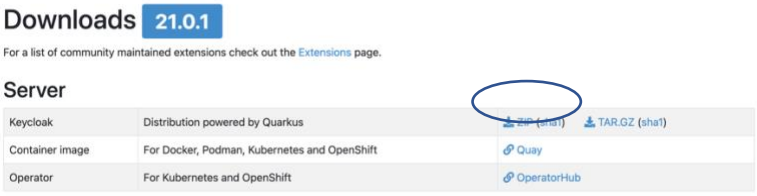
1. For java 8
   https://www.keycloak.org/archive/downloads-13.0.1.html
2. To stat keycloack
   standalone.bat -Djboss.http.port=8181

3. Download keycloak zip from below link
   https://www.keycloak.org/downloads
   For java 11 and up

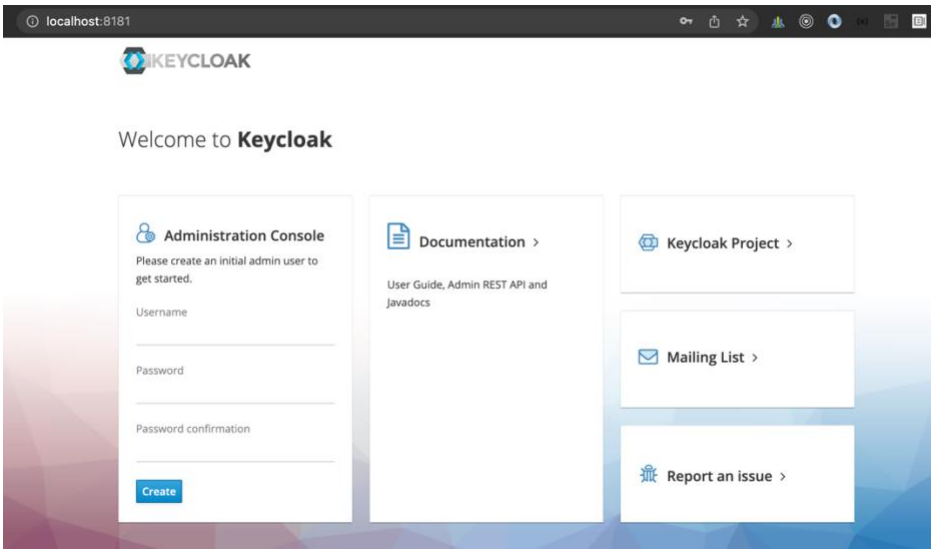


4. Extract the zip folder and open terminal / cmd from within the bin folder
5. Execute below command to start keycloak server
   MAC -> ./kc.sh start-dev --http-port=8181
   WINDOWS -> kc.bat start-dev --http-port=8181

```
(base) Manishs-MacBook-Pro:bin Shalini$ ./kc.sh start-dev --http-port=8181
Updating the configuration and installing your custom providers, if any. Please wait.
```

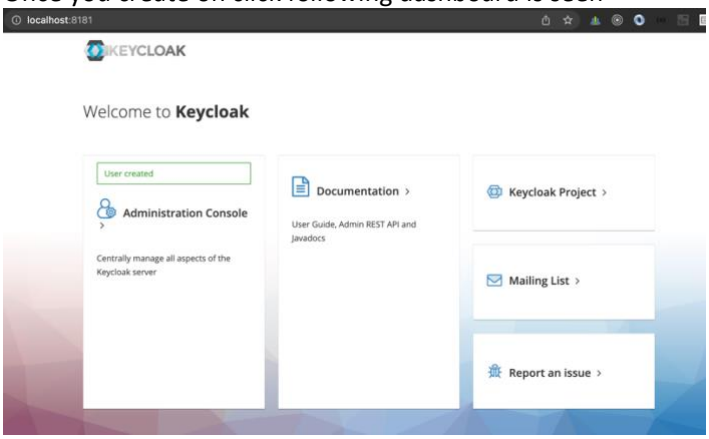
NOTE : Please wait it will take some time to start the server

