## SSO Documentation

## Keycloak and Java JDK Setup

### Keycloak Setup

1. **Download Keycloak**
   * Visit the [Keycloak Downloads](https://www.keycloak.org/downloads) page.
   * Download Keycloak version 25.0.5:
     + Choose either the ZIP (SHA1) or TAR.GZ (SHA1) file.
2. **Extract the Downloaded File**
   * Extract the contents of the downloaded file to a location of your choice.
3. **Run Keycloak in Development Mode**
   * Open a Command Prompt window.
   * Navigate to the bin directory within the extracted Keycloak folder. For example:

C:\Users\user\Downloads\keycloak-25.0.5\bin

* + You can open Command Prompt directly in this path by typing cmd in the address bar of the File Explorer window and pressing Enter.
  + Start Keycloak in development mode by running the following command:

bin\kc.bat start-dev

if the java jdk is not found or java\_HOME setup is not found , then setup the java jdk setup by the following given below step.

### Java JDK Setup

If Java JDK is not already installed on your system, follow these steps:

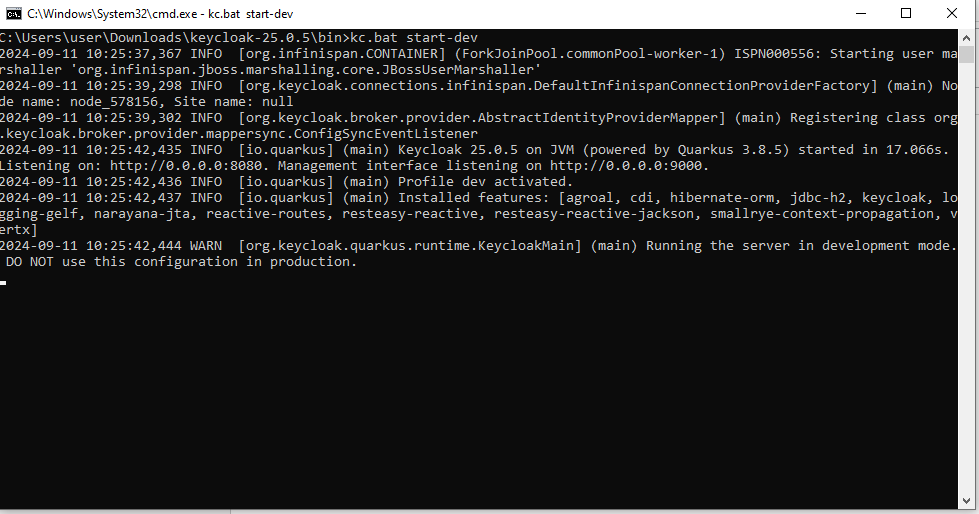
1. **Download Java JDK**
   * Download the Java JDK 22 x64 Installer from the following link: [jdk-22\_windows-x64\_bin.exe](https://download.oracle.com/java/22/latest/jdk-22_windows-x64_bin.exe).
2. **Install Java JDK**
   * Run the downloaded installer and follow the on-screen instructions to complete the installation.
3. **Set Up JAVA\_HOME and Update PATH**
   * Open the Environment Variables settings:
     + Press Windows Key and search for “Environment Variables”.
     + Click on “Edit environment variables for your account”.
   * In the Environment Variables window:
     + **Add JAVA\_HOME Variable:**
       - Under the "User variables" section, click “New”.
       - Set the variable name to JAVA\_HOME and the variable value to the path of the Java JDK installation, e.g., C:\Program Files\Java\jdk-22.
       - Click “OK”.
     + **Update PATH Variable:**
       - In the "User variables" section, find and select the Path variable, then click “Edit”.
       - Click “New” and add %JAVA\_HOME%\bin.
       - Click “OK” to save the changes.
   * Verify the Java JDK installation:
     + Open a new Command Prompt window and run:

java --version

* + - You should see the version information for Java JDK 22.

