2.6 Penugasan

Lengkapi layanan perpustakaan di atas dengan menambahkan layanan pencarian buku berdasarkan kata kunci pencarian.

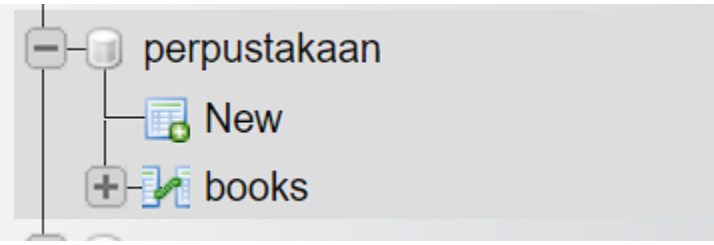
Depencency (pom.xml) :

```
<dependencies>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-data-jpa</artifactId>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-web</artifactId>
        </dependency>

        <dependency>
            <groupId>com.mysql</groupId>
            <artifactId>mysql-connector-j</artifactId>
            <scope>runtime</scope>
        </dependency>
        <dependency>
            <groupId>org.projectlombok</groupId>
            <artifactId>lombok</artifactId>
            <optional>true</optional>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-test</artifactId>
            <scope>test</scope>
        </dependency>

        <dependency>
            <groupId>jakarta.validation</groupId>
            <artifactId>jakarta.validation-api</artifactId>
            <version>3.0.2</version>
            <type>jar</type>
        </dependency>
    </dependencies>
```

Koneksi ke database (application.properties) :

```
spring.application.name=perpustakaan
spring.datasource.url=jdbc:mysql://localhost:3306/perpustakaan
spring.datasource.driverClassName=com.mysql.cj.jdbc.Driver
spring.datasource.username=root
spring.datasource.password=
spring.jpa.hibernate.ddl-auto=update
spring.jpa.database-platform=org.hibernate.dialect.MySQLDialect
```

Pembuatan database (phpMyAdmin) :



JsonRpcController.java :

Pada controller ini, ditambahkan method searchBooks untuk mencari buku berdasarkan keyword atau kata kunci pencarian.

```
package com.polstat.perpustakaan.controller;

import com.fasterxml.jackson.databind.JsonNode;
import com.polstat.perpustakaan.dto.BookDto;
import com.polstat.perpustakaan.rpc.JsonRpcRequest;
import com.polstat.perpustakaan.rpc.JsonRpcResponse;
import com.polstat.perpustakaan.service.BookService;
import java.util.List;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.http.ResponseEntity;
import org.springframework.web.bind.annotation.PostMapping;
import org.springframework.web.bind.annotation.RequestBody;
import org.springframework.web.bind.annotation.RestController;

@RestController
public class JsonRpcController {
    @Autowired
    private BookService bookService;

    @PostMapping("/jsonrpc")
```

```
    public ResponseEntity<Object> handleJsonRpcRequest(@RequestBody
JsonRpcRequest request) {
        try {
            String method = request.getMethod();
            JsonNode params = request.getParams();
            System.out.println("Method: " + method);
            switch (method) {
                case "createBook":
                    String title = params.get("title").asText();
                    String author = params.get("author").asText();
                    String description = params.get("description").asText();
                    BookDto book = BookDto.builder()
                            .title(title)
                            .description(description)
                            .author(author)
                            .build();
                    bookService.createBook(book);
                    return ResponseEntity.ok(new JsonRpcResponse("created",
request.getId()));
                case "getBooks":
                    List<BookDto> books = bookService.getBooks();
                    return ResponseEntity.ok(new JsonRpcResponse(books,
request.getId()));
                case "searchBooks":
                    String keyword = params.get("keyword").asText();
                    List<BookDto> result = bookService.searchBooks(keyword);
                    return ResponseEntity.ok(new JsonRpcResponse(result,
request.getId()));
                default:
                    return ResponseEntity.badRequest().build();
            }
        } catch (Exception e) {
            return ResponseEntity.badRequest().build();
        }
    }
}
```

