs:

✅ Steps to use:

1. Copy the full JSON below and save it to a file called `quiz-service.postman_collection.json`.
2. Open Postman → Click "Import" → Choose the JSON file.

📦 `quiz-service.postman_collection.json`

json
CopyEdit

```
{
  "info": {
    "name": "Quiz Service APIs",
    "_postman_id": "5d8806d7-4f80-4f82-b8b5-cfae78d7dc4f",
    "description": "Collection to test quiz-service endpoints",
    "schema":
"https://schema.getpostman.com/json/collection/v2.1.0/collection.json"
  },
  "item": [
    {
      "name": "Get All Quizzes",
      "request": {
        "method": "GET",
        "header": [],
        "url": {
          "raw": "http://localhost:8080/api/quizzes",
          "protocol": "http",
          "host": ["localhost"],
          "port": "8080",
          "path": ["api", "quizzes"]
        }
      }
    },
    {
      "name": "Get Quiz By ID",
      "request": {
        "method": "GET",
        "header": [],
        "url": {
          "raw": "http://localhost:8080/api/quizzes/1",
          "protocol": "http",
          "host": ["localhost"],
          "port": "8080",
          "path": ["api", "quizzes", "1"]
        }
      }
    },
    {
      "name": "Create Quiz",
      "request": {
        "method": "POST",
        "header": [
          { "key": "Content-Type", "value": "application/json" }
        ],
        "body": {
          "mode": "raw",
          "raw": "{\n  \"id\": null,\n  \"title\": \"Basic Math
Quiz\",\n  \"questions\": [\n    {\n      \"id\": null,\n
\"quizId\": 0,\n      \"text\": \"What is 2+2?\",\n      \"answer\":
\"4\",\n      \"score\": 10\n    },\n    {\n      \"id\": null,\n
\"quizId\": 0,\n      \"text\": \"What is 3*3?\",\n      \"answer\":
\"9\",\n      \"score\": 10\n    }\n  ]\n}"
        },
        "url": {
          "raw": "http://localhost:8080/api/quizzes",
          "protocol": "http",
          "host": ["localhost"],
          "port": "8080",
          "path": ["api", "quizzes"]
        }
      }
    },
    {
      "name": "Submit Quiz",
      "request": {
        "method": "POST",
        "header": [
          { "key": "Content-Type", "value": "application/json" }
        ],
        "body": {
          "mode": "raw",
          "raw": "{\n  \"userId\": \"user123\",\n  \"quizId\": 1,\n
\"answers\": {\n    \"1\": \"4\",\n    \"2\": \"9\"\n  }\n}"
        },
        "url": {
          "raw": "http://localhost:8080/api/quizzes/submit",
          "protocol": "http",
          "host": ["localhost"],
          "port": "8080",
          "path": ["api", "quizzes", "submit"]
        }
      }
    }
  ]
}
```

Would you like me to also generate a shell script that downloads this and runs Postman tests via Newman for CI/CD or terminal testing?

You said:

I got this error when creating quiz: org.hibernate.TransientPropertyValueException: object references an unsaved transient instance - save the transient instance before flushing : com.elearning.quiz.infrastructure.persistence.QuizQuestionEntity.question -> com.elearning.quiz.infrastructure.persistence.QuestionEntity   at org.hibernate.engine.spi.CascadingActions$8.noCascade(CascadingActions.java:372) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at org.hibernate.engine.internal.Cascade.cascade(Cascade.java:173) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at org.hibernate.event.internal.AbstractSaveEventListener.cascadeBeforeSave(AbstractSaveEventListener.java:482) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at org.hibernate.event.internal.DefaultPersistEventListener.justCascade(DefaultPersistEventListen

```
er.java:160) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]      at
org.hibernate.event.internal.DefaultPersistEventListener.entityIsPersistent(DefaultPersistEventLi
stener.java:154) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]          at
org.hibernate.event.internal.DefaultPersistEventListener.persist(DefaultPersistEventListener.jav
a:90) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]     at
org.hibernate.event.internal.DefaultPersistEventListener.onPersist(DefaultPersistEventListener.j
ava:77) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]  at
org.hibernate.event.service.internal.EventListenerGroupImpl.fireEventOnEachListener(EventList
enerGroupImpl.java:138) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]        at
org.hibernate.internal.SessionImpl.persistOnFlush(SessionImpl.java:830)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.spi.CascadingActions$8.cascade(CascadingActions.java:333)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.spi.CascadingActions$8.cascade(CascadingActions.java:323)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.internal.Cascade.cascadeToOne(Cascade.java:517)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.internal.Cascade.cascadeAssociation(Cascade.java:439)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.internal.Cascade.cascadeProperty(Cascade.java:224)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.internal.Cascade.cascadeCollectionElements(Cascade.java:551)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.internal.Cascade.cascadeCollection(Cascade.java:481)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.internal.Cascade.cascadeAssociation(Cascade.java:442)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.internal.Cascade.cascadeProperty(Cascade.java:224)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.internal.Cascade.cascade(Cascade.java:157)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.event.internal.AbstractFlushingEventListener.cascadeOnFlush(AbstractFlushingE
ventListener.java:161) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]  at
org.hibernate.event.internal.AbstractFlushingEventListener.prepareEntityFlushes(AbstractFlushi
ngEventListener.java:144) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]      at
org.hibernate.event.internal.AbstractFlushingEventListener.flushEverythingToExecutions(Abstra
ctFlushingEventListener.java:79) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]        at
org.hibernate.event.internal.DefaultFlushEventListener.onFlush(DefaultFlushEventListener.java:
38) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]        at
org.hibernate.event.service.internal.EventListenerGroupImpl.fireEventOnEachListener(EventList
enerGroupImpl.java:127) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]        at
org.hibernate.internal.SessionImpl.doFlush(SessionImpl.java:1415)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.internal.SessionImpl.managedFlush(SessionImpl.java:496)
```

```
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.internal.SessionImpl.flushBeforeTransactionCompletion(SessionImpl.java:2325)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.internal.SessionImpl.beforeTransactionCompletion(SessionImpl.java:1988)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.engine.jdbc.internal.JdbcCoordinatorImpl.beforeTransactionCompletion(JdbcCoor
dinatorImpl.java:439) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]    at
org.hibernate.resource.transaction.backend.jdbc.internal.JdbcResourceLocalTransactionCoordi
natorImpl.beforeCompletionCallback(JdbcResourceLocalTransactionCoordinatorImpl.java:169)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.hibernate.resource.transaction.backend.jdbc.internal.JdbcResourceLocalTransactionCoordi
natorImpl$TransactionDriverControlImpl.commit(JdbcResourceLocalTransactionCoordinatorImp
l.java:267) ~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]        at
org.hibernate.engine.transaction.internal.TransactionImpl.commit(TransactionImpl.java:101)
~[hibernate-core-6.3.1.Final.jar:6.3.1.Final]   at
org.springframework.orm.jpa.JpaTransactionManager.doCommit(JpaTransactionManager.java:5
61) ~[spring-orm-6.1.1.jar:6.1.1]        at
org.springframework.transaction.support.AbstractPlatformTransactionManager.processCommit(
AbstractPlatformTransactionManager.java:794) ~[spring-tx-6.1.1.jar:6.1.1]            at
org.springframework.transaction.support.AbstractPlatformTransactionManager.commit(Abstract
PlatformTransactionManager.java:757) ~[spring-tx-6.1.1.jar:6.1.1]  at
org.springframework.transaction.interceptor.TransactionAspectSupport.commitTransactionAfter
Returning(TransactionAspectSupport.java:669) ~[spring-tx-6.1.1.jar:6.1.1]
```

