**Create authentication service that returns JWT**   
  
As part of first step of JWT process, the user credentials need to be sent to authentication service request that generates and returns the JWT.  
  
Ideally when the below curl command is executed that calls the new authentication service, the token should be responded. Kindly note that the credentials are passed using -u option.  
  
**Request**

curl -s -u user:pwd http://localhost:8090/authenticate

**Response**

{"token":"eyJhbGciOiJIUzI1NiJ9.eyJzdWIiOiJ1c2VyIiwiaWF0IjoxNTcwMzc5NDc0LCJleHAiOjE1NzAzODA2NzR9.t3LRvlCV-hwKfoqZYlaVQqEUiBloWcWn0ft3tgv0dL0"}

This can be incorporated as three major steps:

* Create authentication controller and configure it in SecurityConfig
* Read Authorization header and decode the username and password
* Generate token based on the user retrieved in the previous step

Let incorporate the above as separate hands on exercises.

**Code:**

**AuthenticationController.java**

**package** **com.example.controller**;

**import** **io.jsonwebtoken.Jwts**;

**import** **io.jsonwebtoken.SignatureAlgorithm**;

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

**import** **java.util.\***;

**import** **java.util.Base64**;

@**RestController**

**public** **class** AunthenticationController {

    @**GetMapping**("/authenticate")

**public** **Map**<**String**, **String**> authenticate(@**RequestHeader**("Authorization") **String** authHeader) {

**Map**<**String**, **String**> map **=** **new** **HashMap**<>();

**String** user **=** getUser(authHeader);

**String** token **=** generateJwt(user);

        map.put("token", token);

**return** map;

    }

**private** **String** getUser(**String** authHeader) {

**String** encoded **=** authHeader.substring("Basic ".length());

**byte**[] decodedBytes **=** Base64.getDecoder().decode(encoded);

**String** decoded **=** **new** String(decodedBytes);

**return** decoded.split(":")[0];

    }

**private** **String** generateJwt(**String** user) {

**return** Jwts.builder()

                .setSubject(user)

                .setIssuedAt(**new** Date())

                .setExpiration(**new** Date(System.currentTimeMillis() **+** 1200000)) *// 20 mins*

                .signWith(SignatureAlgorithm.HS256, "secretkey")

                .compact();

    }

}

**JwtAuthorizationFilter.java**

**package** **com.example.security**;

**import** **io.jsonwebtoken.\***;

**import** **jakarta.servlet.\***;

**import** **jakarta.servlet.http.\***;

**import** **org.springframework.security.authentication.\***;

**import** **org.springframework.security.core.context.SecurityContextHolder**;

**import** **org.springframework.security.web.authentication.www.BasicAuthenticationFilter**;

**import** **java.io.IOException**;

**import** **java.util.ArrayList**;

**public** **class** JwtAuthorizationFilter **extends** BasicAuthenticationFilter {

**public** JwtAuthorizationFilter(**AuthenticationManager** authManager) {

        super(authManager);

    }

    @**Override**

**protected** **void** doFilterInternal(**HttpServletRequest** request,

**HttpServletResponse** response,

**FilterChain** chain)

**throws** **IOException**, **ServletException** {

**String** header **=** request.getHeader("Authorization");

**if** (header **==** **null** **||** **!**header.startsWith("Bearer ")) {

            chain.doFilter(request, response);

**return**;

        }

**UsernamePasswordAuthenticationToken** auth **=** getAuthentication(request);

        SecurityContextHolder.getContext().setAuthentication(auth);

        chain.doFilter(request, response);

    }

**private** **UsernamePasswordAuthenticationToken** getAuthentication(**HttpServletRequest** request) {

**String** token **=** request.getHeader("Authorization");

**if** (token **!=** **null**) {

**try** {

**String** user **=** Jwts.parser()

                        .setSigningKey("secretkey")

                        .parseClaimsJws(token.replace("Bearer ", ""))

                        .getBody()

                        .getSubject();

**if** (user **!=** **null**) {

**return** **new** UsernamePasswordAuthenticationToken(user, **null**, **new** **ArrayList**<>());

                }

            } **catch** (**JwtException** e) {

**return** **null**;

            }

        }

**return** **null**;

    }

}

**SecurityConfig.java**

**package** **com.example.security**;

**import** **org.springframework.context.annotation.Bean**;

**import** **org.springframework.context.annotation.Configuration**;

**import** **org.springframework.security.authentication.AuthenticationManager**;

**import** **org.springframework.security.config.annotation.authentication.builders.AuthenticationManagerBuilder**;

**import** **org.springframework.security.config.annotation.web.builders.HttpSecurity**;

**import** **org.springframework.security.config.annotation.web.configuration.EnableWebSecurity**;

**import** **org.springframework.security.crypto.bcrypt.BCryptPasswordEncoder**;

**import** **org.springframework.security.crypto.password.PasswordEncoder**;

**import** **org.springframework.security.web.SecurityFilterChain**;

**import** **org.springframework.security.config.annotation.authentication.configuration.AuthenticationConfiguration**;

**import** **com.example.security.JwtAuthorizationFilter**;

@**Configuration**

@**EnableWebSecurity**

**public** **class** SecurityConfig {

    @**Bean**

**public** **AuthenticationManager** authenticationManager(**AuthenticationConfiguration** authConfig) **throws** **Exception** {

