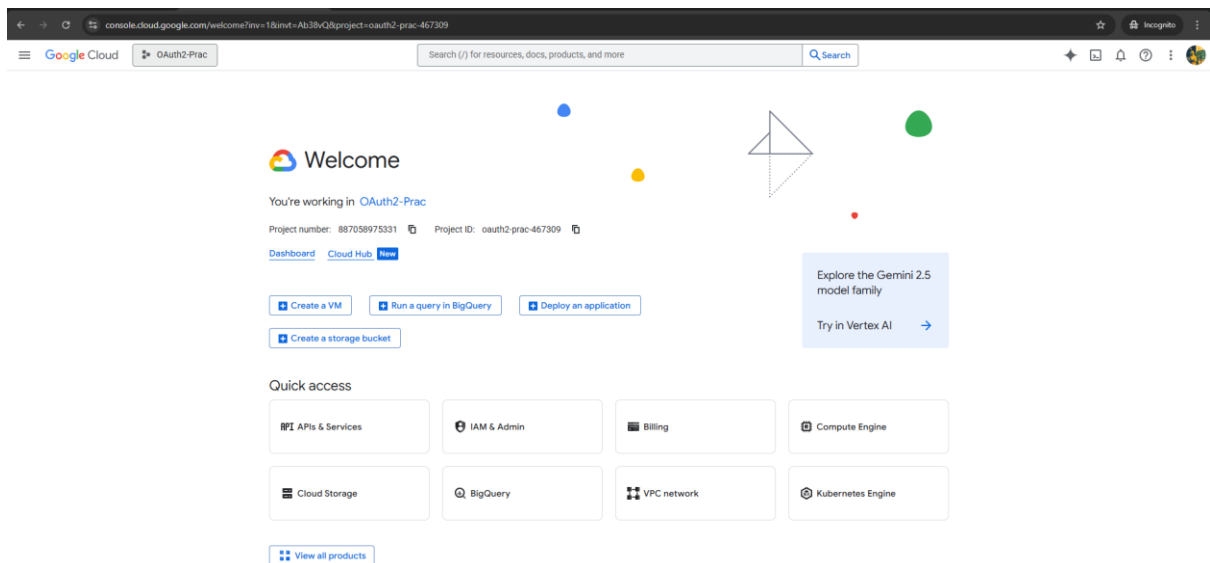
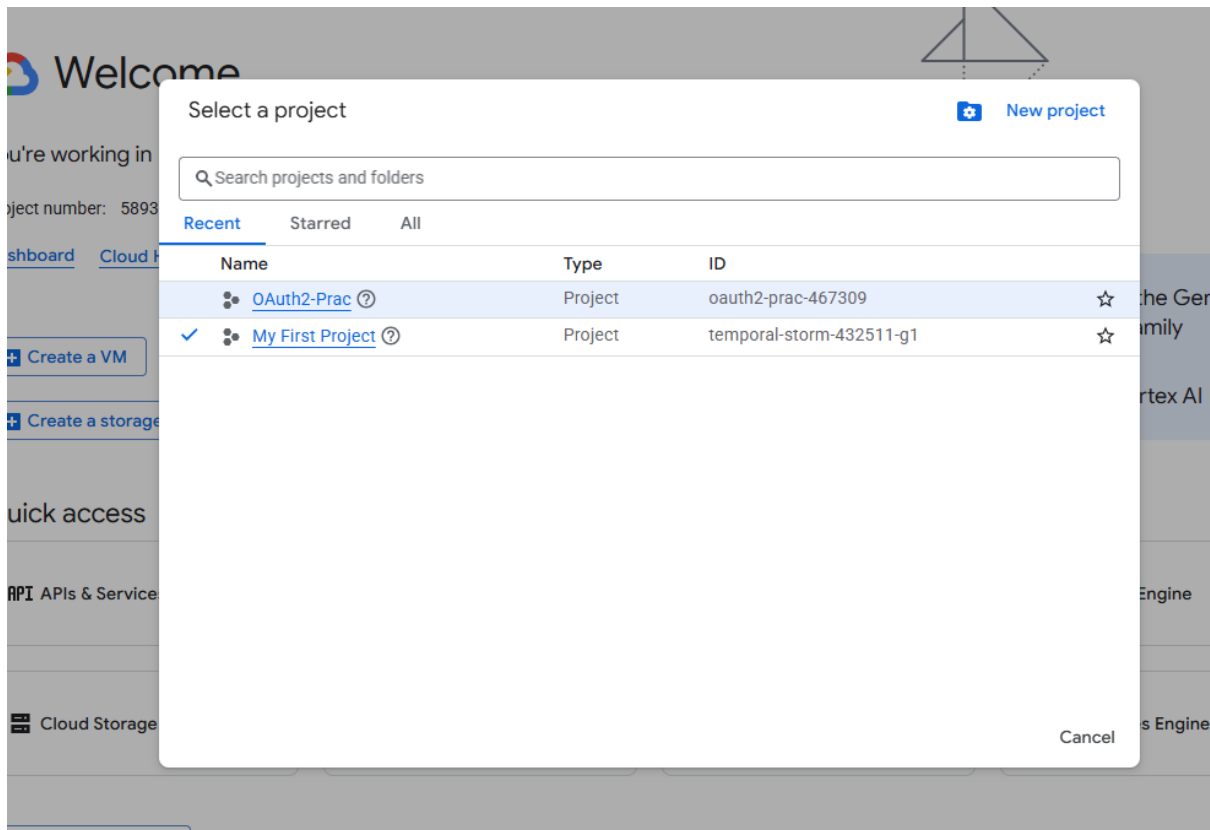


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The screenshot shows the Google Cloud console's welcome page for a new project named 'My First Project'. The page includes a search bar at the top, a 'Welcome' message, and project details: Project number 589377149965 and Project ID temporal-storm-432511-g1. Below this are quick action buttons: 'Create a VM', 'Run a query in BigQuery', 'Deploy an application', and 'Create a storage bucket'. A 'Quick access' section provides links to various services: APIs & Services, IAM & Admin, Billing, Compute Engine, Cloud Storage, BigQuery, VPC network, and Kubernetes Engine. A 'View all products' link is also present. A sidebar on the right promotes the Gemini 2.5 model family and Vertex AI.

The screenshot shows the 'New Project' form in the Google Cloud console. At the top, there is a warning message: 'You have 24 projects remaining in your quota. Request an increase or delete projects. Learn more'. Below this is a 'Project name' field with the value 'OAuth2-Prac'. The 'Project ID' is displayed as 'oauth2-prac-467309', with a note that it cannot be changed later. The 'Location' is set to 'No organization'. At the bottom, there are 'Create' and 'Cancel' buttons.



Project number: 007000270001 **Project no.:** 000000000000

- [+ Create a VM](#)
- [+ Run a query in BigQuery](#)
- [+ Deploy an application](#)
- [+ Create a storage bucket](#)

A screenshot of the Google Cloud console's 'All products' page. It features a grid of six service tiles, each with an icon and a label. The tiles are: 'API APIs & Services' (API icon), 'IAM & Admin' (shield icon), 'Billing' (bill icon), 'Cloud Storage' (cloud storage icon), 'BigQuery' (magnifying glass icon), and 'VPC network' (network icon). At the bottom left, there is a blue button with a grid icon and the text 'View all products'.

