LAB 11

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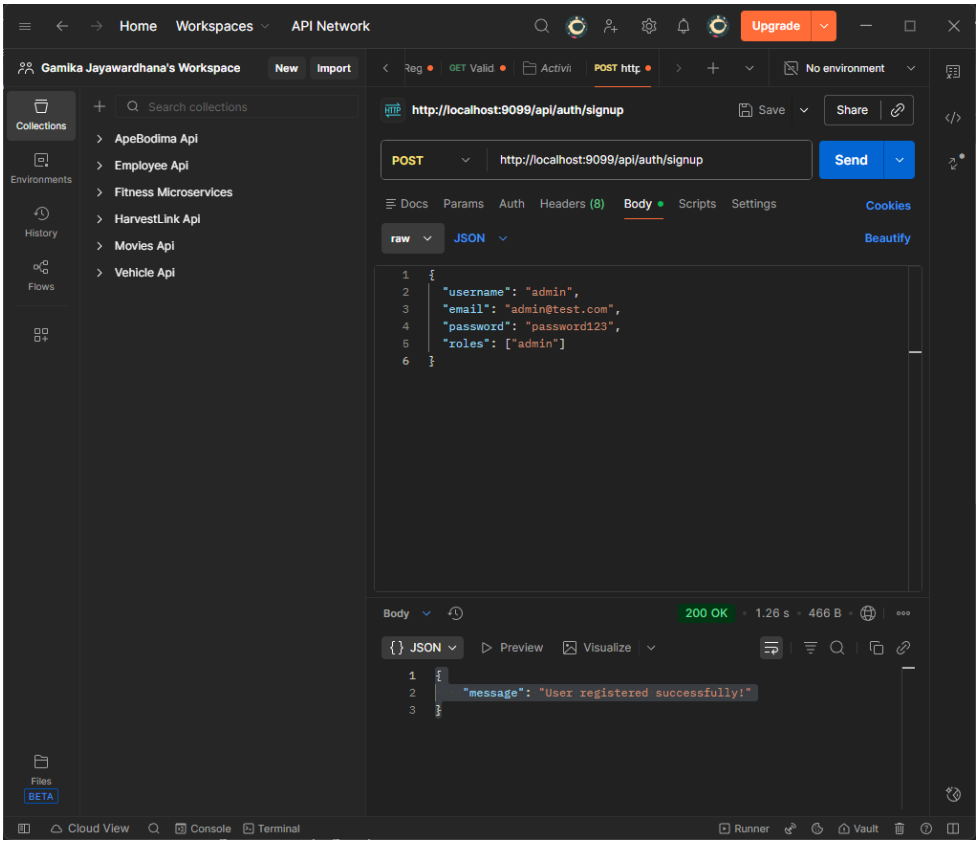

LAB 11

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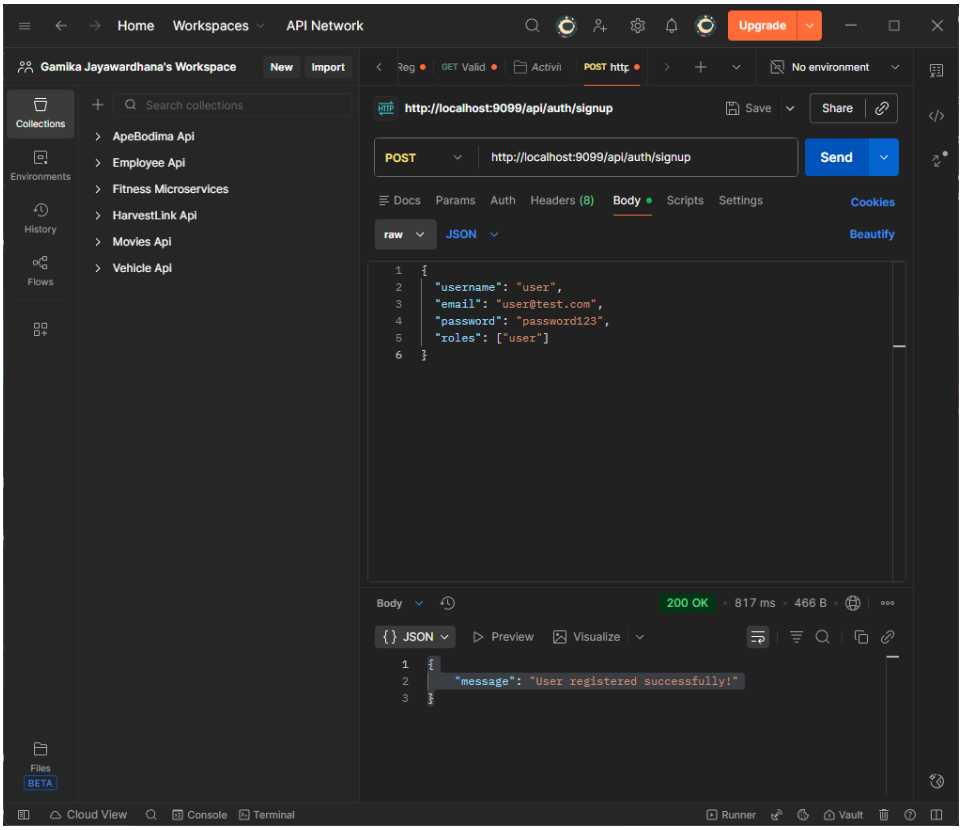