1. After setting up Java JDK, go back to the Keycloak bin directory and run the following command to start Keycloak in development mode:

bin\kc.bat start-dev

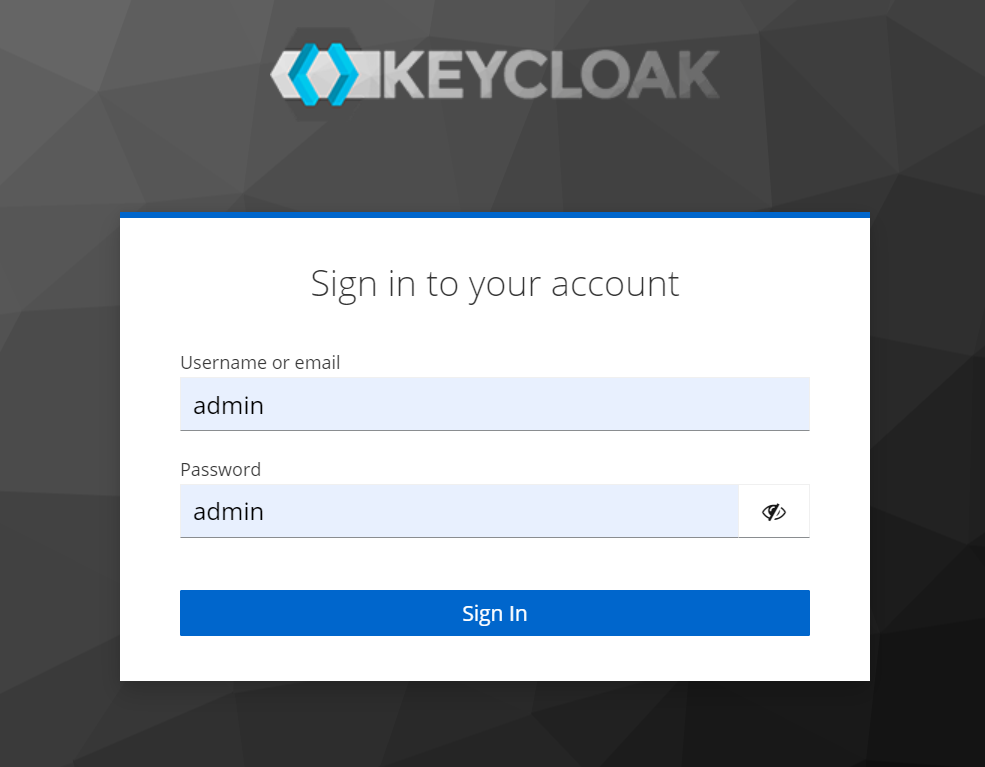