The screenshot shows the Google Cloud API Library interface. At the top, there's a navigation bar with "Google Cloud" and "OAuth2-PKCE". Below it, the breadcrumb "APIs & Services / API Library" is visible. The main header area features a large graphic with the text "Welcome to the API Library" and "The API Library has documentation, links, and a smart search experience." A search bar is present below the header.

The left sidebar contains a "Filter" section with categories like "Public (490)", "Private (2)", "Category", "Analytics (11)", "Big data (22)", "Machine learning", and "Storage (9)".

The main content area displays a grid of API cards under the heading "Maps". The cards include:

- Maps SDK for Android**: Maps for your native Android app.
- Maps SDK for iOS**: Maps for your native iOS app.
- Maps JavaScript API**: Maps for your website.
- Places API**: Get detailed information about 100 million places.
- Roads API**: Snap-to-road functionality to accurately trace GPS breadcrumbs.
- Directions API**: Directions between multiple locations.

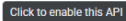
Below the "Maps" section, another grid of API cards is shown under the heading "YouTube":

- YouTube Data API v3**: The YouTube Data API v3 is an API that provides access to YouTube data, such as videos, playlists...
- YouTube Analytics API**: Retrieves your YouTube Analytics data.
- YouTube Reporting API**: Schedules reporting jobs containing your YouTube Analytics data and downloads the resulting...

At the bottom, there's a "Social" section with API cards for:

- Google+ API**: The Google+ API enables developers to build on top of the Google+ platform.
- Blogger API**: The Blogger API provides access to posts, comments and pages of a Blogger blog.
- Google+ Domains API**: The Google+ Domains API enables developers to build on top of the Google+ platform for Google+...
- Google People API**: Provides access to information about profiles and contacts.
- Contacts API**: The Contacts API lets you view, edit, and organize your contacts.

 To avoid losing access to Google Cloud services, an administrator must verify this account.



Related Products

Service name: plus.googleapis.com

The screenshot shows the Google Cloud IAM & Admin console. The left sidebar has a menu with 'Credentials' selected. The main content area is titled 'Credentials' and has a '+ Create credentials' button. Below this, there are three sections: 'API Keys', 'OAuth 2.0 Client IDs', and 'Service Accounts'. Each section has a table with columns for Name, Creation date, and Actions. All three sections are currently empty, displaying 'No API keys to display', 'No OAuth clients to display', and 'No service accounts to display' respectively. A search bar is located at the top right of the console.

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Google Cloud | OAuth2-Prac | Search (/) for resources, docs, products, and more

APIs & Services | Credentials

Create credentials to a

API key
Identifies your project using a simple API key to check quota and access

OAuth client ID
Requests user consent so your app can access the user's data

Service account
Enables server-to-server, app-level authentication using robot accounts

Help me choose
Asks a few questions to help you decide which type of credential to use

Name	Creation date	Type	Client ID	Actions
No OAuth clients to display				

Service Accounts


Email	Name	Actions
No service accounts to display		

Google Cloud | OAuth2-Prac | Search (/) for resources, docs, products, and more

Google Auth Platform / Overview

Overview

OAuth Overview



Google Auth Platform not configured yet
Get started to configure your application's identity and manage credentials for calling Google APIs and Sign-in with Google. [Learn more](#)

[Get started](#)

Google Cloud | OAuth2-Prac | Search (/) for resources, docs, products, and more

Google Auth Platform / Overview / Create branding

Overview

Project configuration

1 App Information

App name *
OAuth2_App
The name of the app asking for consent

User support email *
kaduvettisuraj@gmail.com
For users to contact you with questions about their consent. [Learn more](#)

[Next](#)

2 Audience

3 Contact Information

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Google Cloud

OAuth2-Prac

Search (/) for resources, docs, products, and more

Q Search

Google Auth Platform / Overview / Create branding

Overview

Branding

Audience

Clients

Data Access

Verification Center

Project configuration

1 App Information

2 Audience

3 Contact Information

4 Finish

☒ Internal ⓘ

Only available to users within your organization. You will not need to submit your app for verification. [Learn more about user type](#)

☒ External ⓘ

Available to any test user with a Google Account. Your app will start in testing mode and will only be available to users you add to the list of test users. Once your app is ready to push to production, you may need to verify your app. [Learn more about user type](#)

Next

Google Cloud

OAuth2-Prac

Search (/) for resources, docs, products, and more

Q Search

Google Auth Platform / Overview / Create branding

Overview

Branding

Audience

Clients

Data Access

Verification Center

Project configuration

1 App Information

2 Audience

3 Contact Information

4 Finish

Email addresses *

kaduvettisuraj@gmail.com

These email addresses are for Google to notify you about any changes to your project.

Next

4 Finish

Create Cancel

Google Auth Platform / Overview / Create branding

Overview

Branding

Audience

Clients

Data Access

Verification Center

Project configuration

✓ App Information

|

✓ Audience

|

✓ Contact Information

|

4 Finish

☒ I agree to the [Google API Services: User Data Policy](#)

Continue

Create Cancel

Google Cloud OAuth2-Prac

Search (/) for resources, docs, products, and more

Search

Google Auth Platform / Overview / Create branding

Overview

Branding

Audience

Clients

Data Access

Verification Center

Project configuration

✓ App Information

|

✓ Audience

|

✓ Contact Information

|

✓ Finish

Processing...

Cancel

Google Cloud

OAuth2-Prac

Search (/) for resources, docs, products,

Google Auth Platform / Clients / Client: 887058975331-2eho560gb0ghqmaqbdh08ctmigoq89h.apps.googleusercontent.com

Overview

Branding

Audience

Clients

Data Access

Verification Center

Client ID for Web application

Delete

Name *

Spring Boot OAuth App

The name of your OAuth 2.0 client. This name is only used to identify the client in the console and will not be shown to end users.

The domains of the URIs you add below will be automatically added to your [OAuth consent screen](#) as [authorized domains](#).

Authorized JavaScript origins

For use with requests from a browser

URIs 1 *

https://localhost:8080

+ Add URI

Authorized redirect URIs

For use with requests from a web server

URIs 1 *

http://localhost:8080/login/oauth2/code/google

+ Add URI

Note: It may take 5 minutes to a few hours for settings to take effect

spring initializr

Project

Gradle - Groovy

Gradle - Kotlin

Maven

Language

Java

Kotlin

Groovy

Spring Boot

4.0.0 (SNAPSHOT)

4.0.0 (M1)

3.5.5 (SNAPSHOT)

3.5.4

3.4.9 (SNAPSHOT)

3.4.8

Project Metadata

Group

com.test

Artifact

OAuth2App

Name

OAuth2App

Description

spring-boot-oauth2-google

Package name

com.test.OAuth2App

Packaging

Jar

War

Java

24

21

17

Dependencies

ADD DEPENDENCIES... CTRL + B

Thymeleaf

TEMPLATE ENGINES

A modern server-side Java template engine for both web and standalone environments. Allows HTML to be correctly displayed in browsers and as static prototypes.