ChatGPT said:

The error you're seeing:

pgsql
CopyEdit

```
org.hibernate.TransientPropertyValueException: object references an
unsaved transient instance
```

is due to this line in `JpaQuizRepository.kt`:

kotlin
CopyEdit

```
quiz.questions.map {
    QuestionEntity(
        id = it.id,
        text = it.text,
        answer = it.answer,
        score = it.score,
        quiz = QuizEntity(id = quiz.id, title = quiz.title) // ⚠️ NEW instance!
    )
}
```

You're assigning a **new `QuizEntity` instance** as the `quiz` property for each `QuestionEntity`, instead of referencing the **parent `QuizEntity` being saved**. Hibernate sees the referenced `QuizEntity` as transient (not managed) and throws the error.

✅ Fix

Update the `save()` method in `JpaQuizRepository.kt` like this:

kotlin
CopyEdit

```kotlin
override fun save(quiz: Quiz): Quiz {
    val quizEntity = QuizEntity(
        id = quiz.id,
        title = quiz.title
    )
    val questions = quiz.questions.map {
        QuestionEntity(
            id = it.id,
            text = it.text,
            answer = it.answer,
            score = it.score,
            quiz = quizEntity // ✅ Reference the same instance
        )
    }

    val fullEntity = quizEntity.copy(questions = questions)
    val saved = springRepo.save(fullEntity)
    return saved.toDomain()
}
```

This ensures all `QuestionEntity` instances reference the same managed `QuizEntity`.

Let me know if you'd like this fix applied in the Canvas document.

You said:

pls fix with this impl: import com.elearning.quiz.domain.model.Question import com.elearning.quiz.domain.model.Quiz import com.elearning.quiz.domain.model.QuizQuestion import com.elearning.quiz.domain.port.output.QuizRepository import org.springframework.stereotype.Repository @Repository class QuizRepositoryImpl(private val springDataQuizRepository: SpringDataQuizRepository) : QuizRepository { override fun findAll(): List<Quiz> = springDataQuizRepository.findAll().map { toDomain(it) } override fun findById(id: Long): Quiz? = springDataQuizRepository.findById(id).orElse(null)?.let { toDomain(it) } override fun save(quiz: Quiz): Quiz { val entity = toEntity(quiz) val saved = springDataQuizRepository.save(entity) return toDomain(saved) } private fun toDomain(entity: QuizEntity): Quiz { val questions = entity.quizQuestions.map { QuizQuestion(question = Question(id = it.question.id, text = it.question.text, answer = it.question.answer), score = it.score) } return Quiz(entity.id, entity.title, questions) } private fun toEntity(quiz: Quiz): QuizEntity { val entity = if (quiz.id == null) QuizEntity(title = quiz.title) else springDataQuizRepository.findById(quiz.id).orElse(QuizEntity(title = quiz.title)) entity.quizQuestions.clear() quiz.questions.forEach { qq -> val qqEntity = QuizQuestionEntity(quiz = entity, question = QuestionEntity(id = qq.question.id, text = qq.question.text, answer = qq.question.answer), score = qq.score) entity.quizQuestions.add(qqEntity) } return entity } }

ChatGPT said:

Edited

Your codebase has been updated to integrate the clean implementation of `QuizRepositoryImpl` as requested. This includes:

- Using `QuizQuestion` as an aggregate for `Question` and `score`.
- Mapping between `QuizEntity`, `QuizQuestionEntity`, and the domain models.
- Splitting out `QuestionEntity` as a reusable entity.
- Refactoring the service and controller layers accordingly.

Let me know if you'd like to add support for updating existing `QuestionEntity` entries by content hashing or ID reuse, or anything else.

2/2

You said:

pls provide docker command to install kafka in local

ChatGPT said:

To run Kafka locally using Docker, you typically use **Apache Kafka + Zookeeper**, as Kafka requires Zookeeper for coordination (unless you're using newer versions with KRaft mode). Here's a simple one-command setup using Docker that works well for local development.

✅ Using Docker CLI

bash
CopyEdit

```
docker network create kafka-net

# Start Zookeeper
docker run -d --name zookeeper --network kafka-net -p 2181:2181 \
  -e ZOOKEEPER_CLIENT_PORT=2181 \
  confluentinc/cp-zookeeper:7.5.0

# Start Kafka
docker run -d --name kafka --network kafka-net -p 9092:9092 \
  -e KAFKA_BROKER_ID=1 \
  -e KAFKA_ZOOKEEPER_CONNECT=zookeeper:2181 \
  -e KAFKA_ADVERTISED_LISTENERS=PLAINTEXT://localhost:9092 \
  -e KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR=1 \
  confluentinc/cp-kafka:7.5.0
```

🧪 Test it

After both containers are running:

Produce to a topic:

bash
CopyEdit

```
docker exec -it kafka kafka-console-producer --broker-list
localhost:9092 --topic test
```

1.

Consume from a topic:

bash
CopyEdit
```
docker exec -it kafka kafka-console-consumer --bootstrap-server
localhost:9092 --topic test --from-beginning
```

2.

🧼 Cleanup

bash
CopyEdit
```
docker rm -f kafka zookeeper
docker network rm kafka-net
```

Let me know if you want a Docker Compose version or want to enable Kafka UI like Kafdrop.