After this step   
Go to browser and type “ <http://localhost:8080/> “

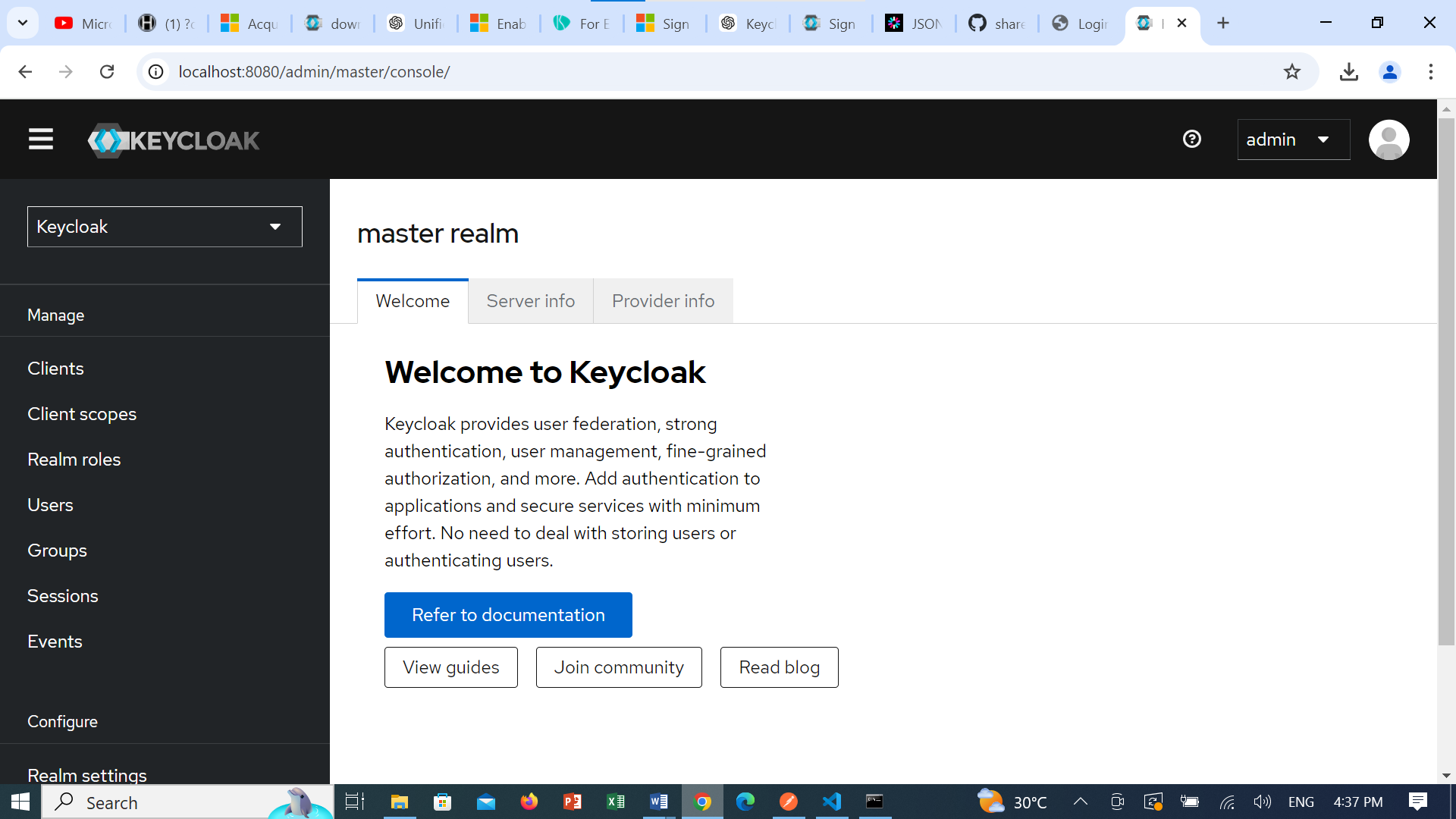
-It will give the option for registration for new user

-After registration login using that account.

