java_springboot_restful_10_Use user from Database using JPA for JWT Continues

{noop} -> It make use of encoders

application.properties -> Modify it

```
# Server port
server.port=8080

# Database config
spring.datasource.url=jdbc:h2:file:./db/db
spring.datasource.driverClassName=org.h2.Driver
spring.datasource.username=admin
spring.datasource.password=pass987
spring.jpa.database-platform=org.hibernate.dialect.H2Dialect

# setup local h2 database console
spring.h2.console.enabled=true
spring.h2.console.path=/db-console
spring.h2.console.settings.web-allow-others=false

# local h2 tables setup on startup; use the value "none" in production!
spring.jpa.hibernate.ddl-auto=create-drop

# Enable lazy loading
# spring.jpa.properties.hibernate.enable_lazy_load_no_trans=true

# application.properties
# Thymeleaf settings (No need for version settings here)
# spring.thymeleaf.version=3.0.15.RELEASE
# spring.thymeleaf-layout-dialect.version=2.5.3

# Static files setting
# spring.mvc.static-path-pattern=/resources/static/**

# logging.level.org.springframework.security=DEBUG
```

Create a folder -> models and repository -> in project -> In the model -> create a model -> Account.java

```
package org.studyeasy.SpringRestdemo.model;
```

```
public class Account {

}
```

Update UserLogin.java -> payload folder

```
public record UserLogin(String username, String password) {

}
```

Update it to

```
public record UserLogin(String email, String password) {

}
```

Account.java

```
package org.studyeasy.SpringRestdemo.model;


import jakarta.persistence.Entity;
import jakarta.persistence.GeneratedValue;
import jakarta.persistence.GenerationType;
import jakarta.persistence.Id;
import lombok.Getter;
import lombok.Setter;
import lombok.ToString;

@Entity
@Getter
@Setter
@ToString
public class Account {
    @Id
    @GeneratedValue(strategy = GenerationType.SEQUENCE)
    private long id;
```

```
    private String email;

    private String password;

    private String role;

}
```

Create a repository -> AccountRepository.java -> and make it as interface

```
package org.studyeasy.SpringRestdemo.repository;

import org.springframework.data.jpa.repository.JpaRepository;
import org.studyeasy.SpringRestdemo.model.Account;

public interface AccountRepository extends JpaRepository<Account, Long>{

}
```

AuthController.java

```
@PostMapping("/token")
    @ResponseBody
    public Token token(@RequestBody UserLogin userLogin) throws
AuthenticationException {
        Authentication authentication = authenticationManager
                .authenticate(new
UsernamePasswordAuthenticationToken(userLogin.username(), userLogin.password()));
        return new Token(tokenService.generateToken(authentication));

    }
```

userLogin.username() -> change to -> userLogin.email()

```
@PostMapping("/token")
    @ResponseBody
    public Token token(@RequestBody UserLogin userLogin) throws AuthenticationException {
        Authentication authentication = authenticationManager
                .authenticate(new UsernamePasswordAuthenticationToken(userLogin.email(),
userLogin.password()));
```

```
        return new Token(tokenService.generateToken(authentication));

    }
```

In config folder -> Create a file -> SeedData.java -> Add service in service folder -> AccountService.java

AccountService.java

```
package org.studyeasy.SpringRestdemo.service;

import org.springframework.beans.factory.annotation.Autowired;
import org.studyeasy.SpringRestdemo.repository.AccountRepository;

public class AccountService {

  @Autowired
  private AccountRepository accountRepository;
}
```

SeedData.java

```
package org.studyeasy.SpringRestdemo.config;

import org.springframework.boot.CommandLineRunner;
import org.springframework.stereotype.Component;

@Component
public class SeedData implements CommandLineRunner{

    @Override
    public void run(String... args) throws Exception {
        // TODO Auto-generated method stub
        throw new UnsupportedOperationException("Unimplemented method 'run'");
    }

}
```