Lombok

DEVELOPER TOOLS

Java annotation library which helps to reduce boilerplate code.

OAuth2 Client

SECURITY

Spring Boot integration for Spring Security's OAuth2/OpenID Connect client features.

Spring Web

WEB

Build web, including RESTful, applications using Spring MVC. Uses Apache Tomcat as the default embedded container.

Spring Security

SECURITY

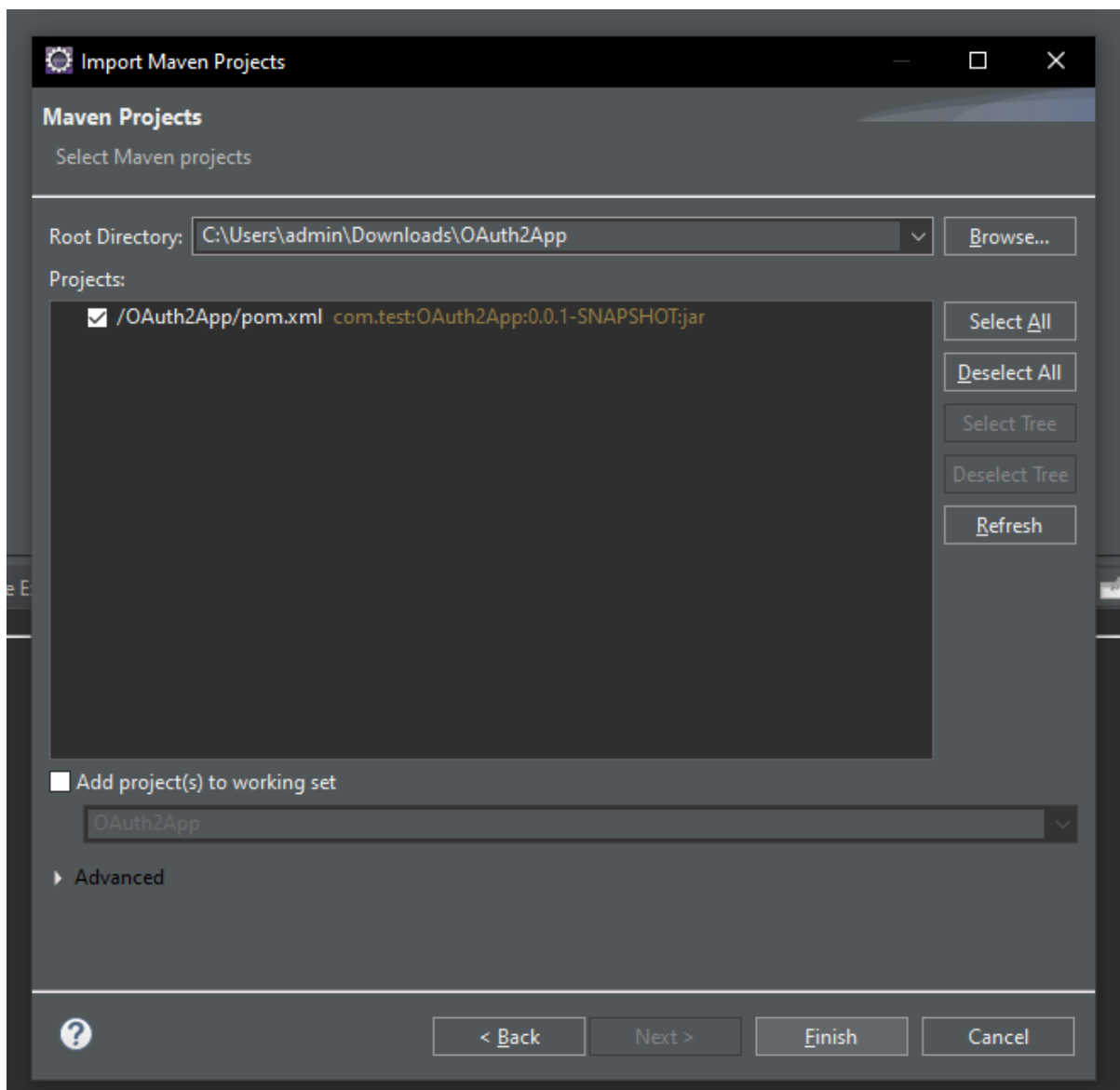
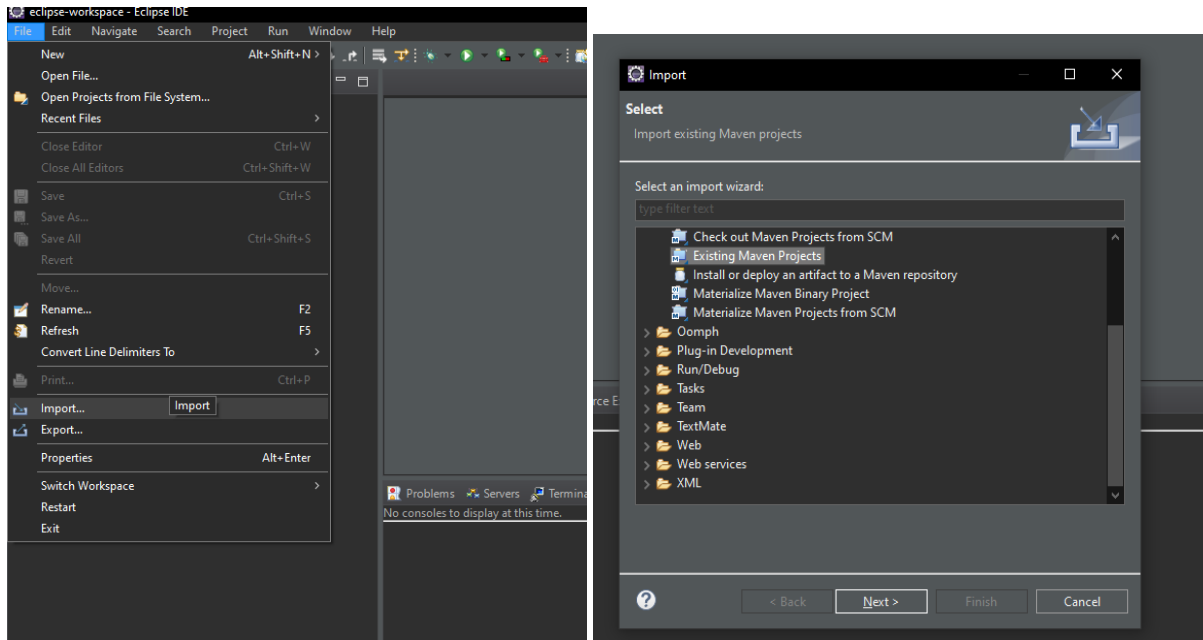
Highly customizable authentication and access-control framework for Spring applications.