You said:
pls also implement /api/quiz/join that allow use to join a quiz by quiz id

ChatGPT said:

To implement the `POST /api/quiz/join` endpoint that allows a user to "join" a quiz by its ID, we'll assume the purpose is to track that a user intends to participate in a quiz (even if they haven't submitted answers yet).

Here's how to implement it step-by-step.

✅ 1. Domain Model (add new)

kotlin
CopyEdit
```
// domain/model/QuizSession.kt
package com.elearning.quiz.domain.model

data class QuizSession(
    val id: Long? = null,
    val userId: String,
    val quizId: Long
)
```

✅ 2. Domain Port

kotlin
CopyEdit

```
// domain/port/input/QuizService.kt
fun joinQuiz(userId: String, quizId: Long): QuizSession
```

kotlin
CopyEdit

```
// domain/port/output/QuizSessionRepository.kt
package com.elearning.quiz.domain.port.output

import com.elearning.quiz.domain.model.QuizSession

interface QuizSessionRepository {
    fun save(session: QuizSession): QuizSession
    fun findByUserIdAndQuizId(userId: String, quizId: Long):
QuizSession?
}
```

✅ 3. Entity & JPA Layer

kotlin
CopyEdit

```
// infrastructure/persistence/QuizSessionEntity.kt
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "quiz_sessions")
data class QuizSessionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val userId: String,
    val quizId: Long
)
```

kotlin
CopyEdit

```
// infrastructure/persistence/QuizSessionJpaRepository.kt
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataQuizSessionRepository :
JpaRepository<QuizSessionEntity, Long> {
    fun findByUserIdAndQuizId(userId: String, quizId: Long):
QuizSessionEntity?
}
```

kotlin
CopyEdit

```
// infrastructure/persistence/QuizSessionRepositoryImpl.kt
package com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.QuizSession
import com.elearning.quiz.domain.port.output.QuizSessionRepository
import org.springframework.stereotype.Repository

@Repository
class QuizSessionRepositoryImpl(
    private val springRepo: SpringDataQuizSessionRepository
) : QuizSessionRepository {

    override fun save(session: QuizSession): QuizSession {
        val entity = QuizSessionEntity(
            id = session.id,
            userId = session.userId,
            quizId = session.quizId
        )
        return springRepo.save(entity).toDomain()
    }
    override fun findByUserIdAndQuizId(userId: String, quizId: Long): QuizSession? {
        return springRepo.findByUserIdAndQuizId(userId, quizId)?.toDomain()
    }

    private fun QuizSessionEntity.toDomain(): QuizSession = QuizSession(
        id = this.id,
        userId = this.userId,
        quizId = this.quizId
    )
}
```

✅ 4. Service Layer

kotlin

CopyEdit

```
// application/service/QuizServiceImpl.kt

@Autowired
lateinit var quizSessionRepository: QuizSessionRepository

override fun joinQuiz(userId: String, quizId: Long): QuizSession {
    quizRepository.findById(quizId) ?: throw RuntimeException("Quiz not found")
    val existing = quizSessionRepository.findByUserIdAndQuizId(userId, quizId)
    return existing ?: quizSessionRepository.save(QuizSession(userId = userId, quizId = quizId))
}
```

✅ 5. Controller

kotlin

CopyEdit

```
// application/controller/QuizController.kt
```

```
data class JoinQuizRequest(val userId: String, val quizId: Long)

@PostMapping("/join")
fun joinQuiz(@RequestBody request: JoinQuizRequest): QuizSession {
    return quizService.joinQuiz(request.userId, request.quizId)
}
```

✅ 6. Database Table (if needed manually)

sql
CopyEdit

```
CREATE TABLE quiz_sessions (
    id BIGINT PRIMARY KEY AUTO_INCREMENT,
    user_id VARCHAR(255) NOT NULL,
    quiz_id BIGINT NOT NULL
);
```

Let me know if you'd like to track the `start time`, or associate quiz status like `IN_PROGRESS`, `COMPLETED`, etc.

You said:
yes

ChatGPT said:

Great! Let's extend the `QuizSession` implementation to include:

- `startTime` (when user joins)
- `status` (e.g. `IN_PROGRESS`, `COMPLETED`)

✅ 1. Update Domain Model

kotlin
CopyEdit

```
// domain/model/QuizSession.kt
```

```
package com.elearning.quiz.domain.model

import java.time.LocalDateTime

enum class QuizSessionStatus {
    IN_PROGRESS, COMPLETED
}

data class QuizSession(
    val id: Long? = null,
    val userId: String,
    val quizId: Long,
    val startTime: LocalDateTime = LocalDateTime.now(),
    val status: QuizSessionStatus = QuizSessionStatus.IN_PROGRESS
)
```

✅ 2. Update Entity

kotlin
CopyEdit

```
// infrastructure/persistence/QuizSessionEntity.kt
package com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.QuizSessionStatus
import jakarta.persistence.*
import java.time.LocalDateTime

@Entity
@Table(name = "quiz_sessions")
data class QuizSessionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    val userId: String,
    val quizId: Long,
    val startTime: LocalDateTime = LocalDateTime.now(),

    @Enumerated(EnumType.STRING)
    val status: QuizSessionStatus = QuizSessionStatus.IN_PROGRESS
)
```

✅ 3. Update Repository Implementation

kotlin
CopyEdit

```
// infrastructure/persistence/QuizSessionRepositoryImpl.kt
package com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.QuizSession
import com.elearning.quiz.domain.model.QuizSessionStatus
import com.elearning.quiz.domain.port.output.QuizSessionRepository
import org.springframework.stereotype.Repository

@Repository
class QuizSessionRepositoryImpl(
    private val springRepo: SpringDataQuizSessionRepository
) : QuizSessionRepository {

    override fun save(session: QuizSession): QuizSession {
        val entity = QuizSessionEntity(
            id = session.id,
            userId = session.userId,
            quizId = session.quizId,
            startTime = session.startTime,
            status = session.status
        )
        return springRepo.save(entity).toDomain()
    }

    override fun findByUserIdAndQuizId(userId: String, quizId: Long):
QuizSession? {
        return springRepo.findByUserIdAndQuizId(userId,
quizId)?.toDomain()
    }
    private fun QuizSessionEntity.toDomain(): QuizSession =
QuizSession(
        id = this.id,
        userId = this.userId,
        quizId = this.quizId,
        startTime = this.startTime,
        status = this.status
    )
}
```

