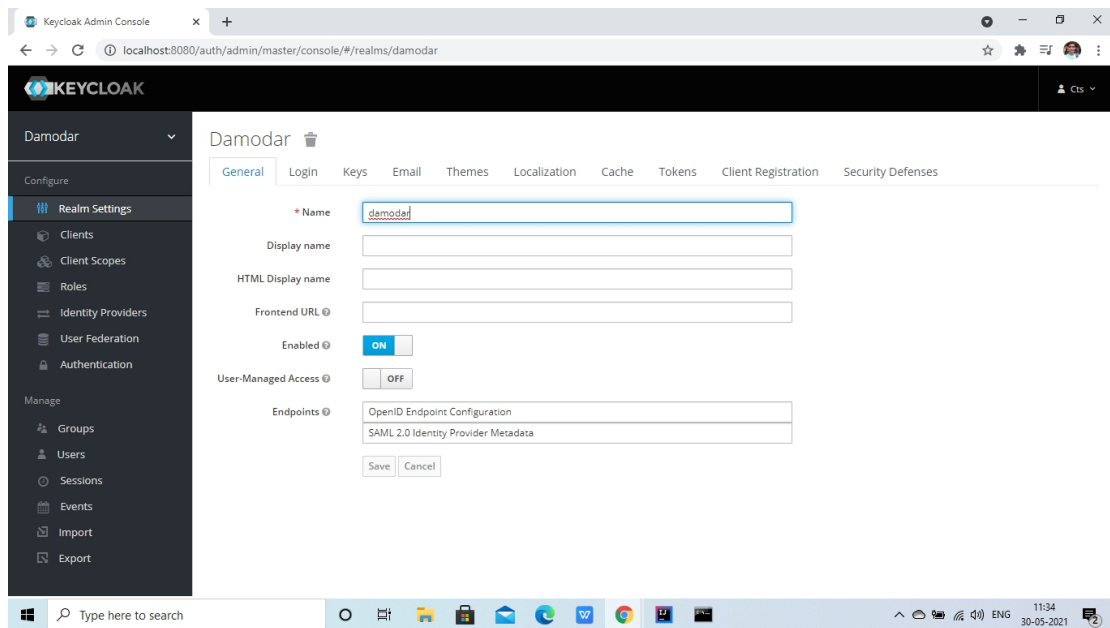


## Keycloak Integration With Spring Boot

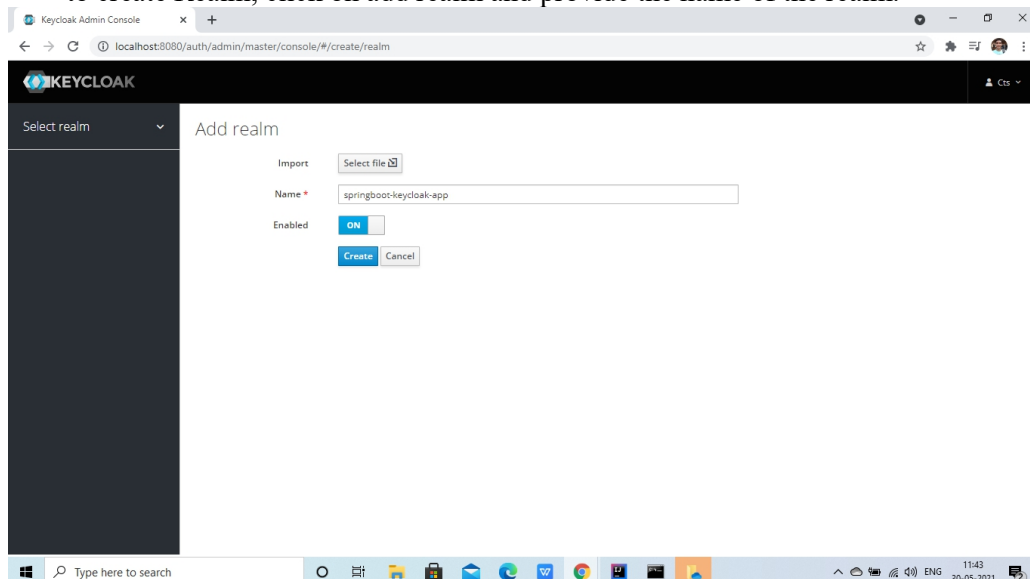
**Keycloak** is a identity and access management tool that provide easy way to secure modern microservices based application. Primary focus of this document is to provide an overview to secure Spring Boot Rest Api's.