Example :-



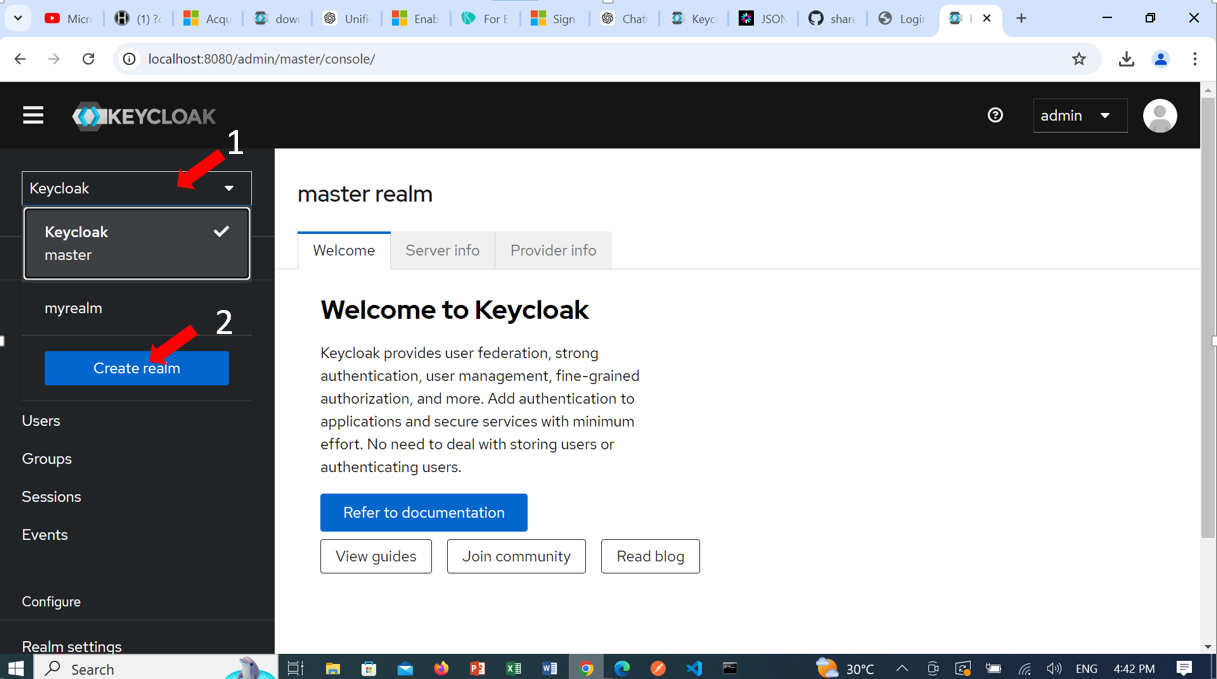
Once you got logged in you need to check the dashboard of keycloak



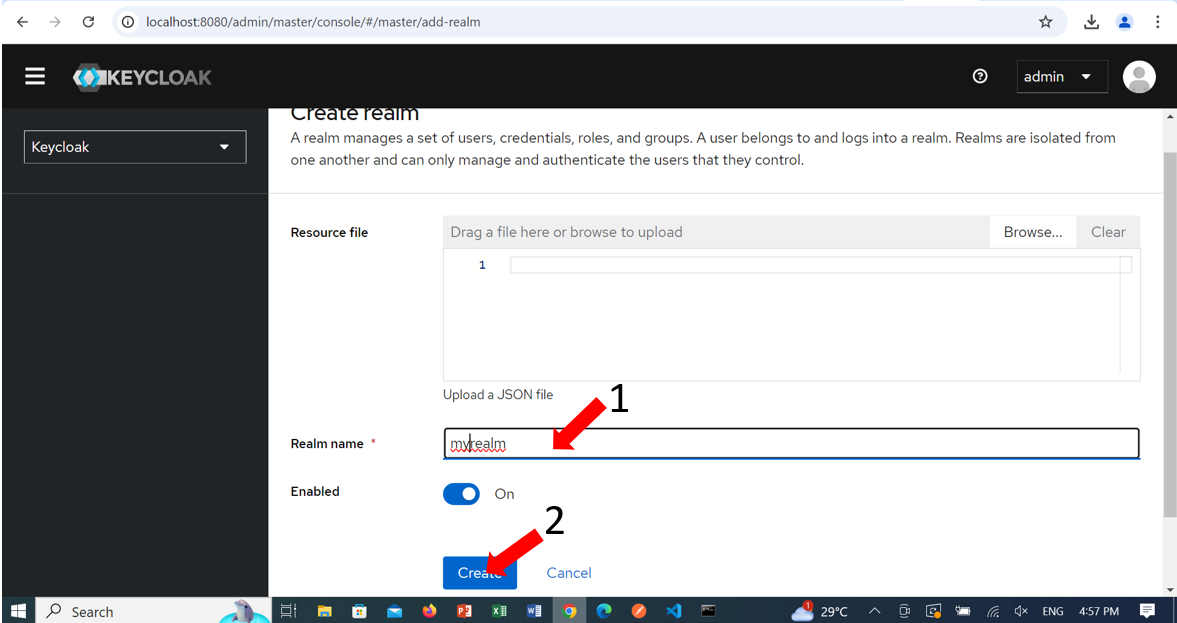
Later you need to create an realm

**Create a New Realm**

1. **Navigate to Realms:**
   * On the left-hand menu, click on the “Master” dropdown.
   * Click “Create realm” from the dropdown menu.