6. Open server on browser at url http://localhost:8181
7. Dashboard looks as follows:

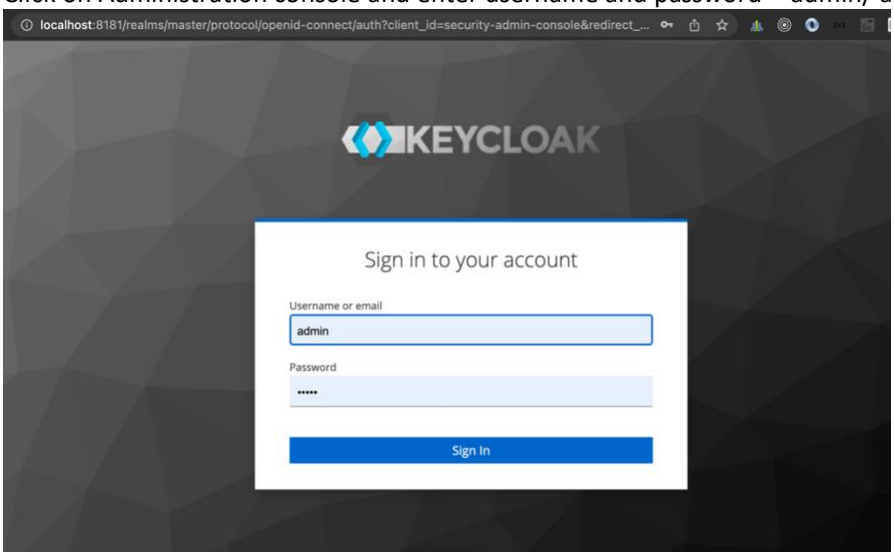


8. Center username – admin, password – admin and click Create

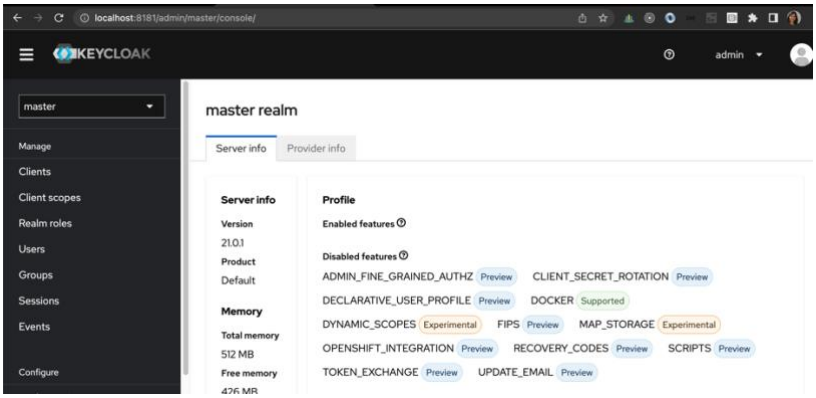
9. Once you create on click following dashboard is seen



10. Click on Administration console and enter username and password – admin/ admin



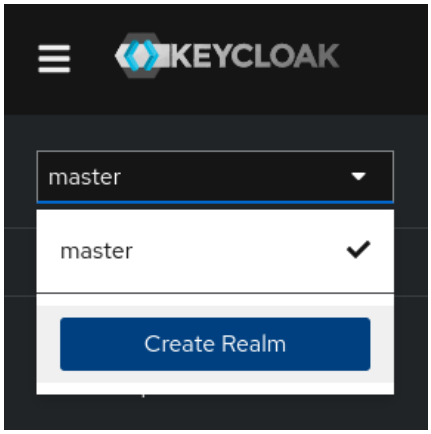
11. Once sign in -> dashboard looks as follows:



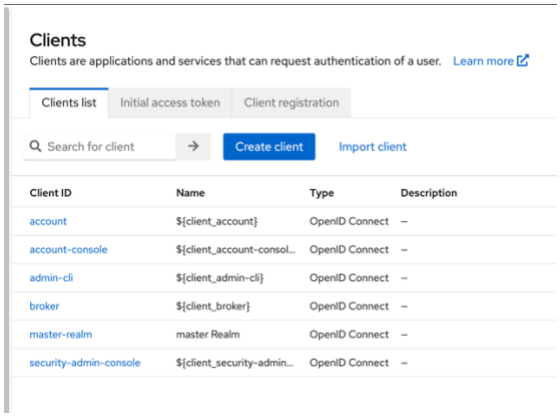
12. https://www.keycloak.org/getting-started/getting-started-docker#_create_a_realm

13. Use these steps to create the first realm.
    a. Open the Keycloak Admin Console.
    b. Click the word master in the top-left corner, then click Create realm.
    c. Enter **oauth-demo-realm** in the Realm name field.

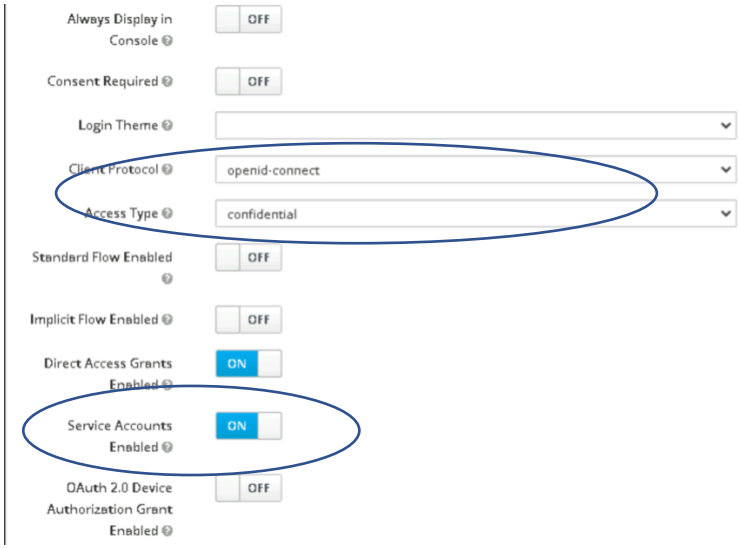
d. Click Create.



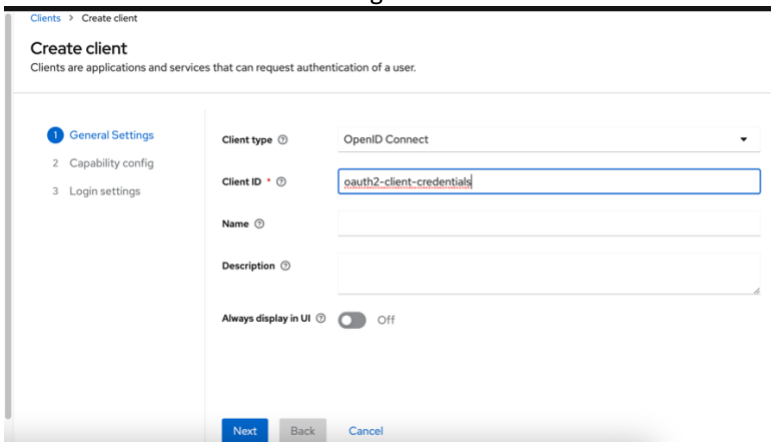
14. Secure the first application
    a. To secure the first application, you start by registering the application with your Keycloak instance:
    b. Open the Keycloak Admin Console.
    c. Click Clients.
    d. Click Create client