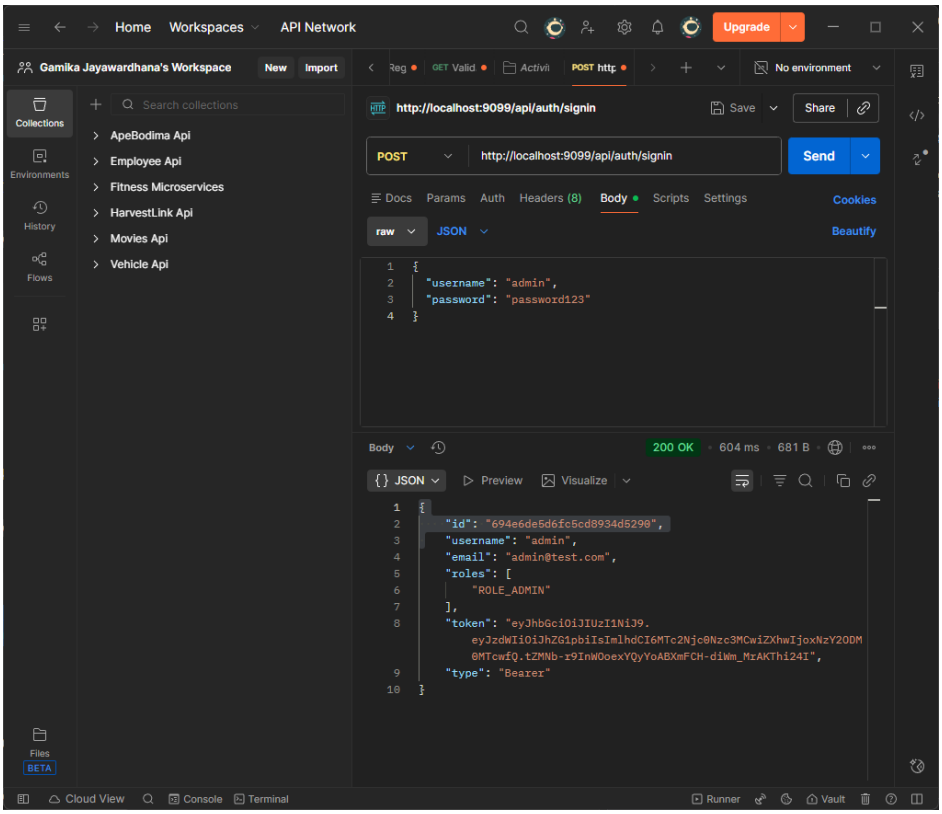

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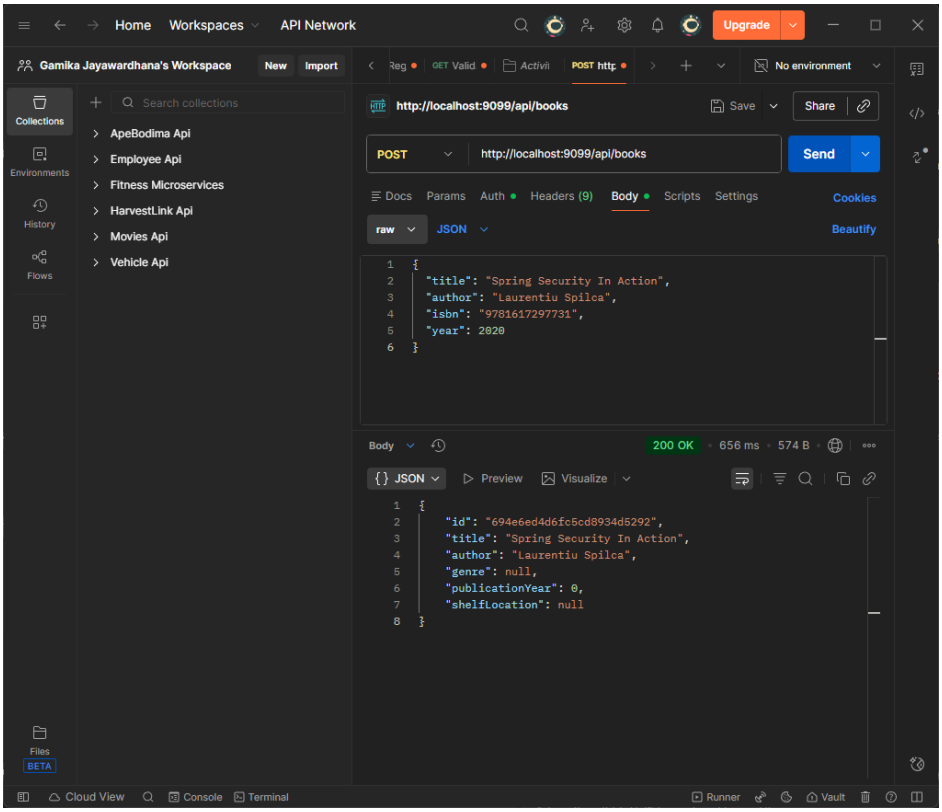