**return** authConfig.getAuthenticationManager();

    }

    @**Bean**

**public** **SecurityFilterChain** filterChain(**HttpSecurity** http) **throws** **Exception** {

        http.csrf().disable()

            .httpBasic()

            .and()

            .authorizeHttpRequests()

            .requestMatchers("/authenticate").hasAnyRole("USER", "ADMIN")

            .anyRequest().authenticated()

            .and()

            .addFilter(**new** JwtAuthorizationFilter(authenticationManager(http.getSharedObject(AuthenticationConfiguration.class))));

**return** http.build();

    }

    @**Bean**

**public** **PasswordEncoder** passwordEncoder() {

**return** **new** BCryptPasswordEncoder();

    }

    @**Bean**

**public** **org**.**springframework**.**security**.**core**.**userdetails**.**UserDetailsService** users() {

**return** username **->** {

**if** (username.equals("user")) {

**return** org.springframework.security.core.userdetails.User.withUsername("user")

                        .password(passwordEncoder().encode("pwd"))

                        .roles("USER").build();

            } **else** **if** (username.equals("admin")) {

**return** org.springframework.security.core.userdetails.User.withUsername("admin")

                        .password(passwordEncoder().encode("pwd"))

                        .roles("ADMIN").build();

            }

**throw** **new** RuntimeException("User not found");

        };

    }

}

**SpringJwtDemoApplication.java**

**package** **com.example**;

**import** **org.springframework.boot.SpringApplication**;

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

@**SpringBootApplication**

**public** **class** SpringJwtDemoApplication {

**public** **static** **void** main(**String**[] args) {

        SpringApplication.run(SpringJwtDemoApplication.class, args);

    }

}

**Application.properties**

server.port=8090

**pom.xml**

<project *xmlns*="http://maven.apache.org/POM/4.0.0"

*xmlns:xsi*="http://www.w3.org/2001/XMLSchema-instance"

*xsi:schemaLocation*="http://maven.apache.org/POM/4.0.0

                             http://maven.apache.org/xsd/maven-4.0.0.xsd">

    <modelVersion>4.0.0</modelVersion>

    <groupId>com.example</groupId>

    <artifactId>spring-jwt-demo</artifactId>

    <version>0.0.1-SNAPSHOT</version>

    <packaging>jar</packaging>

    <name>spring-jwt-demo</name>

    <description>Spring Boot JWT Authentication Demo</description>

    <properties>

        <java.version>17</java.version>

        <spring.boot.version>3.2.4</spring.boot.version>

    </properties>

    <dependencies>

    <dependency>

    <groupId>javax.xml.bind</groupId>

    <artifactId>jaxb-api</artifactId>

    <version>2.3.1</version>

</dependency>

<dependency>

    <groupId>org.glassfish.jaxb</groupId>

    <artifactId>jaxb-runtime</artifactId>

    <version>2.3.1</version>

</dependency>

*<!-- ✅ Spring Boot Web -->*

        <dependency>

            <groupId>org.springframework.boot</groupId>

            <artifactId>spring-boot-starter-web</artifactId>

            <version>${spring.boot.version}</version>

        </dependency>

*<!-- ✅ Spring Boot Security -->*

        <dependency>

            <groupId>org.springframework.boot</groupId>

            <artifactId>spring-boot-starter-security</artifactId>

            <version>${spring.boot.version}</version>

        </dependency>

*<!-- ✅ JWT Token Library -->*

        <dependency>

            <groupId>io.jsonwebtoken</groupId>

            <artifactId>jjwt</artifactId>

            <version>0.9.0</version>

        </dependency>

*<!-- ✅ Jakarta Servlet API (required for Spring Boot 3+ filters) -->*

        <dependency>

            <groupId>jakarta.servlet</groupId>

            <artifactId>jakarta.servlet-api</artifactId>

            <version>6.0.0</version>

            <scope>provided</scope>

        </dependency>

*<!-- Optional: Lombok (if you want cleaner model code) -->*

        <dependency>

            <groupId>org.projectlombok</groupId>

            <artifactId>lombok</artifactId>

            <version>1.18.30</version>

           <scope>provided</scope>

        </dependency>

*<!-- ✅ Spring Boot Test -->*

        <dependency>

            <groupId>org.springframework.boot</groupId>

            <artifactId>spring-boot-starter-test</artifactId>

            <version>${spring.boot.version}</version>

            <scope>test</scope>

        </dependency>

        <dependency>

  <groupId>com.fasterxml.jackson.core</groupId>

  <artifactId>jackson-databind</artifactId>

  <version>2.17.1</version> *<!-- ✅ Latest as of mid-2025 -->*

</dependency>

    </dependencies>

    <build>

        <plugins>

*<!-- ✅ Spring Boot Maven Plugin -->*

            <plugin>

                <groupId>org.springframework.boot</groupId>

                <artifactId>spring-boot-maven-plugin</artifactId>

                <version>${spring.boot.version}</version>

            </plugin>

        </plugins>

    </build>

</project>

**Output:**