✅ 4. Update Service Logic

kotlin
CopyEdit

```
// application/service/QuizServiceImpl.kt
override fun joinQuiz(userId: String, quizId: Long): QuizSession {
    quizRepository.findById(quizId) ?: throw RuntimeException("Quiz
not found")
    val existing = quizSessionRepository.findByUserIdAndQuizId(userId,
quizId)
    return existing ?: quizSessionRepository.save(
        QuizSession(userId = userId, quizId = quizId)
    )
}
```

✅ 5. (Optional) Update Submit to Mark as Completed

kotlin
CopyEdit

```
// In submitQuiz function, after calculating score:
quizSessionRepository.findByUserIdAndQuizId(request.userId,
request.quizId)?.let {
    quizSessionRepository.save(it.copy(status =
QuizSessionStatus.COMPLETED))
}
```

✅ 6. Update DB Schema (if needed manually)

sql
CopyEdit

```
ALTER TABLE quiz_sessions
ADD COLUMN start_time TIMESTAMP,
ADD COLUMN status VARCHAR(20) DEFAULT 'IN_PROGRESS';
```

Let me know if you'd like to add `endTime`, `duration`, or prevent a user from joining twice unless the quiz is reset.

You said:
pls update that many users can join a quiz, a quiz should have its start/end times

ChatGPT said:

Thanks! Let’s now update the implementation so that:

- ✅ A **quiz has start and end time**
- ✅ **Many users can join a quiz**
- ✅ Each join creates a `QuizSession` with `userId`, `quizId`, `startTime`, `status`

✅ 1. Update `Quiz` domain model

kotlin
CopyEdit

```
// domain/model/Quiz.kt
package com.elearning.quiz.domain.model

import java.time.LocalDateTime

data class Quiz(
    val id: Long?,
    val title: String,
    val questions: List<Question> = emptyList(),
    val startTime: LocalDateTime,
    val endTime: LocalDateTime
)
```

✅ 2. Update `QuizEntity`

kotlin
CopyEdit

```
// infrastructure/persistence/QuizEntity.kt
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*
import java.time.LocalDateTime

@Entity
@Table(name = "quizzes")
data class QuizEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    val title: String,

    val startTime: LocalDateTime,
    val endTime: LocalDateTime,

    @OneToMany(mappedBy = "quiz", cascade = [CascadeType.ALL],
orphanRemoval = true, fetch = FetchType.EAGER)
    val quizQuestions: MutableList<QuizQuestionEntity> =
mutableListOf()
)
```

✅ 3. Update Repository Mapping

In your `QuizRepositoryImpl`, update both `toDomain()` and `toEntity()`:

kotlin
CopyEdit

```
private fun toDomain(entity: QuizEntity): Quiz {
    val questions = entity.quizQuestions.map {
        QuizQuestion(
            question = Question(
                id = it.question.id,
                text = it.question.text,
                answer = it.question.answer
            ),
            score = it.score
        )
    }
    return Quiz(
        id = entity.id,
        title = entity.title,
        questions = questions,
        startTime = entity.startTime,
        endTime = entity.endTime
    )
}

private fun toEntity(quiz: Quiz): QuizEntity {
    val entity = if (quiz.id == null) {
        QuizEntity(
            title = quiz.title,
            startTime = quiz.startTime,
            endTime = quiz.endTime
        )
    } else {
        springDataQuizRepository.findById(quiz.id).orElseThrow()
            .copy(title = quiz.title, startTime = quiz.startTime,
endTime = quiz.endTime)
    }

    entity.quizQuestions.clear()
    quiz.questions.forEach { qq ->
        val qqEntity = QuizQuestionEntity(
            quiz = entity,
            question = QuestionEntity(
                id = qq.question.id,
                text = qq.question.text,
                answer = qq.question.answer
            ),
            score = qq.score
        )
        entity.quizQuestions.add(qqEntity)
    }
    return entity
}
```

✅ 4. Update Quiz Create API

Update `/api/quizzes` POST endpoint to accept `startTime` and `endTime`.

✅ 5. Users can Join a Quiz

Add `QuizSessionEntity` and `QuizSessionRepository` (already added earlier), then add a controller method:

kotlin
CopyEdit

```
// application/controller/QuizController.kt

@PostMapping("/join")
fun joinQuiz(@RequestParam userId: String, @RequestParam quizId:
Long): Map<String, Any> {
    val session = quizService.joinQuiz(userId, quizId)
    return mapOf(
        "sessionId" to session.id!!,
        "userId" to session.userId,
        "quizId" to session.quizId,
        "startTime" to session.startTime,
        "status" to session.status
    )
}
```

✅ 6. Business Rule (Optional)

In `joinQuiz()` service logic, add:

kotlin
CopyEdit

```
val now = LocalDateTime.now()
if (now.isBefore(quiz.startTime) || now.isAfter(quiz.endTime)) {
    throw IllegalStateException("Quiz is not active")
}
```

Would you like me to update your existing code (canvas) with this structure as well?

You said:
yes

ChatGPT said:

{"updates": [{"filePath": "src/main/kotlin/com/elearning/quiz/domain/model/Quiz.kt", "code": "package com.elearning.quiz.domain.model\n\nimport java.time.LocalDateTime\n\ndata class Quiz(\n val id: Long?,\n val title: String,\n val questions: List<Question> = emptyList(),\n val startTime: LocalDateTime,\n val endTime: LocalDateTime\n)"}, {"filePath": "src/main/kotlin/com/elearning/quiz/infrastructure/persistence/QuizEntity.kt", "code": "package com.elearning.quiz.infrastructure.persistence\n\nimport jakarta.persistence.*\nimport java.time.LocalDateTime\n\n@Entity\n@Table(name = "quizzes")\ndata class QuizEntity(\n @Id @GeneratedValue(strategy = GenerationType.IDENTITY)\n val id: Long? = null,\n\n val title: String,\n\n val startTime: LocalDateTime,\n val endTime: LocalDateTime,\n\n @OneToMany(mappedBy = "quiz", cascade = [CascadeType.ALL], orphanRemoval = true, fetch = FetchType.EAGER)\n val questions: List<QuestionEntity> = emptyList()\n)"}, {"filePath": "src/main/kotlin/com/elearning/quiz/application/controller/QuizController.kt", "code": "@PostMapping("/join")\nfun joinQuiz(@RequestParam userId: String, @RequestParam quizId: Long): Map<String, Any> {\n val session = quizService.joinQuiz(userId, quizId)\n return mapOf(\n "sessionId" to session.id!!,\n "userId" to session.userId,\n "quizId" to session.quizId,\n "startTime" to session.startTime,\n "status" to session.status\n)\n}"}]}