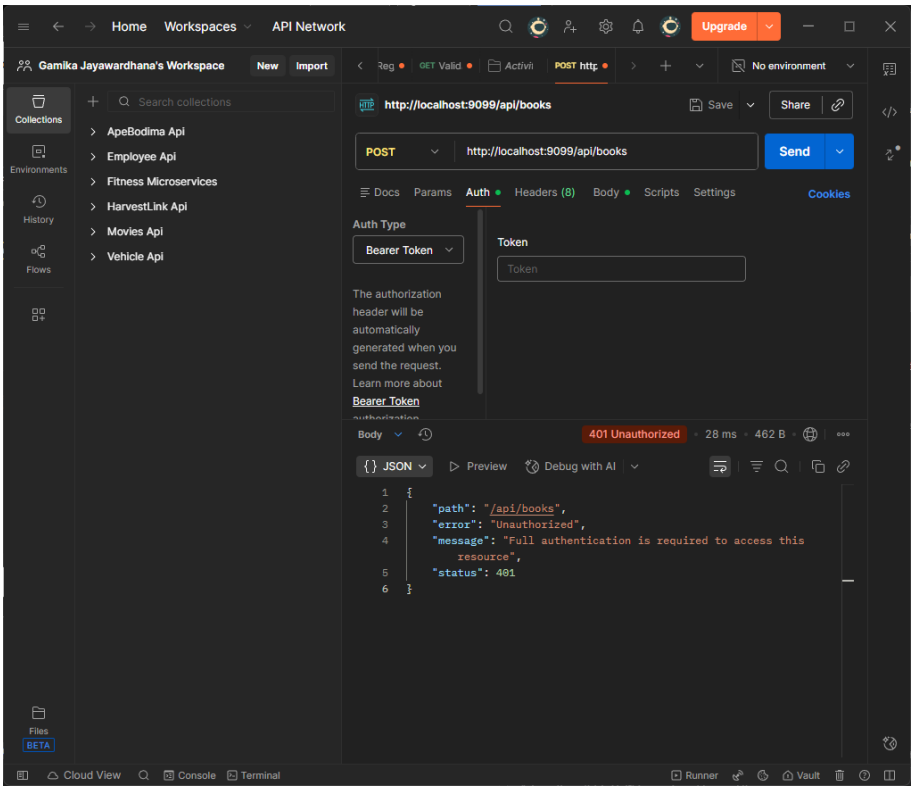

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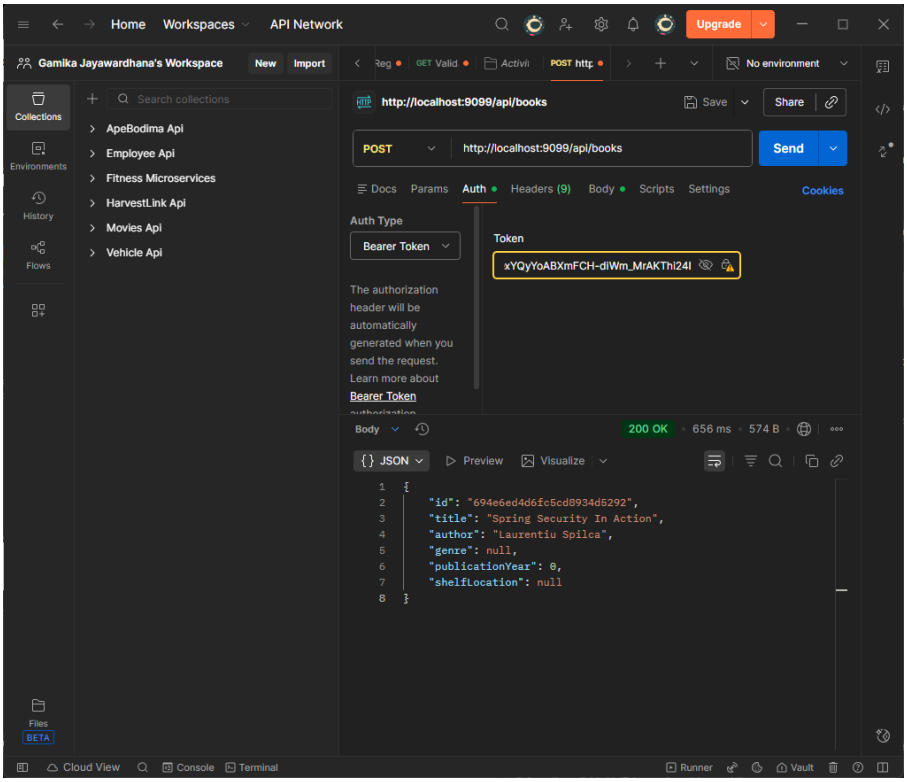