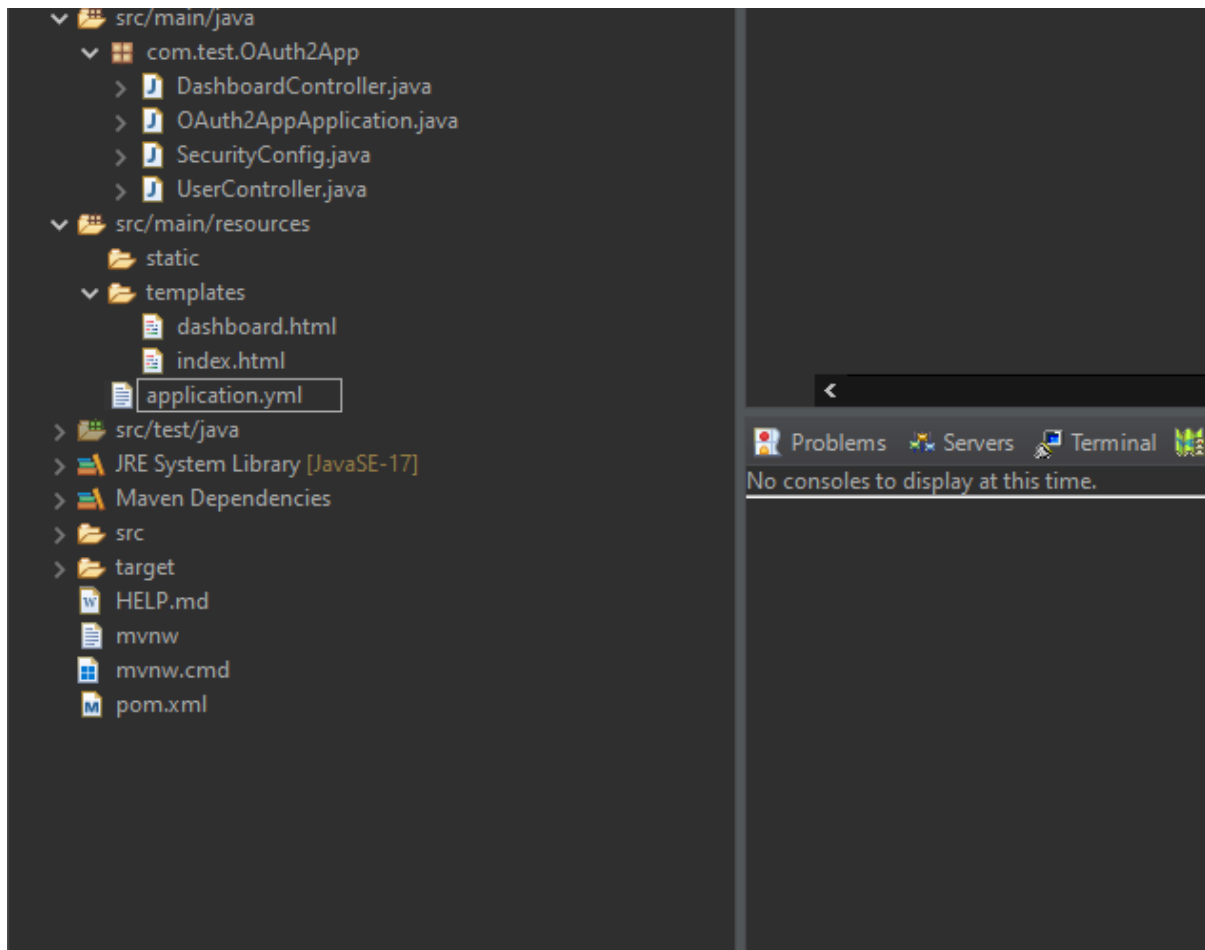
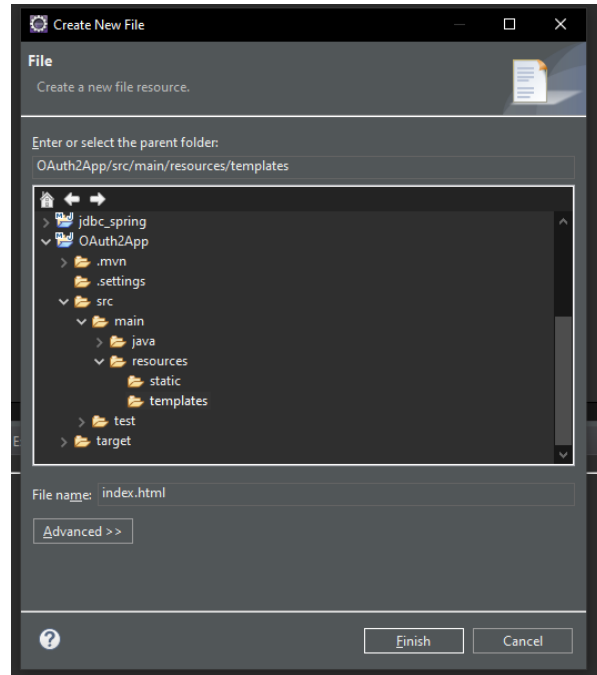
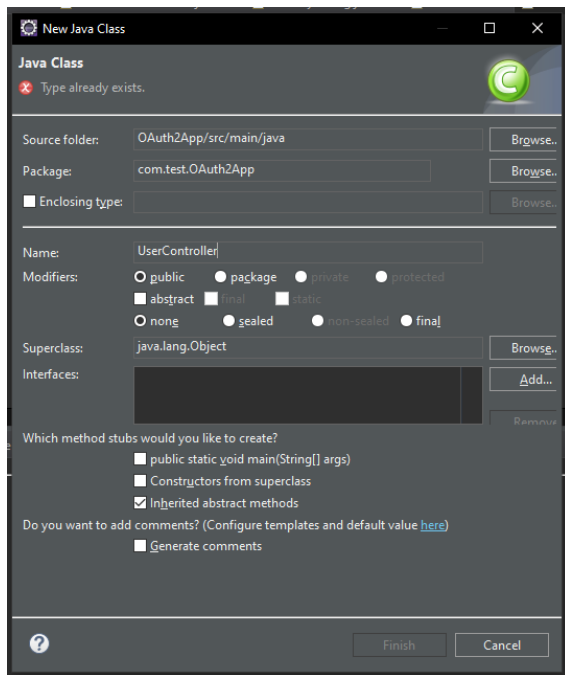
Spring Boot DevTools

DEVELOPER TOOLS

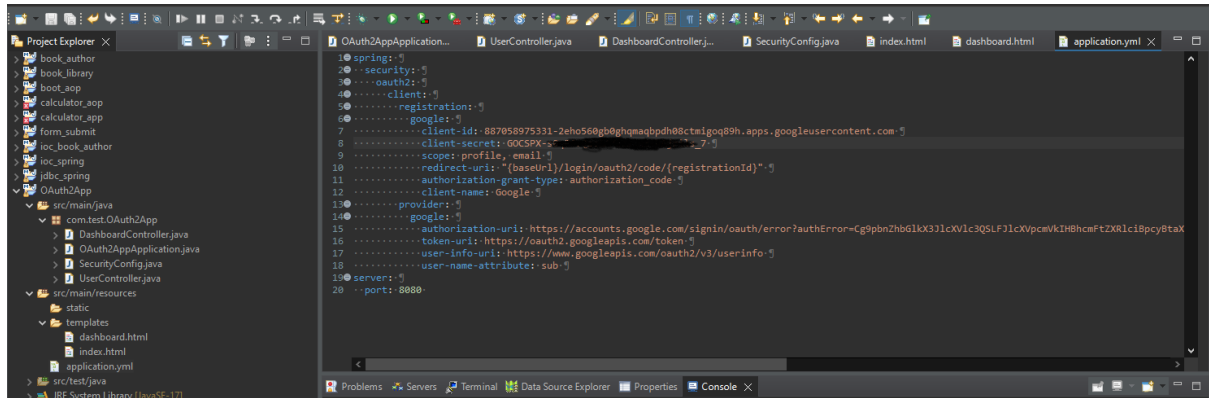
Provides fast application restarts, LiveReload, and configurations for enhanced development experience.