1. **Fill in Realm Details:**
   * **Name**: Enter a unique name for your realm. This name will be used to identify the realm within Keycloak.
   * **Enabled**: Make sure this is checked to enable the realm.
2. **Click “Create”**:
   * After filling in the necessary details, click the “Create” button to create the new realm.



**Configure Realm Settings**

1. **General Settings:**
   * After creating the realm, you’ll be taken to the realm settings page. Here, you can configure general settings, such as:
     + **Display Name**
       1. Make your display name as unique(mostly as realm name)
       2. Click on “save”
     + **Enabled/Disabled**
     + **Login Theme**
       1. Enable the following login screen customization
          - User registration
          - Forgot password
          - Remember me
          - Email as username

**Add Clients**

1. **Navigate to the “Clients” Tab:**
   * Here you can see a list of existing clients and add new ones.
2. **Create a New Client:**
   * Click on the “Create client” button.
   * **Client ID**: Enter a unique identifier for the client. (ex:- myclient)
   * **Client type**: Choose the protocol (e.g., OpenID Connect, SAML).
   * Click on “next” you will redirect to the “Capability config”
   * Now we have to make “enable the Client authentication” and mark the “implicit flow”
   * Click on “next” you will redirect to the “Login settings”
   * **Root URL**: Specify the base URL “ http://localhost:8080” of the application(if needed).
   * Click “Save”.
3. **Configure Client Settings:**
   * After creating the client, configure the settings such as:
     + **Access Type** (e.g., confidential, public)
     + **Redirect URIs**
     + **Web Origins**
     + **Client Credentials**

**Add Users**

1. **Navigate to the “Users” Tab:**
   * Click on “Users” in the left menu.
2. **Add a New User:**
   * Click the “Add user” button.
   * Fill in user details like username, email, and first/last name.
   * Click “Save”.
   * Now a user detail are came with not verified email address we need to verify that
   * Click on “username”
   * Enable the “email verified”
   * Click on “save”
3. **Set User Password:**
   * After creating the user, go to the “Credentials” tab.
   * Set a password for the user and configure password policies if needed.

**6. Test the Realm**

* Test the realm by using the Keycloak login endpoint to ensure that it’s working as expected. For example, you can use the Keycloak login URL for your realm to verify authentication in postman.

### Postman Setup for Keycloak User Login

**1. Set the Request Type to POST:**

* **URL**: <http://localhost:8080/realms/your_realm/protocol/openid-connect/token>

your\_realm : the name of realm you created

**2. Go to the Body tab:**

* Choose **x-www-form-urlencoded**.

**3. Add the following parameters in the body:**

| **Key** | **Description** |
| --- | --- |
| grant\_type | The type of OAuth2 grant. Use password for username/password authentication. |
| client\_id | The client ID registered in Keycloak. |
| client\_secret | The client secret registered in Keycloak. |
| username | The username you are testing. |
| password | The corresponding password for the username. |

1. **Send the request.**

### Response:

* If successful, you'll receive a JSON response containing the access token (access\_token), refresh token (refresh\_token), token type (Bearer), and expiration (expires\_in).

This token can now be used to authenticate further requests to Keycloak-protected APIs.

### Postman Setup for Token Introspection(user details)

**1. Set the Request Type to POST:**

* **URL**: <http://localhost:8080/realms/your_realm/protocol/openid-connect/token/introspect>
* your\_realm : the name of realm you created

**2. Go to the Body tab:**

* Choose **x-www-form-urlencoded**.

**3. Add the following parameters in the body:**

| **Key** | **Description** |
| --- | --- |
| token | The access token or refresh token to introspect. |
| client\_id | The client ID registered in Keycloak. |
| client\_secret | The client secret associated with the client in Keycloak. |

**4. Send the request.**

### Response:

If successful, Keycloak will return a JSON object that provides details about the token, such as whether it is active, the username, roles, and expiration.