BookDto.java :

```
package com.polstat.perpustakaan.dto;

import jakarta.validation.constraints.NotEmpty;
import jakarta.validation.constraints.NotNull;
import lombok.AllArgsConstructor;
import lombok.Builder;
```

```java
import lombok.Data;
import lombok.NoArgsConstructor;

@Data
@Builder
@NoArgsConstructor
@AllArgsConstructor

public class BookDto {
    private Long id;
    @NotEmpty(message = "Judul buku wajib diisi.")
    private String title;
    @NotNull(message = "Penulis buku wajib diisi.")
    private String author;
    private String description;
}
```

Book.java :

```java
package com.polstat.perpustakaan.entity;

import jakarta.persistence.Column;
import jakarta.persistence.Entity;
import jakarta.persistence.GeneratedValue;
import jakarta.persistence.GenerationType;
import jakarta.persistence.Id;
import jakarta.persistence.Table;
import lombok.AllArgsConstructor;
import lombok.Builder;
import lombok.Getter;
import lombok.NoArgsConstructor;
import lombok.Setter;

@Setter
@Getter
@AllArgsConstructor
@NoArgsConstructor
@Builder
@Entity
@Table(name = "books")
public class Book {
    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;
```

```
    @Column(nullable = false)
    private String title;
    @Column(nullable = false)
    private String author;
    @Column(nullable = true)
    private String description;
}
```

BookMapper.java :

```
package com.polstat.perpustakaan.mapper;

import com.polstat.perpustakaan.dto.BookDto;
import com.polstat.perpustakaan.entity.Book;

public class BookMapper {
    public static Book mapToBook(BookDto bookDto) {
        return Book.builder()
                .id(bookDto.getId())
                .title(bookDto.getTitle())
                .description(bookDto.getDescription())
                .author(bookDto.getAuthor())
                .build();
    }

    public static BookDto mapToBookDto(Book book) {
        return BookDto.builder()
                .id(book.getId())
                .title(book.getTitle())
                .description(book.getDescription())
                .author(book.getAuthor())
                .build();
    }
}
```

BookRepository.java :

```
package com.polstat.perpustakaan.repository;
import com.polstat.perpustakaan.entity.Book;
import org.springframework.data.jpa.repository.JpaRepository;
import java.util.List;

public interface BookRepository extends JpaRepository<Book, Long>{
    List<Book> findByTitleContainingIgnoreCase(String title);
}
```

JsonRpcRequest.java :

```java
package com.polstat.perpustakaan.rpc;

import com.fasterxml.jackson.databind.JsonNode;
import lombok.*;

@Setter
@Getter

public class JsonRpcRequest {
    private String jsonrpc;
    private String method;
    private JsonNode params;
    private String id;

}
```

JsonRpcResponse.java :

```java
package com.polstat.perpustakaan.rpc;

import lombok.*;

@Setter
@Getter
@AllArgsConstructor
@NoArgsConstructor

public class JsonRpcResponse {

    private String jsonrpc;
    private Object result;
    private Object error;
    private String id;

    public JsonRpcResponse(Object result, String id) {
        this.result = result;
        this.id = id;
    }
}
```

BookService.java :

```java
package com.polstat.perpustakaan.service;

import com.polstat.perpustakaan.dto.BookDto;
import java.util.List;

public interface BookService {
    public void createBook(BookDto bookDto);
    public List<BookDto> getBooks();
    public List<BookDto> searchBooks(String keyword);
    }
```

BookServiceImpl.java :