To support multiple users joining a quiz and adding start/end times for a quiz, here's what you need to update:

✅ 1. Update `Quiz` model:

kotlin

CopyEdit

```
package com.elearning.quiz.domain.model

import java.time.LocalDateTime

data class Quiz(
    val id: Long?,
    val title: String,
    val questions: List<Question> = emptyList(),
    val startTime: LocalDateTime,
    val endTime: LocalDateTime
)
```

✅ 2. Update `QuizEntity`:

kotlin
CopyEdit

```
@Entity
@Table(name = "quizzes")
data class QuizEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    val title: String,

    val startTime: LocalDateTime,
    val endTime: LocalDateTime,

    @OneToMany(mappedBy = "quiz", cascade = [CascadeType.ALL],
orphanRemoval = true, fetch = FetchType.EAGER)
    val questions: List<QuestionEntity> = emptyList()
)
```

✅ 3. Add `QuizSessionEntity`:

A new entity to track users joining quizzes:

kotlin
CopyEdit
```
@Entity
@Table(name = "quiz_sessions")
data class QuizSessionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    val userId: String,

    @ManyToOne(fetch = FetchType.LAZY)
    @JoinColumn(name = "quiz_id")
    val quiz: QuizEntity,

    val startTime: LocalDateTime = LocalDateTime.now(),

    @Enumerated(EnumType.STRING)
    val status: QuizSessionStatus = QuizSessionStatus.ACTIVE
)

enum class QuizSessionStatus {
    ACTIVE, COMPLETED
}
```

✅ 4. Create `QuizSessionRepository`:

kotlin
CopyEdit
```
interface SpringDataQuizSessionRepository :
JpaRepository<QuizSessionEntity, Long>
```

✅ 5. Add method in `QuizService`:

kotlin
CopyEdit
```
fun joinQuiz(userId: String, quizId: Long): QuizSession
```

✅ 6. Implement it in `QuizServiceImpl`:

kotlin
CopyEdit

```
override fun joinQuiz(userId: String, quizId: Long): QuizSession {
    val quiz = quizRepository.findById(quizId)
        ?: throw RuntimeException("Quiz not found")

    val session = QuizSessionEntity(
        userId = userId,
        quiz = quizRepository.findEntityById(quizId), // helper method
to fetch QuizEntity
    )

    val saved = quizSessionRepository.save(session)
    return QuizSession(
        id = saved.id,
        userId = saved.userId,
        quizId = quizId,
        startTime = saved.startTime,
        status = saved.status
    )
}
```

✅ 7. Add `/api/quizzes/join` endpoint:

kotlin
CopyEdit

```
@PostMapping("/join")
fun joinQuiz(@RequestParam userId: String, @RequestParam quizId:
Long): Map<String, Any> {
    val session = quizService.joinQuiz(userId, quizId)
    return mapOf(
        "sessionId" to session.id!!,
        "userId" to session.userId,
        "quizId" to session.quizId,
        "startTime" to session.startTime,
        "status" to session.status
    )
}
```

Let me know if you'd like the shell script and SQL migration for creating the new table (`quiz_sessions`) or help modifying the persistence layer.

You said:
pls implement full QuizRepositoryImpl

ChatGPT said:

Here is the complete implementation of `QuizRepositoryImpl`, supporting:

- Multiple questions in a quiz (many-to-many)
- Start and end times
- Mapping between `QuizEntity`, `QuestionEntity`, and `QuizQuestionEntity`
- Fetching and saving quizzes cleanly

✅ `QuizRepositoryImpl.kt`

kotlin
CopyEdit

```
package com.elearning.quiz.infrastructure.persistence

import com.elearning.quiz.domain.model.Question
import com.elearning.quiz.domain.model.Quiz
import com.elearning.quiz.domain.model.QuizQuestion
import com.elearning.quiz.domain.port.output.QuizRepository
import org.springframework.stereotype.Repository
import java.util.*

@Repository
class QuizRepositoryImpl(
    private val springDataQuizRepository: SpringDataQuizRepository,
    private val springDataQuestionRepository:
SpringDataQuestionRepository
) : QuizRepository {

    override fun findAll(): List<Quiz> =
        springDataQuizRepository.findAll().map { toDomain(it) }

    override fun findById(id: Long): Quiz? =
        springDataQuizRepository.findById(id).orElse(null)?.let {
toDomain(it) }

    override fun save(quiz: Quiz): Quiz {
        val entity = toEntity(quiz)
        val saved = springDataQuizRepository.save(entity)
        return toDomain(saved)
    }

    fun findEntityById(id: Long): QuizEntity =
        springDataQuizRepository.findById(id).orElseThrow {
RuntimeException("Quiz not found") }

    private fun toDomain(entity: QuizEntity): Quiz {
        val questions = entity.quizQuestions.map {
            QuizQuestion(
                question = Question(
                    id = it.question.id,
                    text = it.question.text,
                    answer = it.question.answer
                ),
                score = it.score
            )
        }
        return Quiz(
            id = entity.id,
            title = entity.title,
            questions = questions,
            startTime = entity.startTime,
            endTime = entity.endTime
        )
    }

    private fun toEntity(quiz: Quiz): QuizEntity {
        val entity = if (quiz.id == null) {
            QuizEntity(
                title = quiz.title,
                startTime = quiz.startTime,
                endTime = quiz.endTime
            )
        } else {
            springDataQuizRepository.findById(quiz.id)
                .orElseThrow { RuntimeException("Quiz not found") }
                .apply {
                    title = quiz.title
                    startTime = quiz.startTime
                    endTime = quiz.endTime
                    quizQuestions.clear()
                }
        }

        quiz.questions.forEach { qq ->
            val question = if (qq.question.id != null) {
                springDataQuestionRepository.findById(qq.question.id)
                    .orElseThrow { RuntimeException("Question not
found: ${qq.question.id}") }
            } else {
                QuestionEntity(text = qq.question.text, answer =
qq.question.answer).also {
                    springDataQuestionRepository.save(it)
                }
            }

            val qqEntity = QuizQuestionEntity(
                quiz = entity,
                question = question,
                score = qq.score
            )
            entity.quizQuestions.add(qqEntity)
        }

        return entity
    }
}
```

🧩 Required supporting classes/interfaces

`SpringDataQuizRepository`:

kotlin
CopyEdit

```
interface SpringDataQuizRepository : JpaRepository<QuizEntity, Long>
```

`SpringDataQuestionRepository`:

kotlin
CopyEdit

```
interface SpringDataQuestionRepository : JpaRepository<QuestionEntity, Long>
```

Make sure your `QuizEntity` and `QuestionEntity` are configured for the many-to-many relation via `QuizQuestionEntity`.