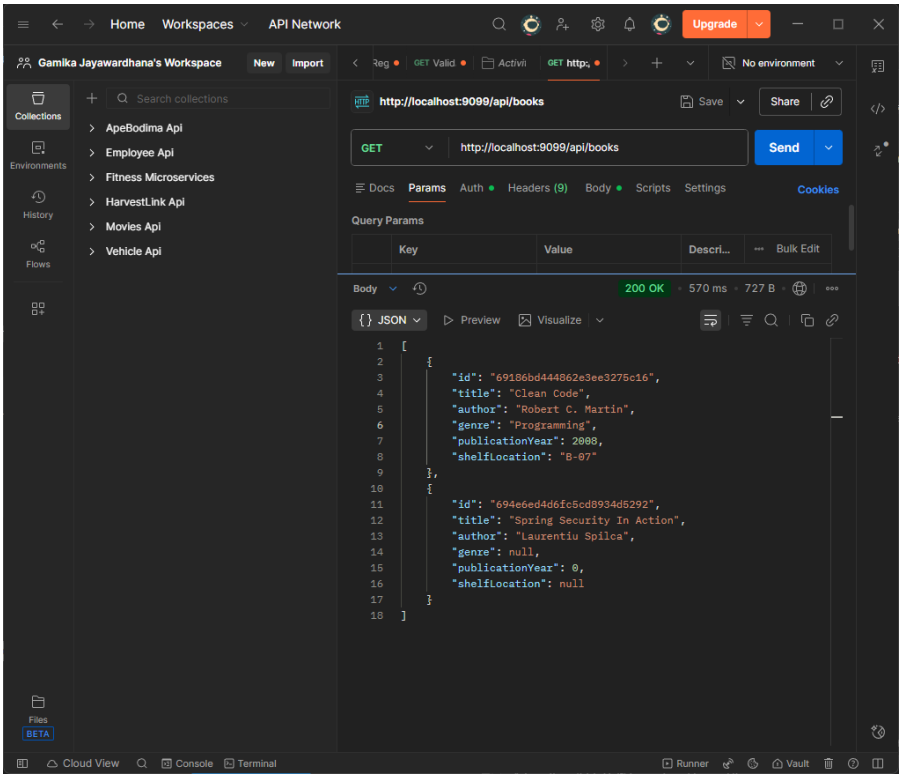

AuthController.java

```
package com.lib.LiMS.controller;

import com.lib.LiMS.model.ERole;
import com.lib.LiMS.model.Role;
import com.lib.LiMS.model.User;
import com.lib.LiMS.payload.request.LoginRequest;
import com.lib.LiMS.payload.request.SignupRequest;
import com.lib.LiMS.payload.response.JwtResponse;
import com.lib.LiMS.payload.response.MessageResponse;
import com.lib.LiMS.repository.RoleRepository;
import com.lib.LiMS.repository.UserRepository;
import com.lib.LiMS.security.jwt.JwtUtils;
import com.lib.LiMS.security.services.UserDetailsImpl;
import jakarta.validation.Valid;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.http.ResponseEntity;
import
org.springframework.security.authentication.AuthenticationManager;
import
org.springframework.security.authentication.UsernamePasswordAuthentica
tionToken;
import org.springframework.security.core.Authentication;
import
org.springframework.security.core.context.SecurityContextHolder;
import org.springframework.security.crypto.password.PasswordEncoder;
import org.springframework.web.bind.annotation.*;

import java.util.HashSet;
import java.util.List;
import java.util.Set;
import java.util.stream.Collectors;

@CrossOrigin(origins = "*", maxAge = 3600)
@RestController
@RequestMapping("/api/auth")
public class AuthController {
```

```
    @Autowired
    AuthenticationManager authenticationManager;

    @Autowired
    UserRepository userRepository;

    @Autowired
    RoleRepository roleRepository;

    @Autowired
    PasswordEncoder encoder;

    @Autowired
    JwtUtils jwtUtils;

    @PostMapping("/signin")
    public ResponseEntity<?> authenticateUser(@Valid @RequestBody
LoginRequest loginRequest) {

        Authentication authentication =
authenticationManager.authenticate(
                new
UsernamePasswordAuthenticationToken(loginRequest.getUsername(),
loginRequest.getPassword()));

        SecurityContextHolder.getContext().setAuthentication(authentic
ation);
        String jwt = jwtUtils.generateJwtToken(authentication);

        UserDetailsImpl userDetails = (UserDetailsImpl)
authentication.getPrincipal();
        List<String> roles = userDetails.getAuthorities().stream()
                .map(item -> item.getAuthority())