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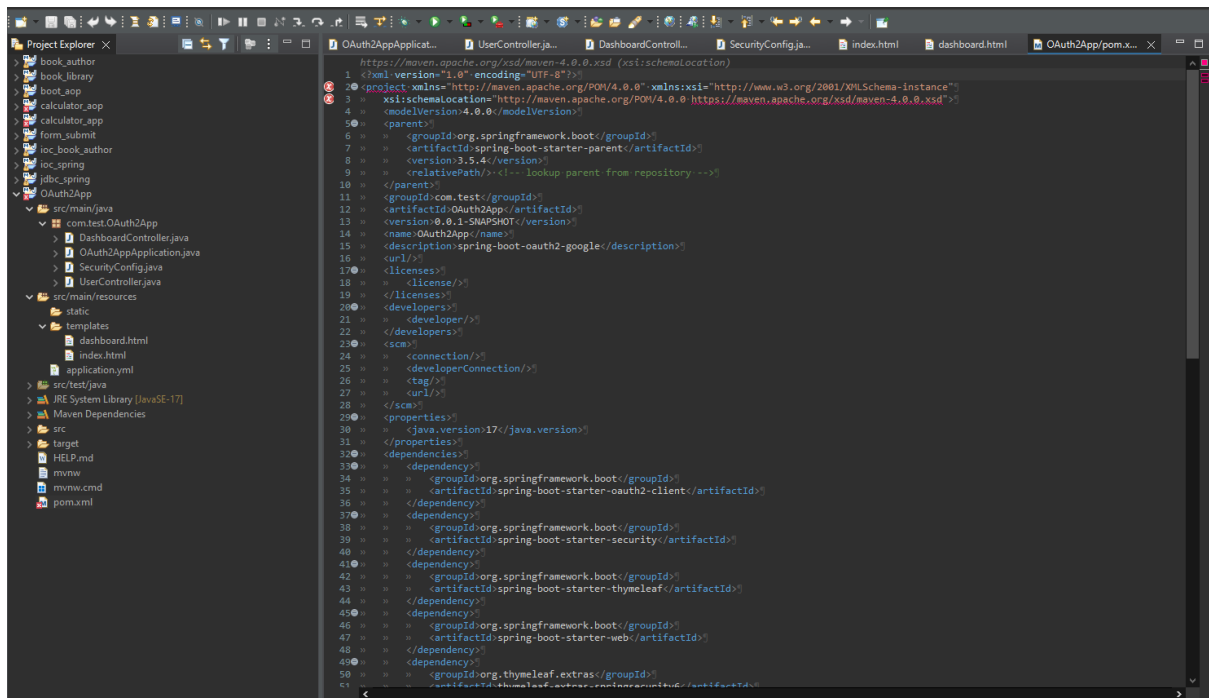




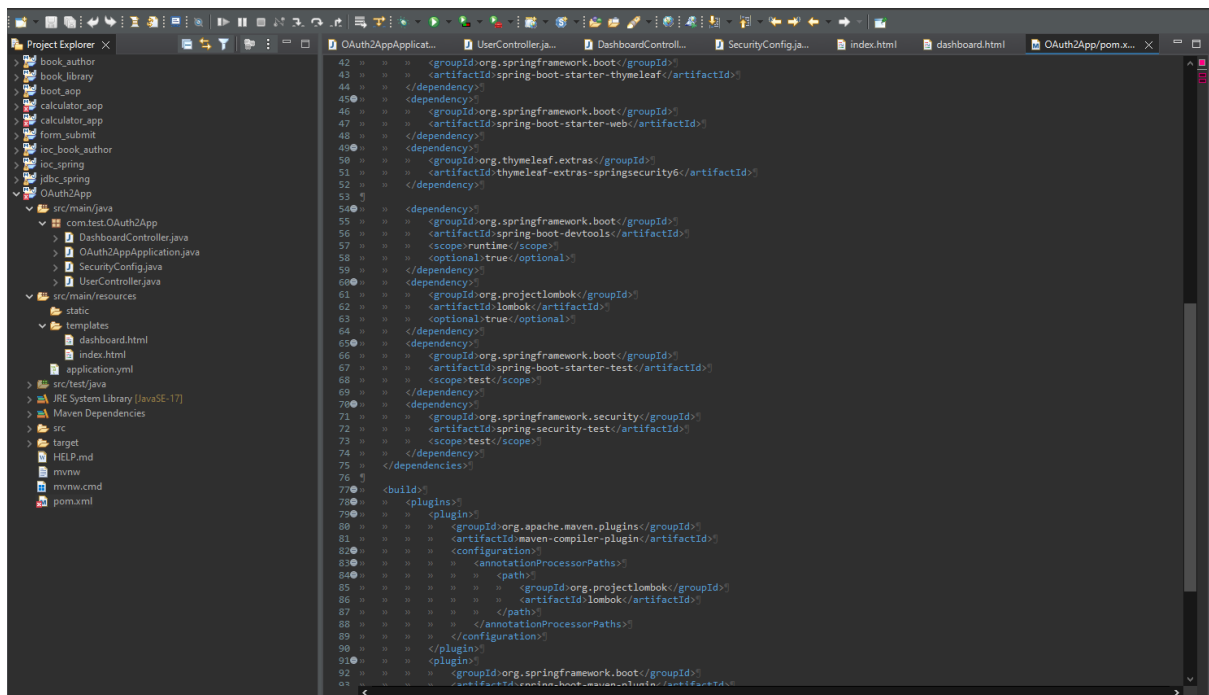
Practical 5 Suraj S Kaduvetti 40772240015 F015



```
10 spring:
11   ...security:
12     ...oauth2:
13       ...client:
14         ...registration:
15           ...google:
16             client-id: 887058975331-2eh0560g0ghmqapbd08ctm1goq89h.apps.googleusercontent.com
17             client-secret: GOCSPX...
18             scope: profile, email
19             redirect-uri: "{baseUrl}/login/oauth2/code/{registrationId}"
20             authorization-grant-type: authorization_code
21             client-name: Google
22             provider:
23               google:
24                 authorization-uri: https://accounts.google.com/signin/oauth/error?authError=Cg9pbmZhbGloX3N1cXVl3Q5LF3lCVpcwVtIHhcmFtZXRlcjBpYStax
25                 token-uri: https://oauth2.googleapis.com/token
26                 user-info-uri: https://www.googleapis.com/oauth2/v3/userinfo
27                 user-name-attribute: sub
28   ...server:
29     ...port: 8080
```