Let me know if you want the updated entity classes (`QuizEntity`, `QuestionEntity`, `QuizQuestionEntity`) or the matching `QuizSession` and its persistence layer.

2/2

You said:

pls update @PostMapping fun createQuiz(@RequestBody request: CreateQuizRequest): QuizResponse { val quiz = Quiz(id = null, title = request.title, questions = request.questions.map { q -> QuizQuestion(question = Question(q.id, q.text, q.answer), score = q.score) }) val saved = quizService.save(quiz) return QuizResponse(id = saved.id ?: 0, title = saved.title, questions = saved.questions.map { qq -> QuestionResponse(id = qq.question.id ?: 0, text = qq.question.text, score = qq.score) }) }

ChatGPT said:

Here is the updated `@PostMapping` `createQuiz` method to fully support:

- `startTime` and `endTime` in the request
- Correct transformation from `CreateQuizRequest` (including nested questions and scores)
- `QuizResponse` that returns only the necessary info (no answers)

✅ Updated `createQuiz` Endpoint

kotlin
CopyEdit

```
@PostMapping
fun createQuiz(@RequestBody request: CreateQuizRequest): QuizResponse
{
    val quiz = Quiz(
        id = null,
        title = request.title,
        startTime = request.startTime,
        endTime = request.endTime,
        questions = request.questions.map { q ->
            QuizQuestion(
                question = Question(
                    id = q.id,
                    text = q.text,
                    answer = q.answer
                ),
                score = q.score
            )
        }
    )
    val saved = quizService.save(quiz)
    return QuizResponse(
        id = saved.id ?: 0,
        title = saved.title,
        startTime = saved.startTime,
        endTime = saved.endTime,
        questions = saved.questions.map { qq ->
            QuestionResponse(
                id = qq.question.id ?: 0,
                text = qq.question.text,
                score = qq.score
            )
        }
    )
}
```

🧩 Supporting Data Classes

You’ll need these DTOs (modify if already defined differently):

kotlin
CopyEdit

```
data class CreateQuizRequest(
    val title: String,
    val startTime: LocalDateTime,
    val endTime: LocalDateTime,
    val questions: List<CreateQuizQuestionRequest>
)

data class CreateQuizQuestionRequest(
    val id: Long?, // Optional if new
    val text: String,
    val answer: String,
    val score: Int
)

data class QuizResponse(
    val id: Long,
    val title: String,
    val startTime: LocalDateTime,
    val endTime: LocalDateTime,
    val questions: List<QuestionResponse>
)

data class QuestionResponse(
    val id: Long,
    val text: String,
    val score: Int
)
```

Let me know if you'd like this also reflected in Swagger/OpenAPI, or updated in Postman test collection.

You said:

pls update logic of override fun submitAnswers(userId: String, quizId: Long, answers: Map<Long, String>): Int { val quiz = quizRepository.findById(quizId) ?: throw IllegalArgumentException("Quiz not found") var totalScore = 0 for (qq in quiz.questions) { val userAnswer = answers[qq.question.id] if (userAnswer != null && userAnswer.trim().equals(qq.question.answer.trim(), ignoreCase = true)) { totalScore += qq.score } } return totalScore }

ChatGPT said:

Here's the updated `submitAnswers` logic for your `QuizServiceImpl`, with added enhancements:

✅ Improvements:

1. **Validation**: Ensures the quiz is active (within start and end time).
2. **Logging/User feedback (optional)**: You can plug in additional logging or response capture if needed.
3. **Null safety & trimming**: Robust answer comparison with safe navigation and normalization.
4. **Future extensibility**: Placeholder for saving user submissions.

🔁 Updated Method Implementation

kotlin
CopyEdit

```
override fun submitAnswers(userId: String, quizId: Long, answers:
Map<Long, String>): Int {
    val quiz = quizRepository.findById(quizId)
        ?: throw IllegalArgumentException("Quiz not found")

    val now = LocalDateTime.now()
    if (quiz.startTime != null && quiz.startTime.isAfter(now)) {
        throw IllegalStateException("Quiz has not started yet.")
    }
    if (quiz.endTime != null && quiz.endTime.isBefore(now)) {
        throw IllegalStateException("Quiz has already ended.")
    }

    var totalScore = 0
    for (qq in quiz.questions) {
        val userAnswer = answers[qq.question.id]
        if (userAnswer != null &&
userAnswer.trim().equals(qq.question.answer.trim(), ignoreCase =
true)) {
            totalScore += qq.score
        }
    }

    // Optionally persist submission (for history/statistics)
    // submissionRepository.save(Submission(userId, quizId,
totalScore, answers))

    return totalScore
}
```

🔎 Additional Enhancements (optional)

- Track each user's submissions per quiz (create `UserSubmissionEntity`).
- Return more detailed feedback (e.g., which questions were correct).
- Record submission timestamp for audit/tracking.

Let me know if you'd like help adding a submission persistence layer or enhancing the return object to include correct/incorrect answers.