                .collect(Collectors.toList());

        return ResponseEntity.ok(new JwtResponse(jwt,
                userDetails.getId(),
                userDetails.getUsername(),
```

```
                userDetails.getEmail(),
                roles));
    }

    @PostMapping("/signup")
    public ResponseEntity<?> registerUser(@Valid @RequestBody
SignupRequest signUpRequest) {
        if
(userRepository.existsByUsername(signUpRequest.getUsername())) {
            return ResponseEntity
                    .badRequest()
                    .body(new MessageResponse("Error: Username is
already taken!"));
        }

        if (userRepository.existsByEmail(signUpRequest.getEmail())) {
            return ResponseEntity
                    .badRequest()
                    .body(new MessageResponse("Error: Email is already
in use!"));
        }

        // Create new user's account
        User user = new User(signUpRequest.getUsername(),
                signUpRequest.getEmail(),
                encoder.encode(signUpRequest.getPassword()));

        Set<String> strRoles = signUpRequest.getRoles();
        Set<Role> roles = new HashSet<>();

        if (strRoles == null) {
            Role userRole = roleRepository.findByName(ERole.ROLE_USER)
                    .orElseThrow(() -> new RuntimeException("Error:
Role is not found."));
            roles.add(userRole);
        } else {
            strRoles.forEach(role -> {
                switch (role) {
```

```
                    case "admin":
                        Role adminRole =
roleRepository.findByName(ERole.ROLE_ADMIN)
                                .orElseThrow(() -> new
RuntimeException("Error: Role is not found."));
                        roles.add(adminRole);

                        break;
                    default:
                        Role userRole =
roleRepository.findByName(ERole.ROLE_USER)
                                .orElseThrow(() -> new
RuntimeException("Error: Role is not found."));
                        roles.add(userRole);
                }
            });
        }

        user.setRoles(roles);
        userRepository.save(user);

        return ResponseEntity.ok(new MessageResponse("User registered
successfully!"));
    }
}
```