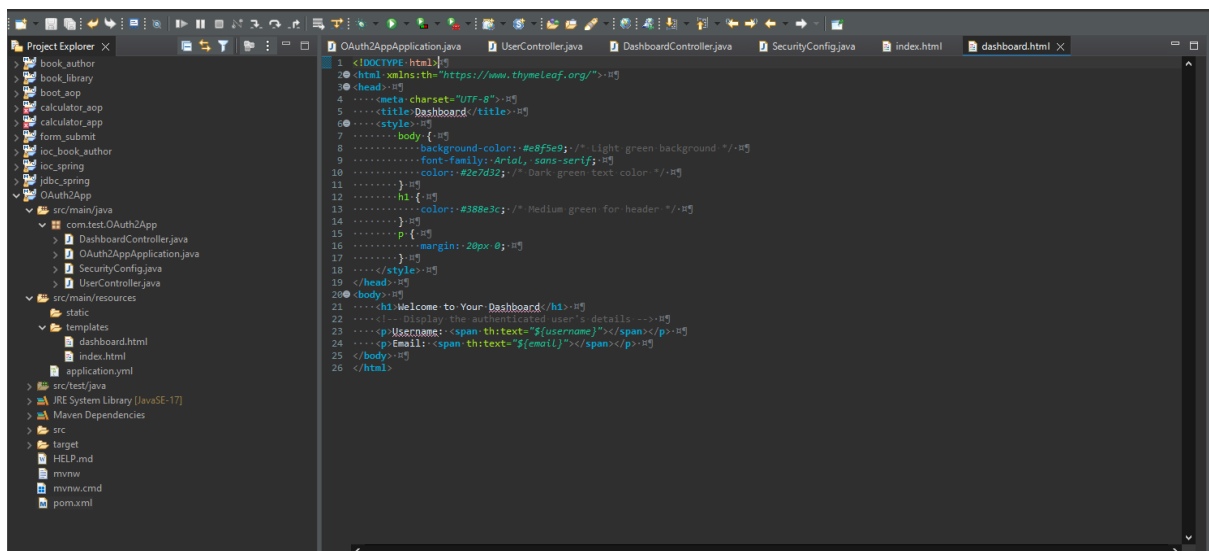
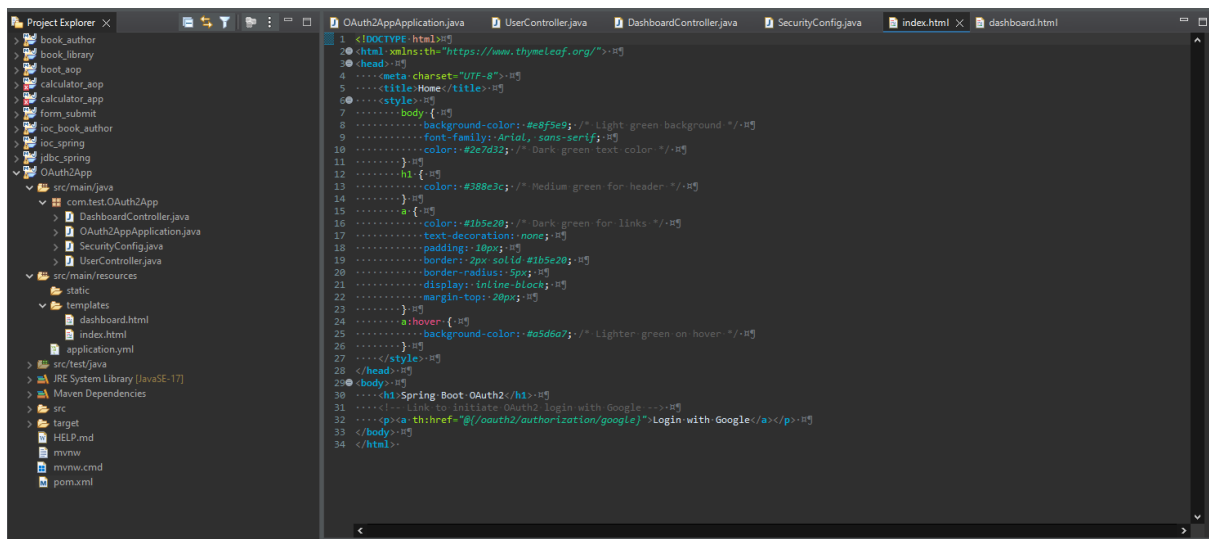
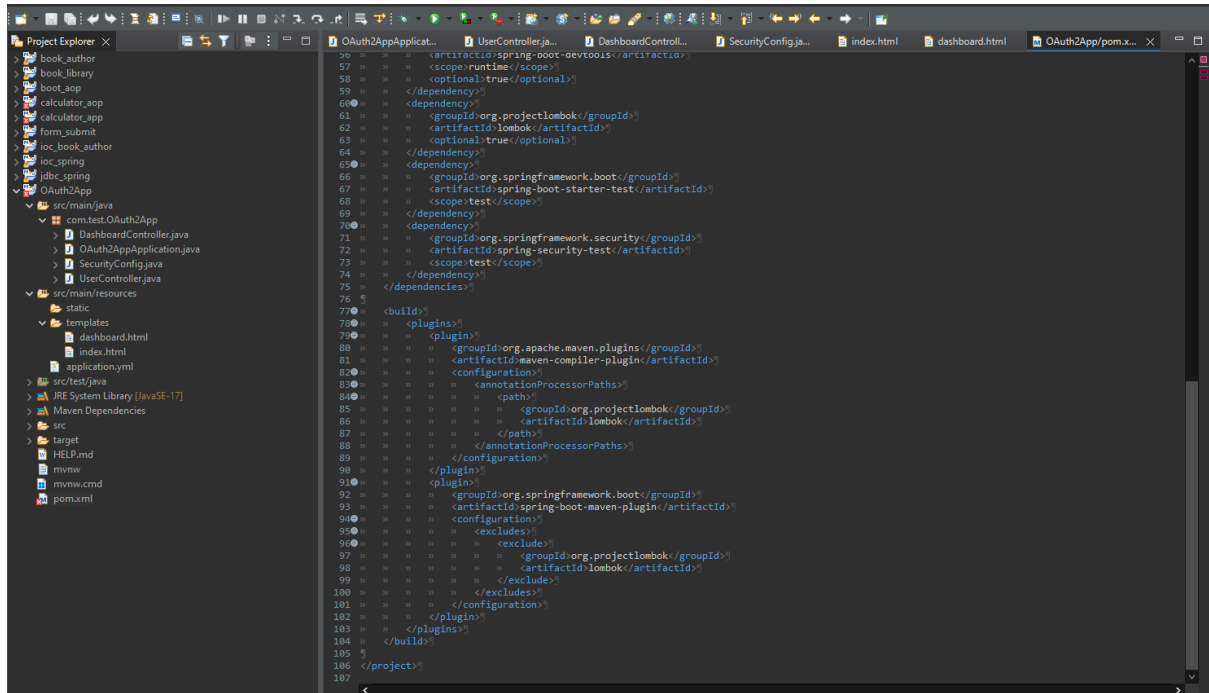


```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3   xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
4   <modelVersion>4.0.0</modelVersion>
5   <parent>
6     <groupId>org.springframework.boot</groupId>
7     <artifactId>spring-boot-starter-parent</artifactId>
8     <version>3.5.4</version>
9     <relativePath/> <!-- lookup parent from repository -->
10   </parent>
11   <groupId>com.test</groupId>
12   <artifactId>OAuth2App</artifactId>
13   <version>0.0.1-SNAPSHOT</version>
14   <name>OAuth2App</name>
15   <description>spring-boot-oauth2-google</description>
16   <url/>
17   <licenses>
18     <license/>
19   </licenses>
20   <developers>
21     <developer/>
22   </developers>
23   <scm>
24     <connection/>
25     <developerConnection/>
26     <tag/>
27     <url/>
28   </scm>
29   <properties>
30     <java.version>17</java.version>
31   </properties>
32   <dependencies>
33     <dependency>
34       <groupId>org.springframework.boot</groupId>
35       <artifactId>spring-boot-starter-oauth2-client</artifactId>
36     </dependency>
37     <dependency>
38       <groupId>org.springframework.boot</groupId>
39       <artifactId>spring-boot-starter-security</artifactId>
40     </dependency>
41     <dependency>
42       <groupId>org.springframework.boot</groupId>
43       <artifactId>spring-boot-starter-thymeleaf</artifactId>
44     </dependency>
45     <dependency>
46       <groupId>org.springframework.boot</groupId>
47       <artifactId>spring-boot-starter-web</artifactId>
48     </dependency>
49     <dependency>
50       <groupId>org.thymeleaf.extras</groupId>
51       <artifactId>thymeleaf-extras-springsecurity6</artifactId>
52     </dependency>
53   </dependencies>
54   <dependency>
55     <groupId>org.springframework.boot</groupId>
56     <artifactId>spring-boot-devtools</artifactId>
57     <scope>runtime</scope>
58     <optional>true</optional>
59   </dependency>
60   <dependency>
61     <groupId>org.projectlombok</groupId>
62     <artifactId>lombok</artifactId>
63     <optional>true</optional>
64   </dependency>
65   <dependency>
66     <groupId>org.springframework.boot</groupId>
67     <artifactId>spring-boot-starter-test</artifactId>
68     <scope>test</scope>
69   </dependency>
70   <dependency>
71     <groupId>org.springframework.security</groupId>
72     <artifactId>spring-security-test</artifactId>
73     <scope>test</scope>
74   </dependency>
75 </dependencies>
76   <build>
77     <plugins>
78       <plugin>
79         <groupId>org.apache.maven.plugins</groupId>
80         <artifactId>maven-compiler-plugin</artifactId>
81         <configuration>
82           <annotationProcessorPaths>
83             <path>
84               <groupId>org.projectlombok</groupId>
85               <artifactId>lombok</artifactId>
86             </path>
87           </annotationProcessorPaths>
88         </configuration>
89       </plugin>
90     </plugins>
91   </build>
92   <groupId>org.springframework.boot</groupId>
```