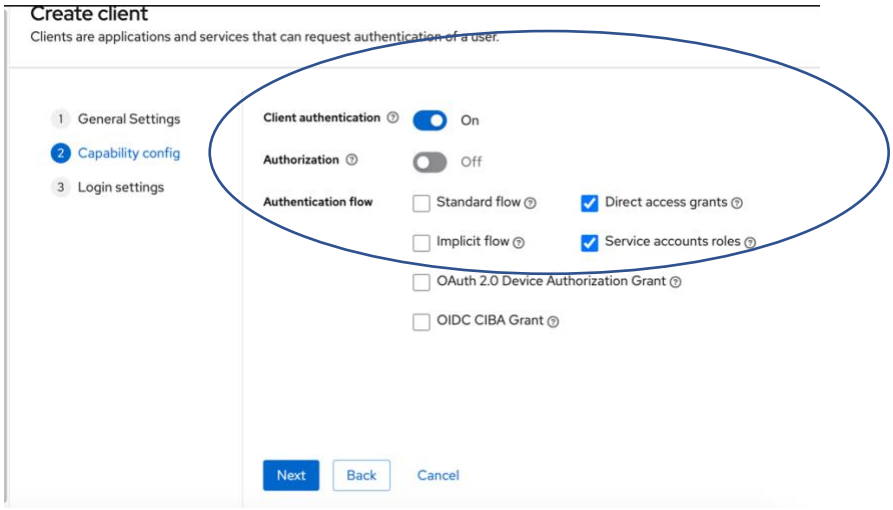
e. For java 8



f. Fill in the form with the following values:

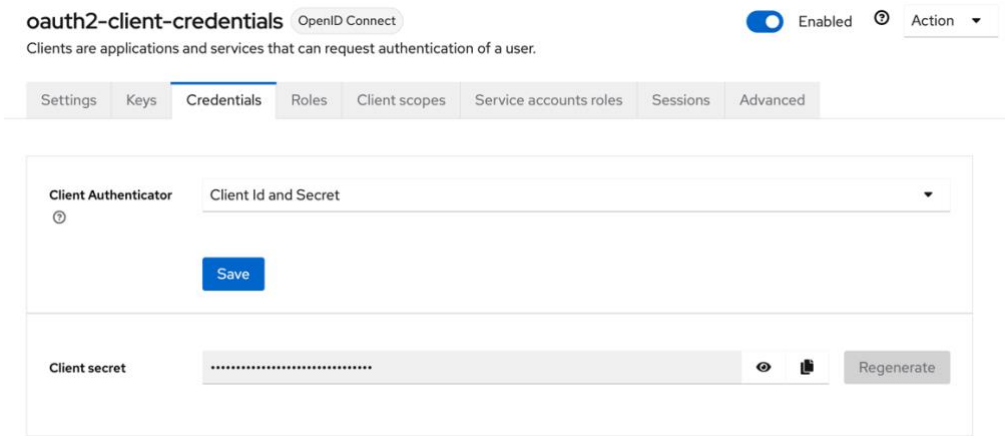


g. Click Next – select the following



h. Click Next and Save

i. After save dashboard looks as follows: Click on Credentials tab for client secret

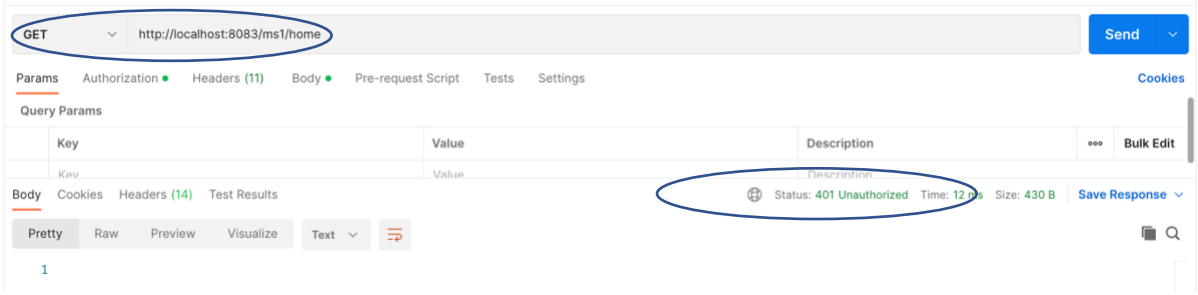


15. Create a spring boot application with following dependencies

```
<dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-web</artifactId>
```