BookController.java

```
package com.lib.LiMS.controller;

import com.lib.LiMS.model.Book;
import com.lib.LiMS.service.BookService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.http.ResponseEntity;
import org.springframework.security.access.prepost.PreAuthorize;
import org.springframework.web.bind.annotation.*;
```

```
import java.util.List;
import java.util.Optional;

@RestController
@CrossOrigin(origins = "*")
@RequestMapping("api/books")
public class BookController {

    @Autowired
    private BookService bookService;

    @PostMapping
    @PreAuthorize("hasRole('ADMIN')")
    public ResponseEntity<Book> createBook(@RequestBody Book book) {
        Book newBook = bookService.createBook(book);
        return ResponseEntity.ok(newBook);
    }

    @GetMapping
    @PreAuthorize("hasRole('USER') or hasRole('ADMIN')")
    public ResponseEntity<List<Book>> getAllBooks() {
        List<Book> books = bookService.getAllBooks();
        return ResponseEntity.ok(books);
    }

    @GetMapping("/{id}")
    @PreAuthorize("hasRole('USER') or hasRole('ADMIN')")
    public ResponseEntity<Book> getBookByID(@PathVariable String id) {
        Book book = bookService.getBookById(id);
        return book != null ? ResponseEntity.ok(book) :
ResponseEntity.notFound().build();
    }

    @PutMapping("/{id}")
    @PreAuthorize("hasRole('ADMIN')")
    public ResponseEntity<Book> updateBook(@PathVariable String id,
@RequestBody Book book) {
```

```
        Book updatedBook = bookService.updateBook(id, book);
        return updatedBook != null ? ResponseEntity.ok(updatedBook) :
ResponseEntity.notFound().build();
    }

    @DeleteMapping("/{id}")
    @PreAuthorize("hasRole('ADMIN')")
    public ResponseEntity<Book> deleteBook(@PathVariable String id) {
        bookService.deleteBookById(id);
        return ResponseEntity.noContent().build();
    }

    @GetMapping("/year/{year}")
    @PreAuthorize("hasRole('USER') or hasRole('ADMIN')")
    public ResponseEntity<List<Book>> getBooksByYear(@PathVariable int
year) {
        List<Book> books = bookService.getBooksByYear(year);
        return ResponseEntity.ok(books);
    }

    @GetMapping("/{id}/genre")
    @PreAuthorize("hasRole('USER') or hasRole('ADMIN')")
    public ResponseEntity<String> getGenre(@PathVariable String id) {
        Optional<String> genre = bookService.getGenreById(id);
        return genre.map(ResponseEntity::ok).orElseGet(() ->
ResponseEntity.notFound().build());
    }

    @DeleteMapping("/year/{year}")
    @PreAuthorize("hasRole('ADMIN')")
    public ResponseEntity<String> deleteBookByYear(@PathVariable int
year) {
        bookService.deleteByYear(year);
        return ResponseEntity.ok("Successfully deleted all service
record for the year: " + year);
    }

}
```

BookService.java

```
package com.lib.LiMS.service;

import com.lib.LiMS.model.Book;
import org.springframework.stereotype.Service;

import java.util.List;
import java.util.Optional;

@Service
public interface BookService {
    Book createBook(Book book);
    List<Book> getAllBooks();
    Book getBookById(String id);
    Book updateBook(String id, Book book);
    void deleteBookById(String id);
    List<Book> getBooksByYear(int year);
    Optional<String> getGenreById(String id);
    void deleteByYear(int publicationYear);

}
```

BookServiceImpl.java

```
package com.lib.LiMS.service.impl;

import com.lib.LiMS.model.Book;
import com.lib.LiMS.repository.BookRepository;
import com.lib.LiMS.service.BookService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;
```

```java
import java.util.List;
import java.util.Optional;

@Service
public class BookServiceImpl implements BookService {


    @Autowired
    private BookRepository bookRepository;

    @Override
    public Book createBook(Book book) {
        return bookRepository.save(book);
    }

    @Override
    public List<Book> getAllBooks() {
        return bookRepository.findAll();
    }

    @Override
    public Book getBookById(String id) {
        Optional<Book> book = bookRepository.findById(id);
        return book.orElse(null);
        //return null or throw an exception
    }

    @Override
    public Book updateBook(String id,Book book) {
        if(bookRepository.existsById(id)){
            book.setId(id);
            return bookRepository.save(book);
        }
        return null;
    }

    @Override
    public void deleteBookById(String id) {
```

```
        bookRepository.deleteById(id);

    }

    @Override
    public List<Book> getBooksByYear(int year) {
        return bookRepository.findByPublicationYear(year);

    }

    @Override
    public Optional<String> getGenreById(String id) {
       Optional<Book> book = bookRepository.findGenreById(id);
       return book.map(Book::getGenre);
    }

    @Override
    public void deleteByYear(int publicationYear) {
        bookRepository.deleteByPublicationYear(publicationYear);

    }


}
```