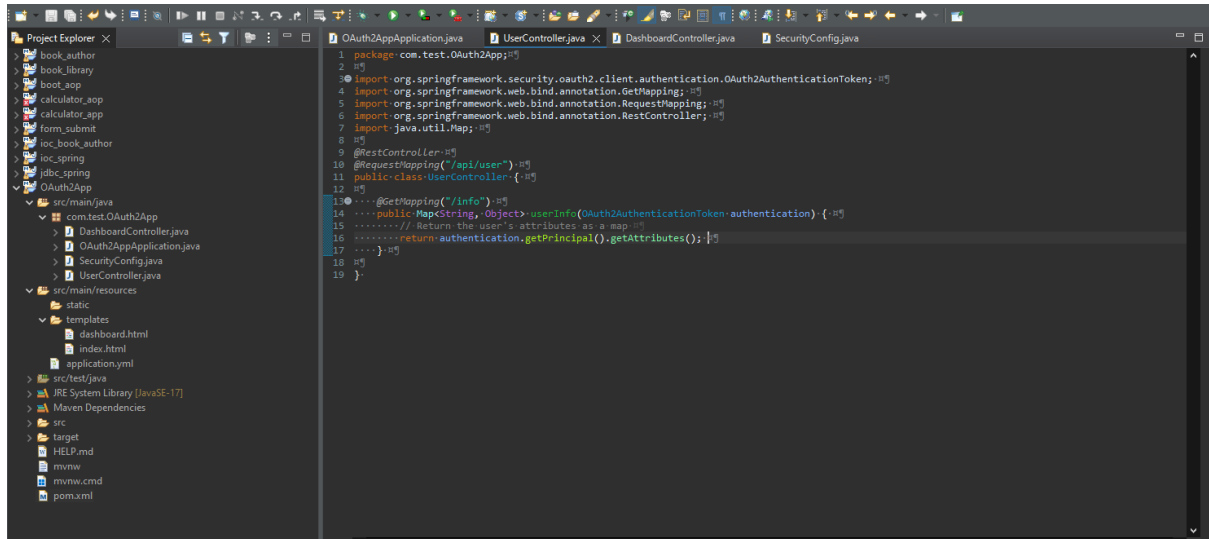


```
42   <groupId>org.springframework.boot</groupId>
43   <artifactId>spring-boot-starter-thymeleaf</artifactId>
44   </dependency>
45   <dependency>
46     <groupId>org.springframework.boot</groupId>
47     <artifactId>spring-boot-starter-web</artifactId>
48   </dependency>
49   <dependency>
50     <groupId>org.thymeleaf.extras</groupId>
51     <artifactId>thymeleaf-extras-springsecurity6</artifactId>
52   </dependency>
53   </dependencies>
54   <dependency>
55     <groupId>org.springframework.boot</groupId>
56     <artifactId>spring-boot-devtools</artifactId>
57     <scope>runtime</scope>
58     <optional>true</optional>
59   </dependency>
60   <dependency>
61     <groupId>org.projectlombok</groupId>
62     <artifactId>lombok</artifactId>
63     <optional>true</optional>
64   </dependency>
65   <dependency>
66     <groupId>org.springframework.boot</groupId>
67     <artifactId>spring-boot-starter-test</artifactId>
68     <scope>test</scope>
69   </dependency>
70   <dependency>
71     <groupId>org.springframework.security</groupId>
72     <artifactId>spring-security-test</artifactId>
73     <scope>test</scope>
74   </dependency>
75 </dependencies>
76   <build>
77     <plugins>
78       <plugin>
79         <groupId>org.apache.maven.plugins</groupId>
80         <artifactId>maven-compiler-plugin</artifactId>
81         <configuration>
82           <annotationProcessorPaths>
83             <path>
84               <groupId>org.projectlombok</groupId>
85               <artifactId>lombok</artifactId>
86             </path>
87           </annotationProcessorPaths>
88         </configuration>
89       </plugin>
90     </plugins>
91   </build>
92   <groupId>org.springframework.boot</groupId>
```