In SecurityConfig.java -> We will be creating our own user management system, so remove or uncomment below code.

```
 @Bean
    public InMemoryUserDetailsManager users() {
        return new InMemoryUserDetailsManager(
                User.withUsername("chaand")
                        .password("{noop}password")
                        .authorities("read")
                        .build());
    }
```

Add below code -> PasswordEncoder()

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

AccountService.java

```
package org.studyeasy.SpringRestdemo.service;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.security.crypto.password.PasswordEncoder;
import org.studyeasy.SpringRestdemo.model.Account;
import org.studyeasy.SpringRestdemo.repository.AccountRepository;

@Service
public class AccountService {

    @Autowired
    private AccountRepository accountRepository;

    @Autowired
    private PasswordEncoder passwordEncoder;

    public Account save(Account account){
        account.setPassword(passwordEncoder.encode(account.getPassword()));
        return accountRepository.save(account);
    }
}
```

In SeedData.java

```java
package org.studyeasy.SpringRestdemo.config;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.CommandLineRunner;
import org.springframework.stereotype.Component;
import org.studyeasy.SpringRestdemo.model.Account;
import org.studyeasy.SpringRestdemo.service.AccountService;

@Component
public class SeedData implements CommandLineRunner{

    @Autowired
    private AccountService accountService;

    @Override
    public void run(String... args) throws Exception {
        Account account01 = new Account();
        Account account02 = new Account();

        account01.setEmail("user@user.com");
        account01.setPassword("pass987");
        account01.setRole("ROLE_USER");
        accountService.save(account01);

        account02.setEmail("admin@admin.com");
        account02.setPassword("pass987");
        account02.setRole("ROLE_ADMIN");
        accountService.save(account02);
    }

}
```

In SecurityConfig.java -> update -> securityFilterChain method -> add below code

```java
.csrf(csrf -> csrf.ignoringRequestMatchers("/db-console/**"))
.headers(headers -> headers.frameOptions(frameOptions ->
frameOptions.sameOrigin()))
```

```java
@Bean
    public SecurityFilterChain securityFilterChain(HttpSecurity http) throws
Exception {
        http
                .csrf(csrf -> csrf.ignoringRequestMatchers("/db-console/**"))
                .headers(headers -> headers.frameOptions(frameOptions ->
frameOptions.sameOrigin()))
                .authorizeHttpRequests(authorize -> authorize
                        .requestMatchers("/token").permitAll()
                        .requestMatchers("/").permitAll()
                        .requestMatchers("/swagger-ui/**").permitAll()
                        .requestMatchers("/v3/api-docs/**").permitAll()
                        .requestMatchers("/test").authenticated())
                .oauth2ResourceServer(oauth2 -> oauth2
                        .jwt(Customizer.withDefaults()))
                .sessionManagement(session -> session
                        .sessionCreationPolicy(SessionCreationPolicy.STATELESS))
                .csrf(csrf -> csrf.disable())
                .headers(headers -> headers
                        .frameOptions(frameOptions -> frameOptions.disable()));
        return http.build();
    }
```

Run The App -> You get error

```
***************************************************

APPLICATION FAILED TO START

***************************************************

Description:


Parameter 0 of method authManager in org.studyeasy.SpringRestdemo.security.SecurityConfig required a bean of type
'org.springframework.security.core.userdetails.UserDetailsService' that could not be found.


Action:


Consider defining a bean of type 'org.springframework.security.core.userdetails.UserDetailsService' in your configuration.

***************************************************************************
```

There should be on class which implements UserDetailsService and that class will be AccountService.java