UserDetailsService.java

```
package com.lib.LiMS.security.services;

import com.lib.LiMS.model.User;
import com.lib.LiMS.repository.UserRepository;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.security.core.userdetails.UserDetails;
import
org.springframework.security.core.userdetails.UserDetailsService;
```

```
import
org.springframework.security.core.userdetails.UsernameNotFoundExceptio
n;
import org.springframework.stereotype.Service;
import org.springframework.transaction.annotation.Transactional;

@Service
public class UserDetailsServiceImpl implements UserDetailsService {
    @Autowired
    UserRepository userRepository;

    @Override
    @Transactional
    public UserDetails loadUserByUsername(String username) throws
UsernameNotFoundException {
        User user = userRepository.findByUsername(username)
                .orElseThrow(() -> new UsernameNotFoundException("User
Not Found with username: " + username));

        return UserDetailsImpl.build(user);
    }
}
```

UserDetailsServiceImpl.java

```
package com.lib.LiMS.security.services;

import com.fasterxml.jackson.annotation.JsonIgnore;
import com.lib.LiMS.model.User;
import org.springframework.security.core.GrantedAuthority;
import
org.springframework.security.core.authority.SimpleGrantedAuthority;
import org.springframework.security.core.userdetails.UserDetails;

import java.util.Collection;
import java.util.List;
```

```
import java.util.Objects;
import java.util.stream.Collectors;

public class UserDetailsImpl implements UserDetails {
    private static final long serialVersionUID = 1L;

    private String id;

    private String username;

    private String email;

    @JsonIgnore
    private String password;

    private Collection<? extends GrantedAuthority> authorities;

    public UserDetailsImpl(String id, String username, String email,
String password,
            Collection<? extends GrantedAuthority> authorities) {
        this.id = id;
        this.username = username;
        this.email = email;
        this.password = password;
        this.authorities = authorities;
    }

    public static UserDetailsImpl build(User user) {
        List<GrantedAuthority> authorities = user.getRoles().stream()
                .map(role -> new
SimpleGrantedAuthority(role.getName().name()))
                .collect(Collectors.toList());

        return new UserDetailsImpl(
                user.getId(),
                user.getUsername(),
                user.getEmail(),
                user.getPassword(),
```

```
                authorities);
    }

    @Override
    public Collection<? extends GrantedAuthority> getAuthorities() {
        return authorities;
    }

    public String getId() {
        return id;
    }

    public String getEmail() {
        return email;
    }

    @Override
    public String getPassword() {
        return password;
    }

    @Override
    public String getUsername() {
        return username;
    }

    @Override
    public boolean isAccountNonExpired() {
        return true;
    }

    @Override
    public boolean isAccountNonLocked() {
        return true;
    }

    @Override
    public boolean isCredentialsNonExpired() {
```

```
        return true;
    }

    @Override
    public boolean isEnabled() {
        return true;
    }

    @Override
    public boolean equals(Object o) {
        if (this == o)
            return true;
        if (o == null || getClass() != o.getClass())
            return false;
        UserDetailsImpl user = (UserDetailsImpl) o;
        return Objects.equals(id, user.id);
    }
}
```

BookRepository.java

```
package com.lib.LiMS.repository;

import com.lib.LiMS.model.Book;
import org.springframework.data.mongodb.repository.MongoRepository;
import org.springframework.transaction.annotation.Transactional;

import java.util.List;
import java.util.Optional;

public interface BookRepository extends MongoRepository<Book, String>
{

    List<Book> findByPublicationYear(int publicationYear);

    Optional<Book> findGenreById(String id);
```

```
    @Transactional
    void deleteByPublicationYear(int publicationYear);
}
```

UserRepository.java

```
package com.lib.LiMS.repository;

import com.lib.LiMS.model.User;
import org.springframework.data.mongodb.repository.MongoRepository;

import java.util.Optional;

public interface UserRepository extends MongoRepository<User, String>
{
    Optional<User> findByUsername(String username);

    Boolean existsByUsername(String username);

    Boolean existsByEmail(String email);
}
```

LoginRequest.java

```
package com.lib.LiMS.payload.request;

import jakarta.validation.constraints.NotBlank;
import lombok.Data;

@Data
public class LoginRequest {
    @NotBlank
    private String username;
```

```
    @NotBlank
    private String password;
}
```