First we need to configure our keycloak application. Please follow steps that are given below.

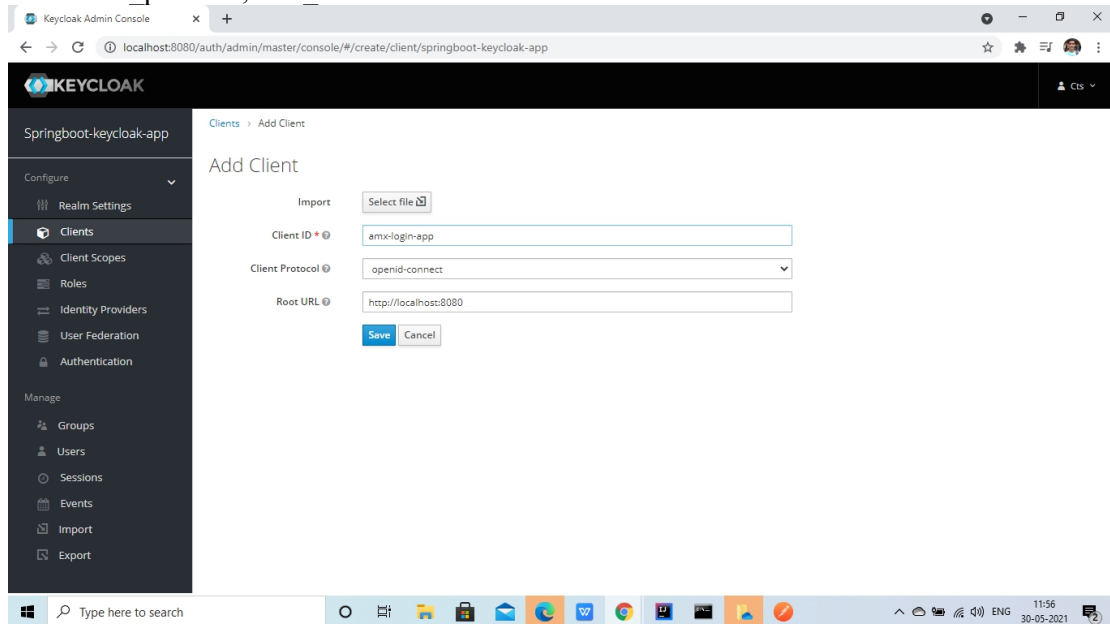
- Go to keycloak download page ( <https://www.keycloak.org/downloads> ) and downloads zip version. Extract the folder under C:// and inside C:\keycloak-13.0.1\bin folder just run standalone.bat file. It will automatically run keycloak server.
- After running of keycloak server, we need to login keycloak server auth url (http://localhost:8080/auth/) and need to set up username and password for the first time.
- After successful login, a page below will open.



- Now, we need to create a realm, **Realm**: is a set of users, roles, credentials, groups etc. to create Realm, click on add realm and provide the name of the realm.



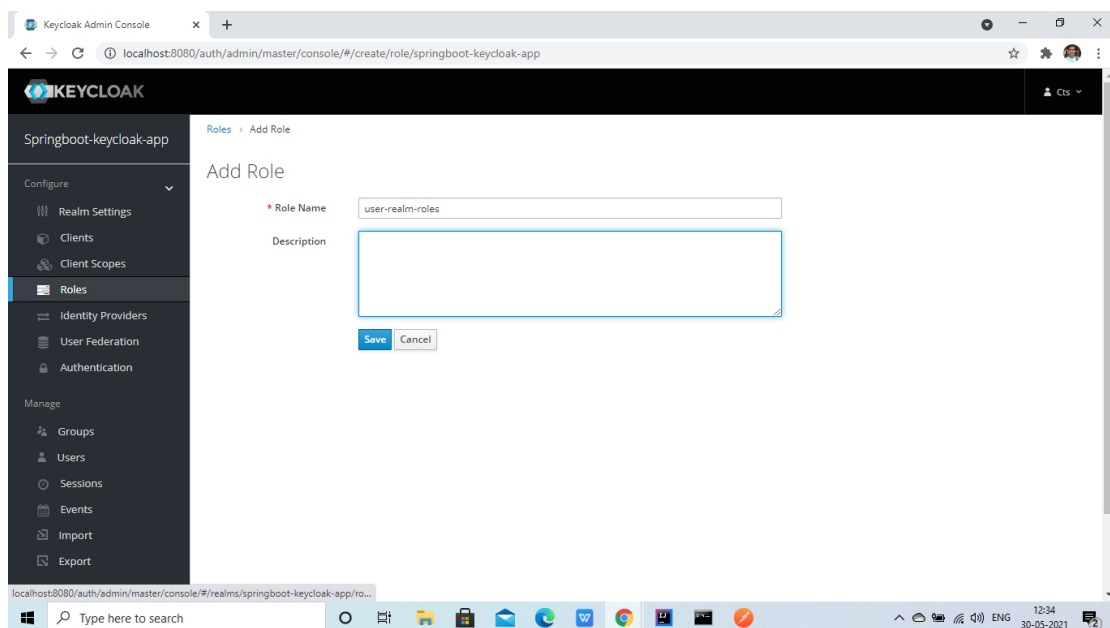
- Now we have to create clients, **CLIENT** is a application or service that tells keycloak to authenticate users for creating keycloak client we need to pass three values, client\_id, client\_protocol, root\_url.