Part 2

Update AccountService.java -> Implements UserDetailsService

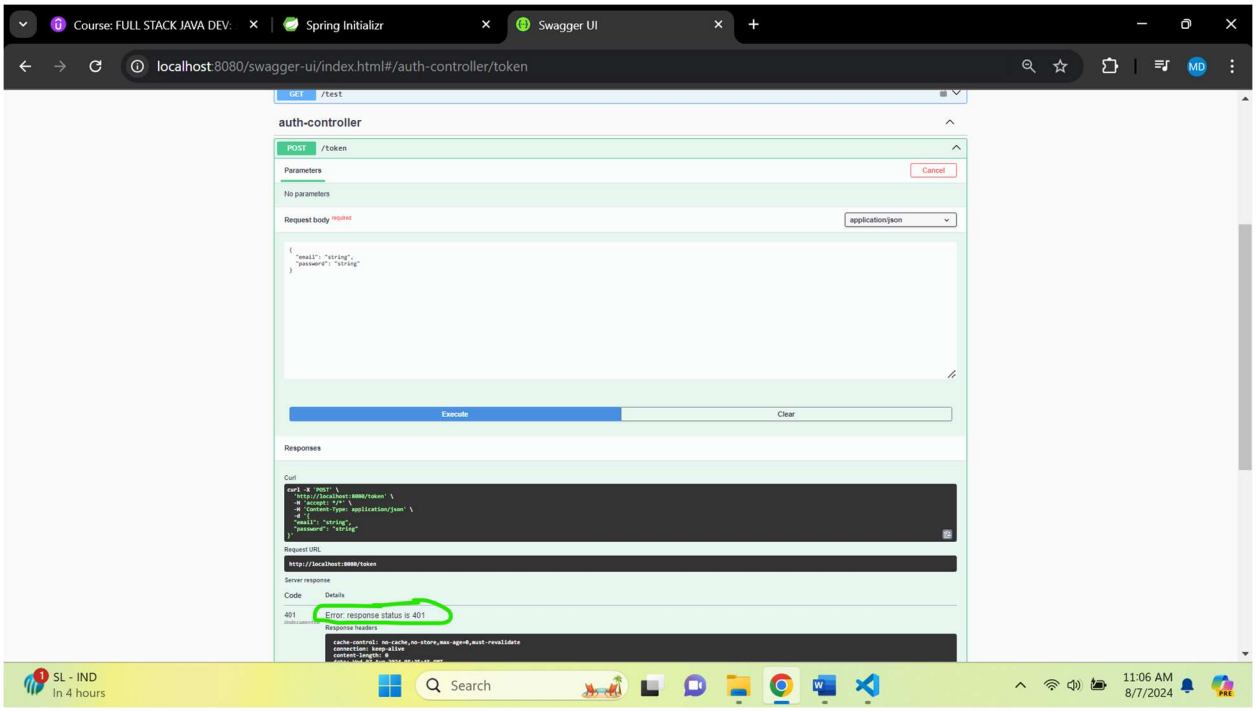
```
package org.studyeasy.SpringRestdemo.service;

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

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.security.core.GrantedAuthority;
import org.springframework.security.core.authority.SimpleGrantedAuthority;
import org.springframework.security.core.userdetails.User;
import org.springframework.security.core.userdetails.UserDetails;
import org.springframework.security.core.userdetails.UserDetailsService;
import org.springframework.security.core.userdetails.UsernameNotFoundException;
import org.springframework.security.crypto.password.PasswordEncoder;
import org.springframework.stereotype.Service;
import org.studyeasy.SpringRestdemo.model.Account;
import org.studyeasy.SpringRestdemo.repository.AccountRepository;

@Service
public class AccountService implements UserDetailsService {

    @Autowired
    private AccountRepository accountRepository;

    @Autowired
    private PasswordEncoder passwordEncoder;

    public Account save(Account account) {
        account.setPassword(passwordEncoder.encode(account.getPassword()));
        return accountRepository.save(account);
    }

    @Override
    public UserDetails loadUserByUsername(String email) throws
UsernameNotFoundException {
        Optional<Account> optionalAccount = accountRepository.findByEmail(email);
```

```
        if (!optionalAccount.isPresent()) {
             throw new UsernameNotFoundException("Account not found");
        }
        Account account = optionalAccount.get();

        List<GrantedAuthority> grantedAuthority = new ArrayList<>();
        grantedAuthority.add(new SimpleGrantedAuthority(account.getRole()));

        // Set<Authority> authorities = account.getAuthorities();
        // for (Authority _auth : authorities) {
        //     grantedAuthority.add(new SimpleGrantedAuthority(_auth.getName()));
        // }

         // return null;
        return new User(account.getEmail(), account.getPassword(),
grantedAuthority);
    }

}
```