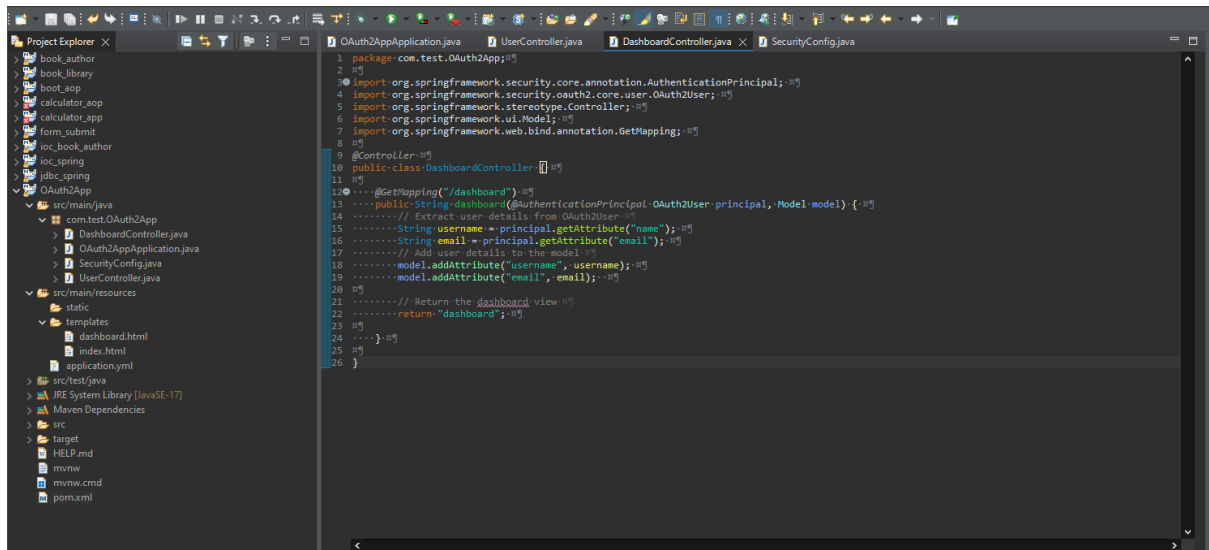
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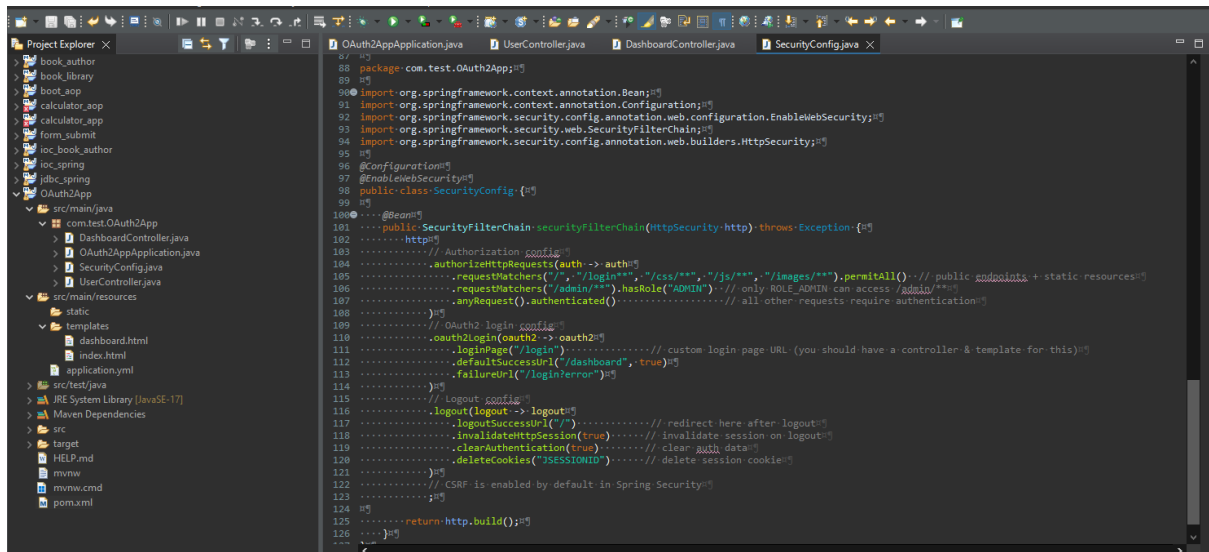
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```
1 package com.test.OAuth2App;
2
3 import org.springframework.security.oauth2.client.authentication.OAuth2AuthenticationToken;
4 import org.springframework.web.bind.annotation.GetMapping;
5 import org.springframework.web.bind.annotation.RequestMapping;
6 import org.springframework.web.bind.annotation.RestController;
7 import java.util.Map;
8
9 @RestController
10 @RequestMapping("/api/user")
11 public class UserController {
12
13     @GetMapping("/info")
14     public Map<String, Object> userInfo(OAuth2AuthenticationToken authentication) {
15         // Return the user's attributes as a map
16         return authentication.getPrincipal().getAttributes();
17     }
18 }
19
```



```
1 package com.test.OAuth2App;
2
3 import org.springframework.security.core.annotation.AuthenticationPrincipal;
4 import org.springframework.security.oauth2.core.user.OAuth2User;
5 import org.springframework.stereotype.Controller;
6 import org.springframework.ui.Model;
7 import org.springframework.web.bind.annotation.GetMapping;
8
9 @Controller
10 public class DashboardController {
11
12     @GetMapping("/dashboard")
13     public String dashboard(@AuthenticationPrincipal OAuth2User principal, Model model) {
14         // Extract user details from OAuth2User
15         String username = principal.getAttribute("name");
16         String email = principal.getAttribute("email");
17         // Add user details to the model
18         model.addAttribute("username", username);
19         model.addAttribute("email", email);
20
21         // Return the dashboard view
22         return "dashboard";
23     }
24 }
25
26
```



```
1 package com.test.OAuth2App;
2
3 import org.springframework.context.annotation.Bean;
4 import org.springframework.context.annotation.Configuration;
5 import org.springframework.security.config.annotation.web.configuration.EnableWebSecurity;
6 import org.springframework.security.web.SecurityFilterChain;
7 import org.springframework.security.config.annotation.web.builders.HttpSecurity;
8
9 @Configuration
10 @EnableWebSecurity
11 public class SecurityConfig {
12
13     @Bean
14     public SecurityFilterChain securityFilterChain(HttpSecurity http) throws Exception {
15         http
16             .authorizeHttpRequests(auth -> auth
17                 .requestMatchers("/", "/login", "/css/**", "/js/**", "/images/**").permitAll()
18                 .requestMatchers("/admin/**").hasRole("ADMIN")
19                 .anyRequest().authenticated()
20             )
21             .oauth2Login(oauth2 -> oauth2
22                 .loginPage("/login")
23                 .failureUrl("/loginError")
24             )
25             .logout(logout -> logout
26                 .logoutSuccessUrl("/")
27                 .invalidateHttpSession(true)
28                 .clearAuthentication(true)
29                 .deleteCookies("JSESSIONID")
30             )
31             .csrf(csrf -> csrf.enabled(false))
32         ;
33         return http.build();
34     }
35 }
36
```

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