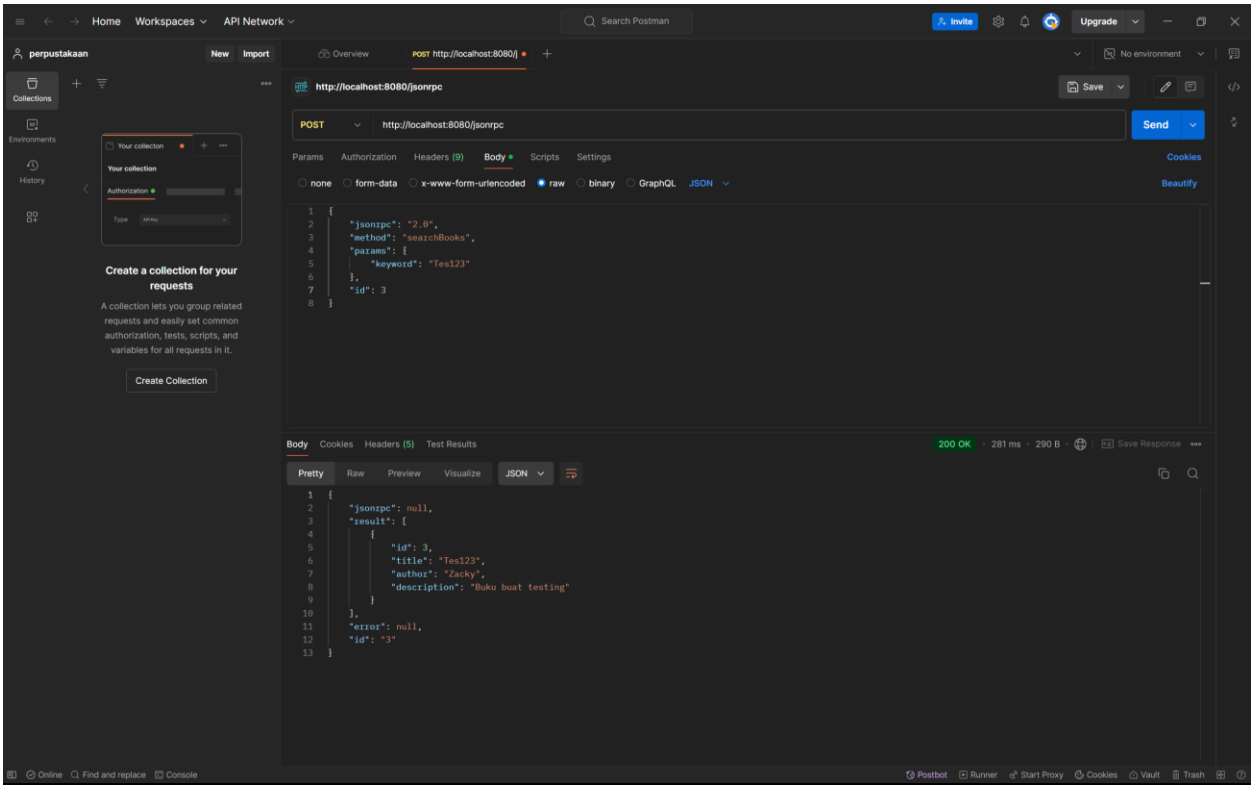
```java
package com.polstat.perpustakaan.service;

import com.polstat.perpustakaan.dto.BookDto;
import com.polstat.perpustakaan.entity.Book;
import com.polstat.perpustakaan.mapper.BookMapper;
import com.polstat.perpustakaan.repository.BookRepository;
import java.util.List;
import java.util.stream.Collectors;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

@Service
public class BookServiceImpl implements BookService {
    @Autowired
    private BookRepository bookRepository;

    @Override
    public void createBook(BookDto bookDto) {
        bookRepository.save(BookMapper.mapToBook(bookDto));
    }

    @Override
    public List<BookDto> getBooks() {
        List<Book> books = bookRepository.findAll();
        List<BookDto> bookDtos = books.stream()
                .map((product) -> (BookMapper.mapToBookDto(product)))
                .collect(Collectors.toList());
        return bookDtos;
    }
```

```
    @Override
    public List<BookDto> searchBooks(String keyword){
        List<Book> books =
bookRepository.findByTitleContainingIgnoreCase(keyword);
        List<BookDto> bookDtos = books.stream()
            .map((product) -> (BookMapper.mapToBookDto(product)))
            .collect(Collectors.toList());
        return bookDtos;
    }
}
```

PerpustakaanApplication.java :

```
package com.polstat.perpustakaan;

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

@SpringBootApplication
public class PerpustakaanApplication {

    public static void main(String[] args) {
        SpringApplication.run(PerpustakaanApplication.class, args);
    }

}
```

Proses permintaan dan respons JSON – RPC (Postman) :



Database perpustakaan :