Update AccountRepository.java

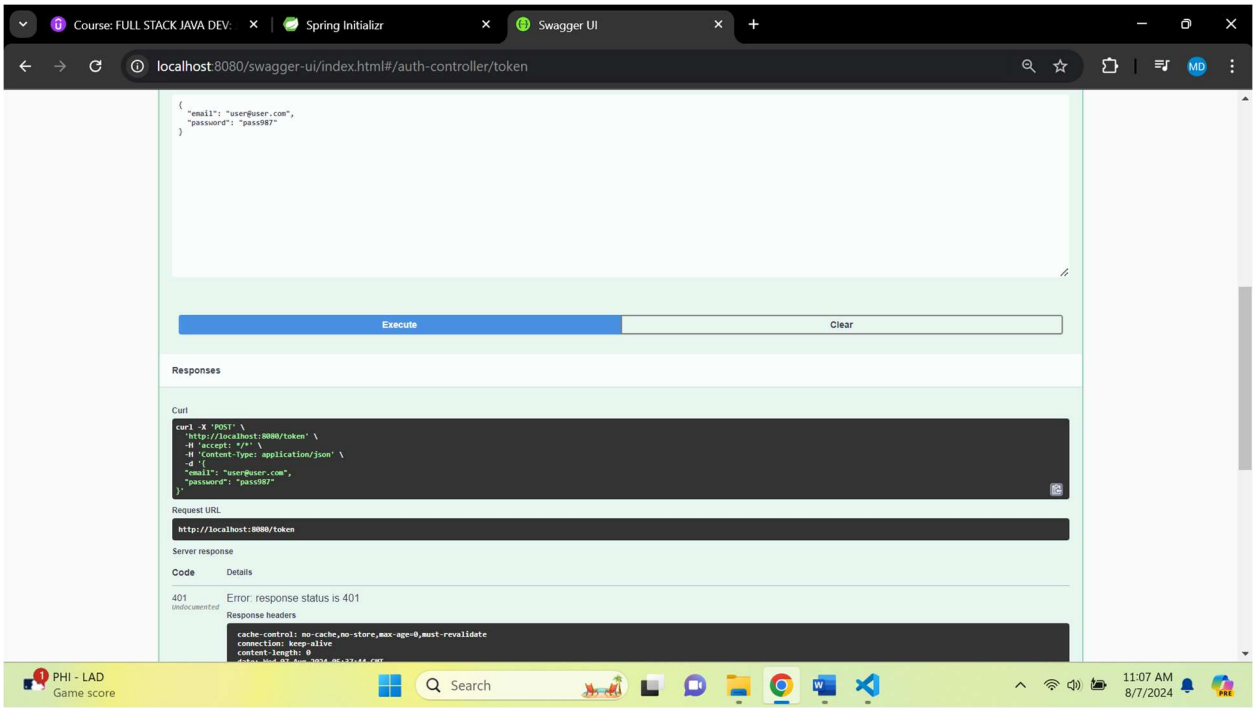
```
package org.studyeasy.SpringRestdemo.repository;

import java.util.Optional;

import org.springframework.data.jpa.repository.JpaRepository;
import org.studyeasy.SpringRestdemo.model.Account;

public interface AccountRepository extends JpaRepository<Account, Long> {

    Optional<Account> findByEmail(String email);
}
```

Run the app



When you enter the details and run the api, you still get 401 error. Why? You also get error like this.