You said:

pls implement persist submission and also check if the user has joined the quiz or not

ChatGPT said:

To implement **submission persistence** and validate if the **user has joined the quiz**, we'll take the following steps:

✅ 1. Define `UserQuizParticipation` & `UserSubmission` Entities

`UserQuizParticipationEntity.kt`

kotlin

CopyEdit

```
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "user_quiz_participation")
data class UserQuizParticipationEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    val userId: String,

    @ManyToOne
    @JoinColumn(name = "quiz_id")
    val quiz: QuizEntity
)
```

`UserSubmissionEntity.kt`

kotlin

CopyEdit

```
package com.elearning.quiz.infrastructure.persistence

import jakarta.persistence.*

@Entity
@Table(name = "user_submissions")
data class UserSubmissionEntity(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,

    val userId: String,

    val score: Int,

    @ManyToOne
    @JoinColumn(name = "quiz_id")
    val quiz: QuizEntity
)
```

✅ 2. Create Spring Data Repositories

`SpringDataUserParticipationRepository.kt`

kotlin
CopyEdit

```
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataUserParticipationRepository :
JpaRepository<UserQuizParticipationEntity, Long> {
    fun existsByUserIdAndQuizId(userId: String, quizId: Long): Boolean
}
```

`SpringDataSubmissionRepository.kt`

kotlin
CopyEdit

```
package com.elearning.quiz.infrastructure.persistence

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

interface SpringDataSubmissionRepository :
JpaRepository<UserSubmissionEntity, Long>
```

✅ 3. Update `QuizServiceImpl`

Inject both repositories:

kotlin
CopyEdit

```
@Service
class QuizServiceImpl(
    private val quizRepository: QuizRepository,
    private val userParticipationRepo:
SpringDataUserParticipationRepository,
    private val submissionRepo: SpringDataSubmissionRepository
) : QuizService {
```

Update `submitAnswers` method:

kotlin
CopyEdit

```
override fun submitAnswers(userId: String, quizId: Long, answers:
Map<Long, String>): Int {
    val quiz = quizRepository.findById(quizId)
        ?: throw IllegalArgumentException("Quiz not found")

    val now = LocalDateTime.now()
    if (quiz.startTime != null && quiz.startTime.isAfter(now)) {
        throw IllegalStateException("Quiz has not started yet.")
    }
    if (quiz.endTime != null && quiz.endTime.isBefore(now)) {
        throw IllegalStateException("Quiz has already ended.")
    }

    // Check if user joined
    val hasJoined =
userParticipationRepo.existsByUserIdAndQuizId(userId, quizId)
    if (!hasJoined) throw IllegalStateException("User has not joined
the quiz.")

    // Calculate score
    var totalScore = 0
    for (qq in quiz.questions) {
        val userAnswer = answers[qq.question.id]
        if (userAnswer != null &&
userAnswer.trim().equals(qq.question.answer.trim(), ignoreCase =
true)) {
            totalScore += qq.score
        }
    }

    // Persist submission
    submissionRepo.save(
        UserSubmissionEntity(
            userId = userId,
            score = totalScore,
            quiz = QuizEntity(id = quizId, title = quiz.title) //
minimal stub for reference
        )
    )

    return totalScore
}
```

📝 Notes

- You should avoid using stubbed `QuizEntity(id, title)` if possible. Prefer fetching the entity via `QuizRepository`.
- If you're tracking per-question answers or timestamps, consider adding those fields to `UserSubmissionEntity`.

Would you like help adding:

- a `GET /api/quizzes/{id}/submissions` API?
- per-question answer records?
- prevention of duplicate submissions?

Let me know!

You said:

pls note we already had: override fun joinQuiz(userId: String, quizId: Long): QuizSession { quizRepository.findById(quizId) ?: throw RuntimeException("Quiz not found") val existing = quizSessionRepository.findByUserIdAndQuizId(userId, quizId) return existing ?: quizSessionRepository.save(QuizSession(userId = userId, quizId = quizId)) }

ChatGPT said:

Updated saved memory

Got it. Based on that, when implementing quiz submission, we'll check `quizSessionRepository.findByUserIdAndQuizId(userId, quizId)` to ensure the user has joined the quiz before allowing submission. Then we'll persist the result into a `QuizSubmission` entity or similar. Let me know if you'd like me to go ahead and generate that implementation.

You said:

yes

ChatGPT said:

Here's a complete implementation to update `submitAnswers` to:

- Check if user joined the quiz (throw if not)

- Calculate score
- Persist quiz submission with answers and score

---

1. Define entities for `QuizSession` and `QuizSubmission`

kotlin
CopyEdit

```
@Entity
@Table(name = "quiz_sessions")
data class QuizSession(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val userId: String,
    val quizId: Long
)

@Entity
@Table(name = "quiz_submissions")
data class QuizSubmission(
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    val id: Long? = null,
    val userId: String,
    val quizId: Long,
    val score: Int,

    @ElementCollection(fetch = FetchType.EAGER)
    @CollectionTable(name = "submission_answers", joinColumns =
[JoinColumn(name = "submission_id")])
    @MapKeyColumn(name = "question_id")
    @Column(name = "answer")
    val answers: Map<Long, String>
)
```

2. Add repository for `QuizSubmission`

kotlin

CopyEdit

```
interface QuizSubmissionRepository : JpaRepository<QuizSubmission,
Long> {
    fun findByUserIdAndQuizId(userId: String, quizId: Long):
QuizSubmission?
}
```

3. Update your service method

kotlin

CopyEdit

```
override fun submitAnswers(userId: String, quizId: Long, answers:
Map<Long, String>): Int {
    // Check if user joined the quiz
    val session = quizSessionRepository.findByUserIdAndQuizId(userId,
quizId)
        ?: throw IllegalStateException("User $userId has not joined
quiz $quizId")

    val quiz = quizRepository.findById(quizId) ?: throw
IllegalArgumentException("Quiz not found")

    var totalScore = 0
    for (qq in quiz.questions) {
        val userAnswer = answers[qq.question.id]
        if (userAnswer != null &&
userAnswer.trim().equals(qq.question.answer.trim(), ignoreCase =
true)) {
            totalScore += qq.score
        }
    }

    // Persist submission
    val existingSubmission =
quizSubmissionRepository.findByUserIdAndQuizId(userId, quizId)
    if (existingSubmission != null) {
        throw IllegalStateException("User $userId already submitted
quiz $quizId")
    }
    val submission = QuizSubmission(
        userId = userId,
        quizId = quizId,
        score = totalScore,
        answers = answers
    )
    quizSubmissionRepository.save(submission)

    return totalScore
}
```

Let me know if you want me to generate the full code for repositories, entities, and service updates!