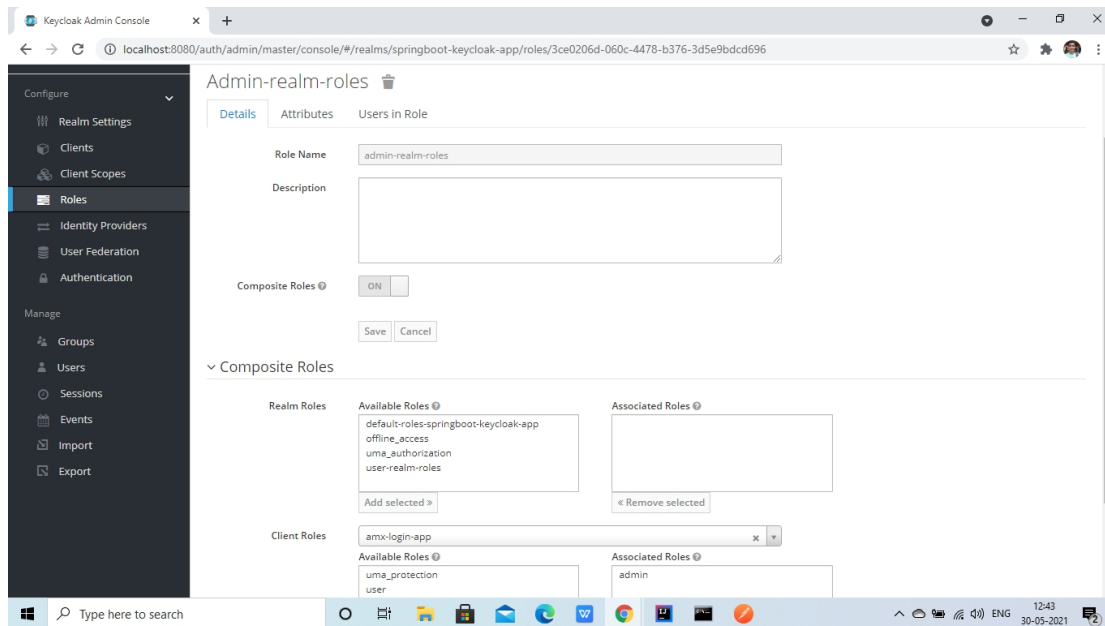


- Now we have to set access\_type to **confidential**, service accounts enabled to **ON**, authorization enabled to **ON**.

After creating client we need to create user level roles. We will create two roles, admin and user role. To create role click on roles button and then provide role name to create.