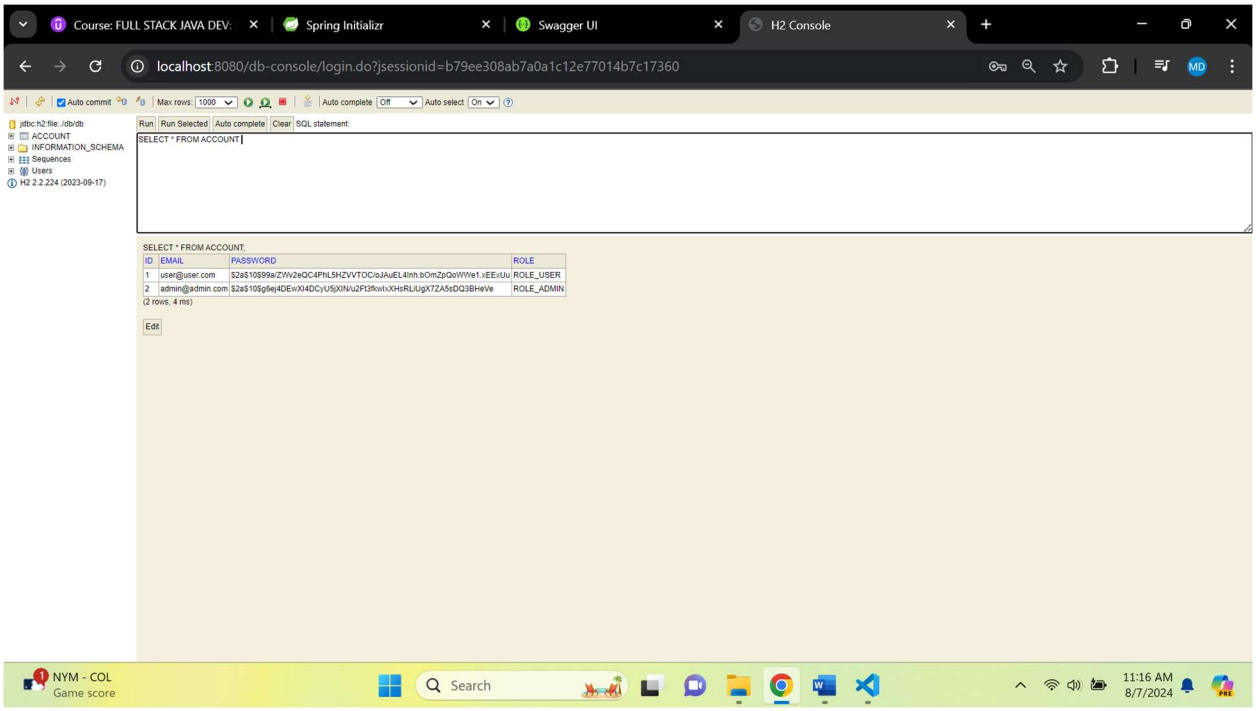
java. lang. IllegalArgumentException: You have entered a password with no Password Encoder. If that is your intent, it should be prefixed with `{noop}`.



You missed this line in SecurityConfig.java in securityFilterChain method

```
.requestMatchers("/db-console/**").permitAll()
```