SignupRequest.java

```
package com.lib.LiMS.payload.request;

import jakarta.validation.constraints.Email;
import jakarta.validation.constraints.NotBlank;
import jakarta.validation.constraints.Size;
import lombok.Data;

import java.util.Set;

@Data
public class SignupRequest {
    @NotBlank
    @Size(min = 3, max = 20)
    private String username;

    @NotBlank
    @Size(max = 50)
    @Email
    private String email;

    private Set<String> roles;

    @NotBlank
    @Size(min = 6, max = 40)
    private String password;
}
```

jwtResponse.java

```
package com.lib.LiMS.payload.response;

import lombok.Data;

import java.util.List;

@Data
public class JwtResponse {
    private String token;
    private String type = "Bearer";
    private String id;
    private String username;
    private String email;
    private List<String> roles;

    public JwtResponse(String accessToken, String id, String username,
String email, List<String> roles) {
        this.token = accessToken;
        this.id = id;
        this.username = username;
        this.email = email;
        this.roles = roles;
    }
}
```

Book.java

```
package com.lib.LiMS.model;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;
import org.springframework.data.annotation.Id;
import org.springframework.data.mongodb.core.mapping.Document;
```

```
@Document(collection = "books")
@Data
@AllArgsConstructor
@NoArgsConstructor
public class Book {
    @Id
    private String id;

    private String title;
    private String author;
    private String genre;
    private int publicationYear;
    private String shelfLocation;
}
```

User.java

```
package com.lib.LiMS.model;

import lombok.Data;
import lombok.NoArgsConstructor;
import org.springframework.data.annotation.Id;
import org.springframework.data.mongodb.core.mapping.DBRef;
import org.springframework.data.mongodb.core.mapping.Document;

import java.util.HashSet;
import java.util.Set;

@Document(collection = "users")
@Data
@NoArgsConstructor
public class User {
    @Id
    private String id;
```

```
    private String username;

    private String email;

    private String password;

    @DBRef
    private Set<Role> roles = new HashSet<>();

    public User(String username, String email, String password) {
        this.username = username;
        this.email = email;
        this.password = password;
    }
}
```

WebSecurityConfig.java

```
package com.lib.LiMS.security;

import com.lib.LiMS.security.jwt.AuthEntryPointJwt;
import com.lib.LiMS.security.jwt.AuthTokenFilter;
import com.lib.LiMS.security.services.UserDetailsServiceImpl;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;
import
org.springframework.security.authentication.AuthenticationManager;
import
org.springframework.security.authentication.dao.DaoAuthenticationProvi
der;
import
org.springframework.security.config.annotation.authentication.configur
ation.AuthenticationConfiguration;
```

```
import
org.springframework.security.config.annotation.method.configuration.En
ableMethodSecurity;
import
org.springframework.security.config.annotation.web.builders.HttpSecuri
ty;
import org.springframework.security.config.http.SessionCreationPolicy;
import
org.springframework.security.crypto.bcrypt.BCryptPasswordEncoder;
import org.springframework.security.crypto.password.PasswordEncoder;
import org.springframework.security.web.SecurityFilterChain;
import
org.springframework.security.web.authentication.UsernamePasswordAuthen
ticationFilter;

@Configuration
@EnableMethodSecurity
public class WebSecurityConfig {
    @Autowired
    UserDetailsServiceImpl userDetailsService;

    @Autowired
    private AuthEntryPointJwt unauthorizedHandler;

    @Bean
    public AuthTokenFilter authenticationJwtTokenFilter() {
        return new AuthTokenFilter();
    }

    @Bean
    public DaoAuthenticationProvider authenticationProvider() {
        DaoAuthenticationProvider authProvider = new
DaoAuthenticationProvider();

        authProvider.setUserDetailsService(userDetailsService);
        authProvider.setPasswordEncoder(passwordEncoder());

        return authProvider;
```

```
    }

    @Bean
    public AuthenticationManager
authenticationManager(AuthenticationConfiguration authConfig) throws
Exception {
        return authConfig.getAuthenticationManager();
    }

    @Bean
    public PasswordEncoder passwordEncoder() {
        return new BCryptPasswordEncoder();
    }

    @Bean
    public SecurityFilterChain filterChain(HttpSecurity http) throws
Exception {
        http.csrf(csrf -> csrf.disable())
                .exceptionHandling(exception ->
exception.authenticationEntryPoint(unauthorizedHandler))
                .sessionManagement(session ->
session.sessionCreationPolicy(SessionCreationPolicy.STATELESS))
                .authorizeHttpRequests(auth ->
auth.requestMatchers("/api/auth/**").permitAll()
                        .requestMatchers("/api/test/**").permitAll()
                        .requestMatchers("/error").permitAll()
                        .anyRequest().authenticated());

        http.authenticationProvider(authenticationProvider());

        http.addFilterBefore(authenticationJwtTokenFilter(),
UsernamePasswordAuthenticationFilter.class);

        return http.build();
    }
}
```

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