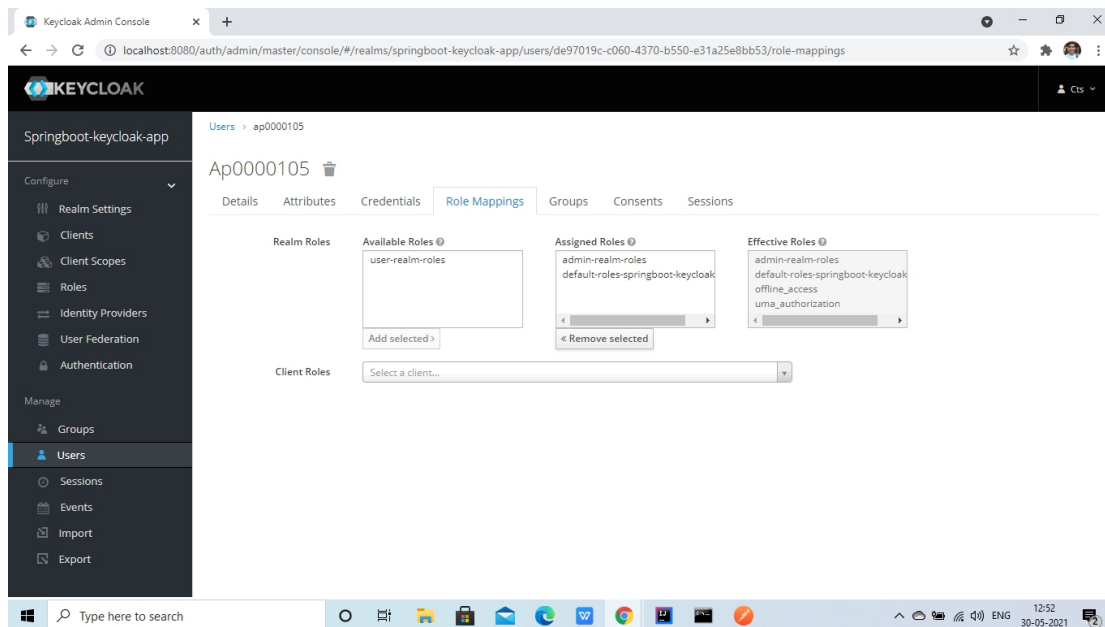
Assume that some API will be accessible by user role and some by admin role. Most often application will access realm roles rather than client role. We have to assign client role in realm roles as composite roles.

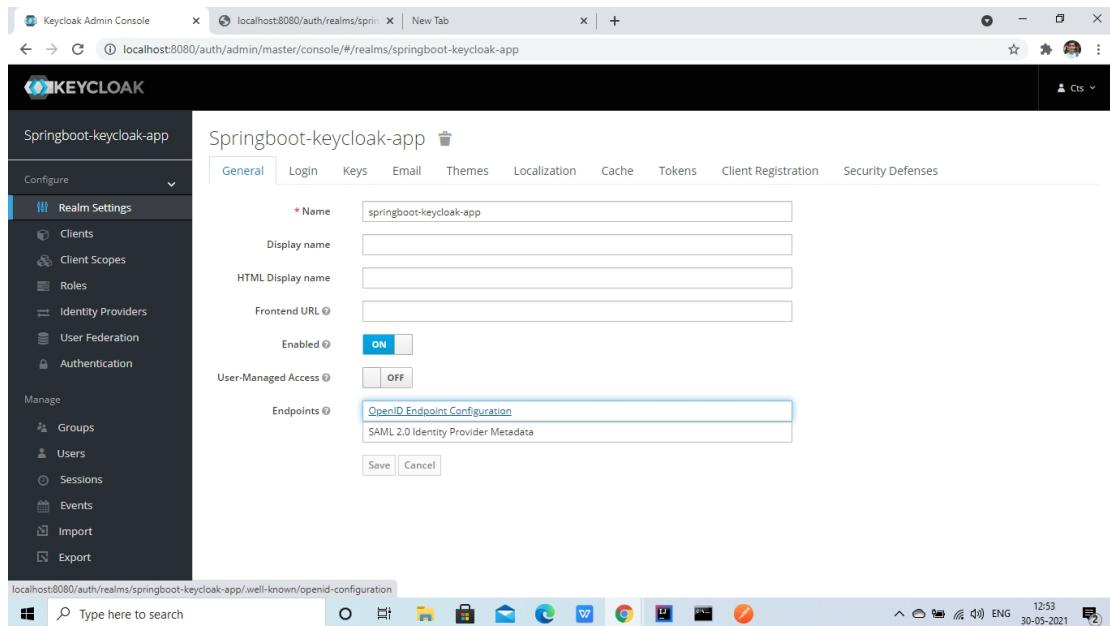




## Create users:

We will create users AP0000103 for user-app roles and AP0000105 for admin roles.