DB Console



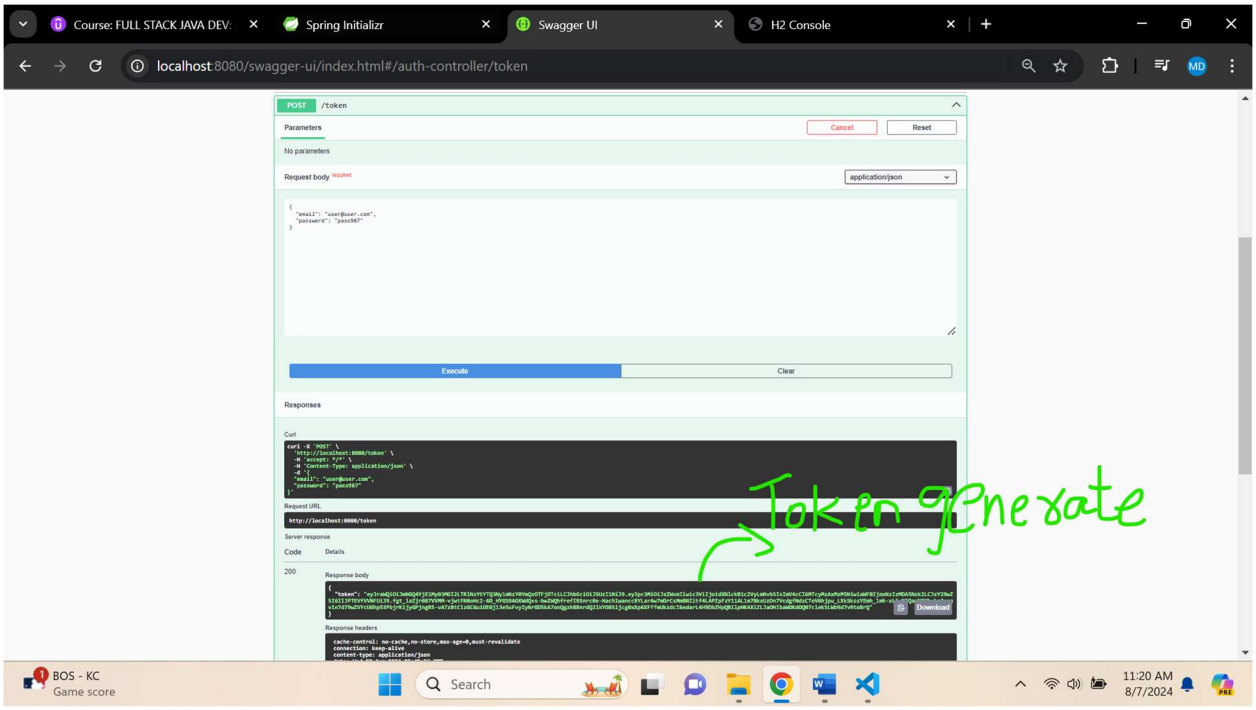
In SecurityConfig.java -> modify authManager() method

```
@Bean
    public AuthenticationManager authManager(UserDetailsService
userDetailsService) {
        var authProvider = new DaoAuthenticationProvider();
        authProvider.setUserDetailsService(userDetailsService);
        return new ProviderManager(authProvider);
    }
```

Add this line

```
 authProvider.setPasswordEncoder(passwordEncoder());
```

Token Generation from frontend



Sample Token Generated displayed in the frontend

eyJraWQiOiJmNGQ4YjE1My03MGI2LTRlNzYtYTQ3Ny1mNzY0YmQzOTFjOTciLCJhbGciOiJSUzI1NiJ9.eyJpc3MiOiJzZWxmIiwic3ViIjoidXNlckB1c2VyLmNvbSIsImV4cCI6MTcyMzAxMzM5NiwiaWF0IjoxNzIzMDA5Nzk2LCJzY29wZSI6IlJPTEVfVVNFUiJ9.fgt_laZjr087VVMM-vjwtFN8oHc2-6D_HYGS9AGKWdQvs-bwZWQhfrefIRSnrc0e-Hach1wancc8YLarAw7mDrCsMmBNIltf4LAPZpFzY11AL1m7BkxUzDn7VcdgfNdzCTeV6hjpu_LXkSkssYEmh_1mh-xLlyKEQazNQYbwho2oqavln7d79wZVYcUGhp53PbjrKijyGPjngR5-vATzBtCizGC6uiOEGj13e5uFvyIyNrGD5kA7onQgzhBBnrdQ2lkYO8Sijcg0xXp6XFffmUkzdcI6edarL4H9DbZHpQB1lpHK4XiZLJaOHIbaWOKdOQ07clekSLWb9d7v9to8rQ