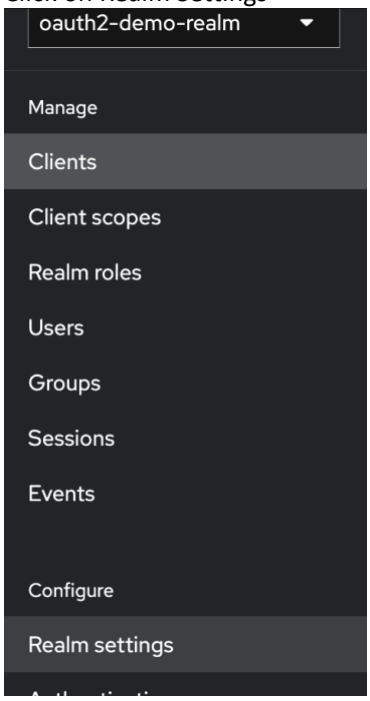
```
</dependency>
<dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-oauth2-client</artifactId>
</dependency>
<dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-oauth2-resource-server</artifactId>
</dependency>
<dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-security</artifactId>
</dependency>
<dependency>
      <groupId>org.springframework.security</groupId>
      <artifactId>spring-security-oauth2-jose</artifactId>
 </dependency>
<dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-devtools</artifactId>
        <scope>runtime</scope>
        <optional>true</optional>
</dependency>
```

16. The project will be available on github
17. Start the spring boot project. Once successfully started open postman and hit the rest controller.
18. Should get unauthorized as follows:

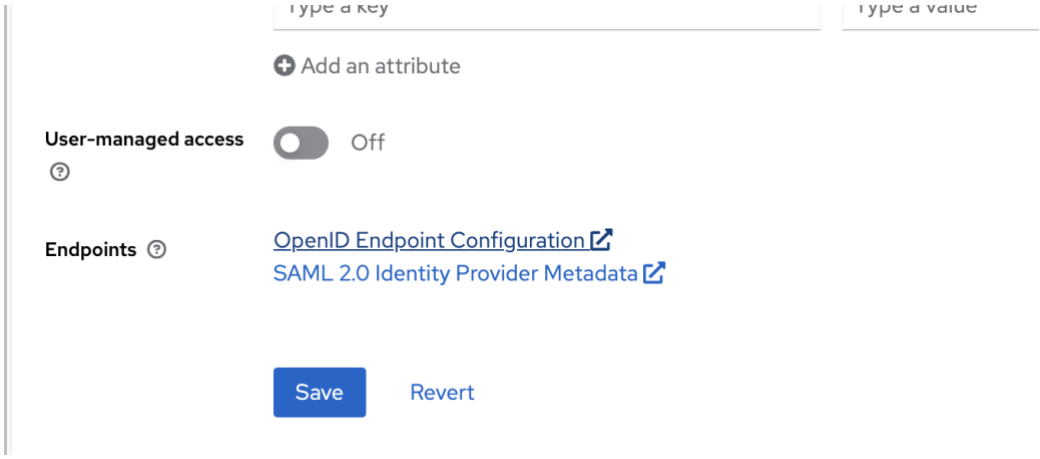


19. Need to get access token before hitting the url.
20. To access the configuration created by keycloak to register oauth-resource server