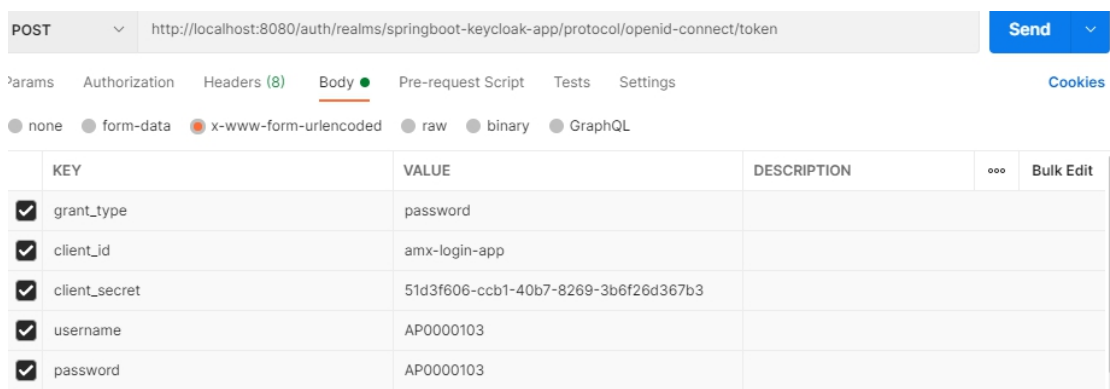




Now click on OpenID Endpoint Configuration link to get below details.

```
{
  "issuer": "http://localhost:8080/auth/realms/springboot-keycloak-app",
  "authorization_endpoint": "http://localhost:8080/auth/realms/springboot-keycloak-app/protocol/openid-connect/auth",
  "token_endpoint": "http://localhost:8080/auth/realms/springboot-keycloak-app/protocol/openid-connect/token",
  "introspection_endpoint": "http://localhost:8080/auth/realms/springboot-keycloak-app/protocol/openid-connect/token/introspect",
  "userinfo_endpoint": "http://localhost:8080/auth/realms/springboot-keycloak-app/protocol/openid-connect/userinfo",
  "end_session_endpoint": "http://localhost:8080/auth/realms/springboot-keycloak-app/protocol/openid-connect/logout",
  "jwks_uri": "http://localhost:8080/auth/realms/springboot-keycloak-app/protocol/openid-connect/certs",
  "check_session_iframe": "http://localhost:8080/auth/realms/springboot-keycloak-app/protocol/openid-connect/login-status-iframe.html",
  "grant_types_supported": [
    "authorization_code",
    "implicit",
    "refresh_token",
    "password",
    "client_credentials",
    "urn:ietf:params:oauth:grant-type:device_code",
    "urn:openid:params:grant-type:ciba"
  ],
  "response_types_supported": [
    "code",
    "none",
    "id_token",
    "token",
    "id_token token",
    "code id_token",
    "code token",
    "code id_token token"
  ],
  "subject_types_supported": [
    "public",
    "pairwise"
  ],
  "id_token_signing_alg_values_supported": [
    "PS384",
    "ES384",
    "RS384",
    "none"
  ]
}
```

Open postman and call service like below.



```
{
  "access_token": "eyJhbGciOiJSUzI1NiIsInR5cCIgOiAiSldUIiwia2lkIiA6ICJ3YWtibzFXcjcNBNUFoYzI1NRThhMjE5TzZmSUzVjVzZGwUFLZDVVNzRZdGVZIn0.eyJleHAiOiJlE2MjIzNjA2MjAsImhhdCI6MTYyMjM2MDMyMCwianRpIjoimDY3NjhYzgtYzZkMS00N2IyLWI1ZGZlZDdmOTUyZjY4MDYyIiwiaXNzIjoiaHR0cDovL2xvY2FsaG9zdDo4MDgwL2F1dGgvcmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiaHR0cDovL2xvY2FsaG9zdDo4MDgwL2F1dGgvcmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd1MS00ZjkwLTk2YTAtYWR1Mjk5ZGU1ZDlkIiwiaWYyNyIjoimSIsImFsbG93ZWQtb3JpZ2lucyI6WyJodHRwOi8vbG9jYXRob3N0OjgwODAiXSwicmluZ2Jvb3Qta2V5Y2xvYWstYXBwIiwiaXVkiIjoiyWVjb3VudCIsInN1YiI6IiJfJmM2MWE3LTJjODQtdNDlhmS1hM2Y1LTE5MWNiMDZmZjk4YSIsInR5cCI6I6Ikj1YXJlciIsImF6cCI6ImFteC1sb2dpci1hcHAiLCJzZXNzaW9uX3N0YXRRIjoizTEwYzNhMjItNjd
```