You said:

pls add global exception handler

ChatGPT said:

Here's how you can add a **global exception handler** in a Spring Boot application using `@ControllerAdvice` to catch and respond with meaningful error messages for exceptions like:

- `IllegalArgumentException`
- `IllegalStateException`
- `RuntimeException`
- Custom exceptions if needed

✅ 1. Create `GlobalExceptionHandler.kt`

kotlin

CopyEdit

```
package com.elearning.quiz.config
```

```
import org.springframework.http.HttpStatus
import org.springframework.http.ResponseEntity
import org.springframework.web.bind.annotation.ControllerAdvice
import org.springframework.web.bind.annotation.ExceptionHandler

@ControllerAdvice
class GlobalExceptionHandler {

    @ExceptionHandler(IllegalArgumentException::class)
    fun handleIllegalArgument(ex: IllegalArgumentException):
ResponseEntity<Map<String, Any>> {
        return ResponseEntity.status(HttpStatus.BAD_REQUEST)
            .body(errorResponse("Invalid request", ex.message))
    }

    @ExceptionHandler(IllegalStateException::class)
    fun handleIllegalState(ex: IllegalStateException):
ResponseEntity<Map<String, Any>> {
        return ResponseEntity.status(HttpStatus.CONFLICT)
            .body(errorResponse("Invalid state", ex.message))
    }

    @ExceptionHandler(RuntimeException::class)
    fun handleRuntime(ex: RuntimeException):
ResponseEntity<Map<String, Any>> {
        return ResponseEntity.status(HttpStatus.INTERNAL_SERVER_ERROR)
            .body(errorResponse("Unexpected error", ex.message))
    }

    private fun errorResponse(error: String, message: String?):
Map<String, Any> {
        return mapOf(
            "error" to error,
            "message" to (message ?: "No details available"),
            "timestamp" to System.currentTimeMillis()
        )
    }
}
```

✅ 2. Result Example for Unjoined Quiz

When a user tries to submit answers without joining:

json
CopyEdit

```
{
  "error": "Invalid state",
  "message": "User user123 has not joined quiz 42",
  "timestamp": 1717930993503
}
```

This ensures **consistent error formatting** and improves **client experience**.

Would you like to include logging or custom error codes in the response as well?

You said:
add logic to send the score via kafka

ChatGPT said:

To send the quiz score via Kafka after a user submits their answers, follow these steps:

✅ 1. Define the Kafka Message Model

kotlin
CopyEdit

```
package com.elearning.quiz.kafka

data class QuizScoreMessage(
    val userId: String,
    val quizId: Long,
    val score: Int
)
```

✅ 2. Kafka Producer Configuration

Add this Kafka producer config in your `application.yml`:

yaml
CopyEdit

```yaml
spring:
  kafka:
    bootstrap-servers: localhost:9092
    producer:
      key-serializer:
org.apache.kafka.common.serialization.StringSerializer
      value-serializer:
org.springframework.kafka.support.serializer.JsonSerializer
```

Then, create a producer service:

kotlin
CopyEdit

```kotlin
package com.elearning.quiz.kafka

import org.springframework.kafka.core.KafkaTemplate
import org.springframework.stereotype.Service

@Service
class QuizScoreProducer(
    private val kafkaTemplate: KafkaTemplate<String, QuizScoreMessage>
) {
    private val topic = "quiz-score"

    fun send(scoreMessage: QuizScoreMessage) {
        kafkaTemplate.send(topic, scoreMessage.userId, scoreMessage)
    }
}
```

✅ 3. Update `QuizServiceImpl.submitAnswers` to Send Score

Make sure the service has access to `QuizScoreProducer`, and update logic:

kotlin
CopyEdit

```
override fun submitAnswers(userId: String, quizId: Long, answers:
Map<Long, String>): Int {
    val session = quizSessionRepository.findByUserIdAndQuizId(userId,
quizId)
        ?: throw IllegalStateException("User $userId has not joined
quiz $quizId")

    val quiz = quizRepository.findById(quizId)
        ?: throw IllegalArgumentException("Quiz not found")

    var totalScore = 0
    for (qq in quiz.questions) {
        val userAnswer = answers[qq.question.id]
        if (userAnswer != null &&
userAnswer.trim().equals(qq.question.answer.trim(), ignoreCase =
true)) {
            totalScore += qq.score
        }
    }

    // Save submission
    submissionRepository.save(
        Submission(
            userId = userId,
            quizId = quizId,
            answers = answers,
            score = totalScore
        )
    )

    // Send to Kafka
    quizScoreProducer.send(
        QuizScoreMessage(userId = userId, quizId = quizId, score =
totalScore)
    )

    return totalScore
}
```

✅ 4. Kafka Dependencies (if missing)

Add to `build.gradle.kts`:

kotlin
CopyEdit

```
implementation("org.springframework.kafka:spring-kafka")
```

Would you like help creating a consumer or configuring Docker Kafka (e.g., with Docker Compose) to test this locally?

You said:

pls also implement kafka consumer

ChatGPT said:

Here’s how to implement a **Kafka consumer** that listens to the quiz scores:

✅ 1. Define the Kafka Consumer Config

Update `application.yml`:

yaml
CopyEdit

```
spring:
  kafka:
    consumer:
      bootstrap-servers: localhost:9092
      group-id: quiz-score-consumer-group
      key-deserializer:
org.apache.kafka.common.serialization.StringDeserializer
      value-deserializer:
org.springframework.kafka.support.serializer.JsonDeserializer
      properties:
        spring.json.trusted.packages: '*'
    listener:
      missing-topics-fatal: false
```

✅ 2. Implement the Consumer

kotlin
CopyEdit

```
package com.elearning.quiz.kafka

import org.slf4j.LoggerFactory
import org.springframework.kafka.annotation.KafkaListener
import org.springframework.stereotype.Component

@Component
class QuizScoreConsumer {

    private val logger =
LoggerFactory.getLogger(QuizScoreConsumer::class.java)

    @KafkaListener(topics = ["quiz-score"], groupId =
"quiz-score-consumer-group")
    fun consume(message: QuizScoreMessage) {
        logger.info("🎯 Received quiz score: userId=${message.userId},
quizId=${message.quizId}, score=${message.score}")

        // You can persist, notify, or trigger any other business
logic here.
    }
}
```

✅ 3. Ensure the `QuizScoreMessage` Is Serializable

If not already done, annotate it or make sure it is a Kotlin data class:

kotlin
CopyEdit

```
package com.elearning.quiz.kafka

data class QuizScoreMessage(
    val userId: String,
    val quizId: Long,
    val score: Int
)
```

✅ 4. Kafka Topic (Optional)

Ensure the topic `quiz-score` is created (if you're using Docker with Kafka, it may auto-create). If not, you can manually create the topic:

bash
CopyEdit

```
docker exec -it kafka kafka-topics.sh --create --topic quiz-score
--bootstrap-server localhost:9092 --partitions 1 --replication-factor
1
```

✅ 5. (Optional) Print to Console or Persist

You can enhance `consume()` to write to the database, call another service, or trigger a notification, depending on your business logic.