a. Click on Realm Settings



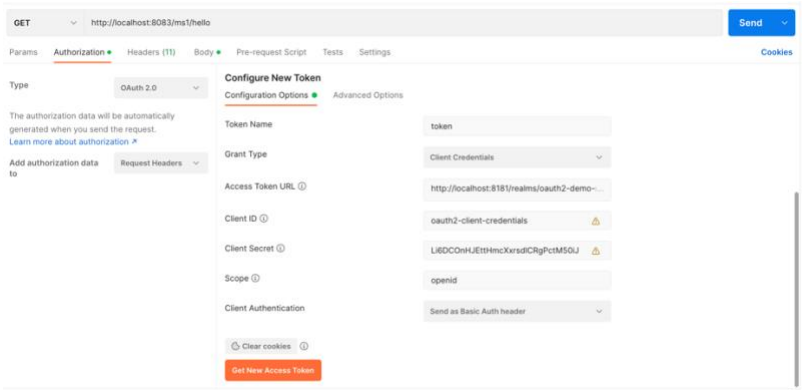
b. Click on OpenID Endpoint Configuration to open the configuration file:



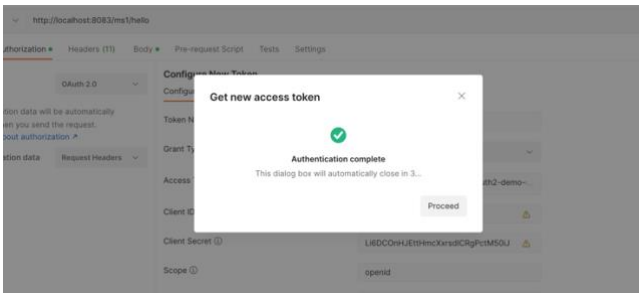
21. The json looks as follows:
    Issuer , jwks-uri and token_endpppoint are what we will need

22. Open POSTMAN to get the access token to successfully connect to microservice
23. Enter details as follows

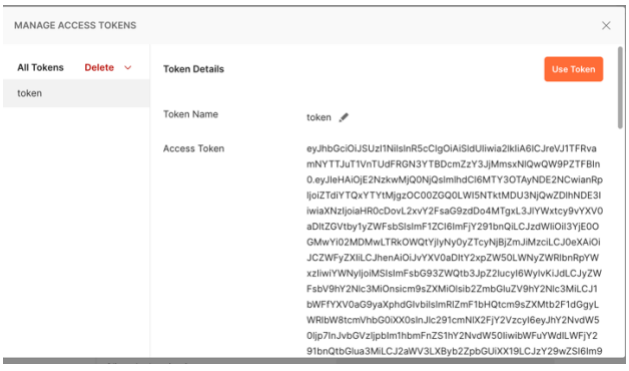
a. Grant type : Client credentials
b. Access token url – copy token-endpoint from json file
c. Client Id : oauth2-client-credentials
d. Client Secret – copy from keycloack Clients
e. Scope – openid
f. Client Authentication – keep it as it is
g. Click on Get new access token



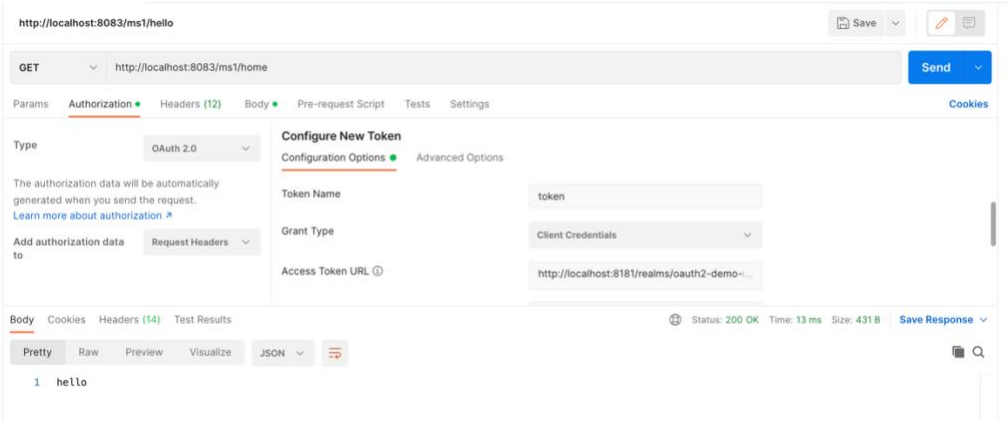
24. Should get Authentication Complete as follows:



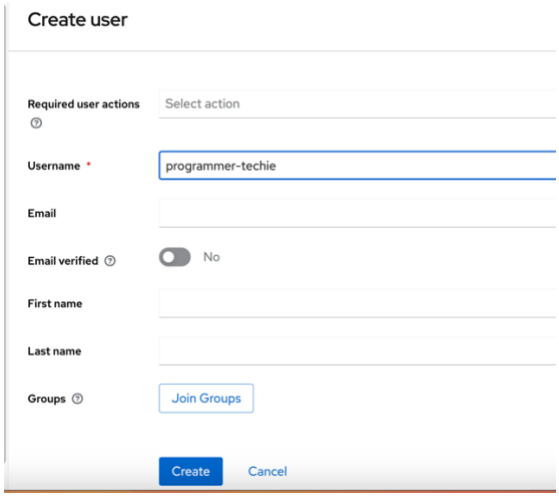
25. Token looks as follows: Click Use Token



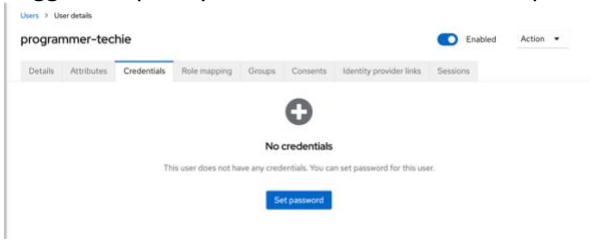
26. Now should get success and a hello message

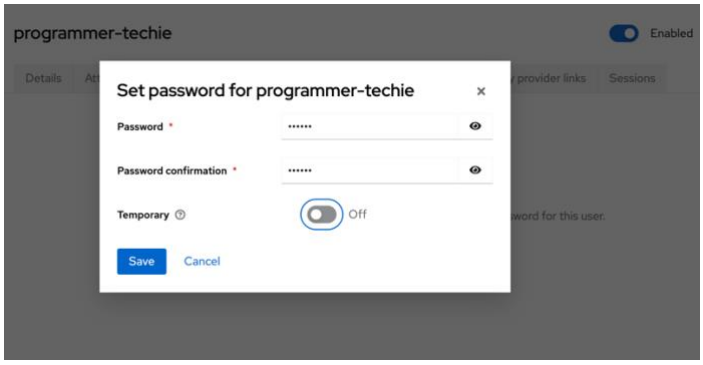


27. User is used if need to create and Oauth client for MVC applications
28. Create a user
    a. Initially, the realm has no users. Use these steps to create a user:
    b. Open the Keycloak Admin Console.
    c. Click Users in the left-hand menu.
    d. Click Create new user.
    e. Fill in the form with the following values:
        i. Username: programmer-techie
        ii. First name: any first name or optional
        iii. Last name: any last name or optional
    f. Click Create.



29. This user needs a password to log in. To set the initial password:
    a. Click Credentials at the top of the page.
    b. Fill in the Set password form with a password.
    c. Toggle Temporary Off so user does not need update this password at the first login.





YOUTUBE LINKS:

1. https://youtu.be/t9O99l4gjAc - spring security basics - oauth
2. https://youtu.be/mPPhcU7oWDU - spring boot microservice crash course
3. https://youtube.com/playlist?list=PLqq-6Pq4lTTYTEooakHchTGglSvkZAjnE – complete security playlist [Kaushik – microservices playlist]
4. https://youtu.be/996OiexHze0 - Best explanation for understanding oauth terminologies [OKTA]
5.