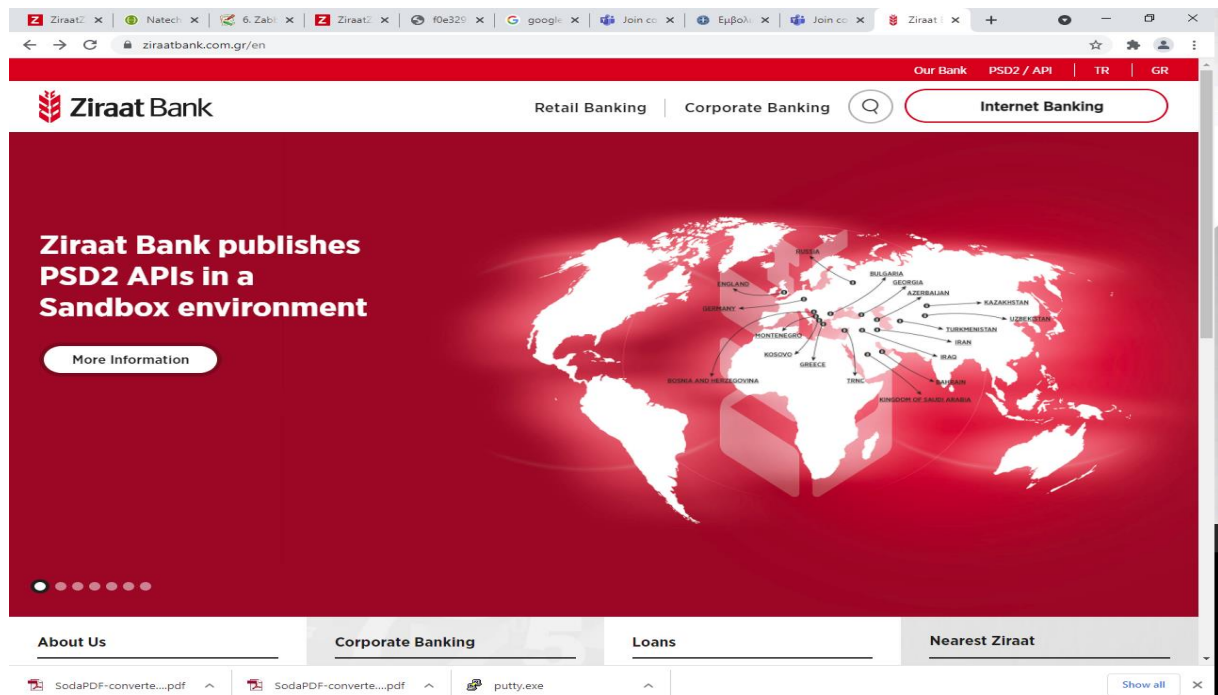
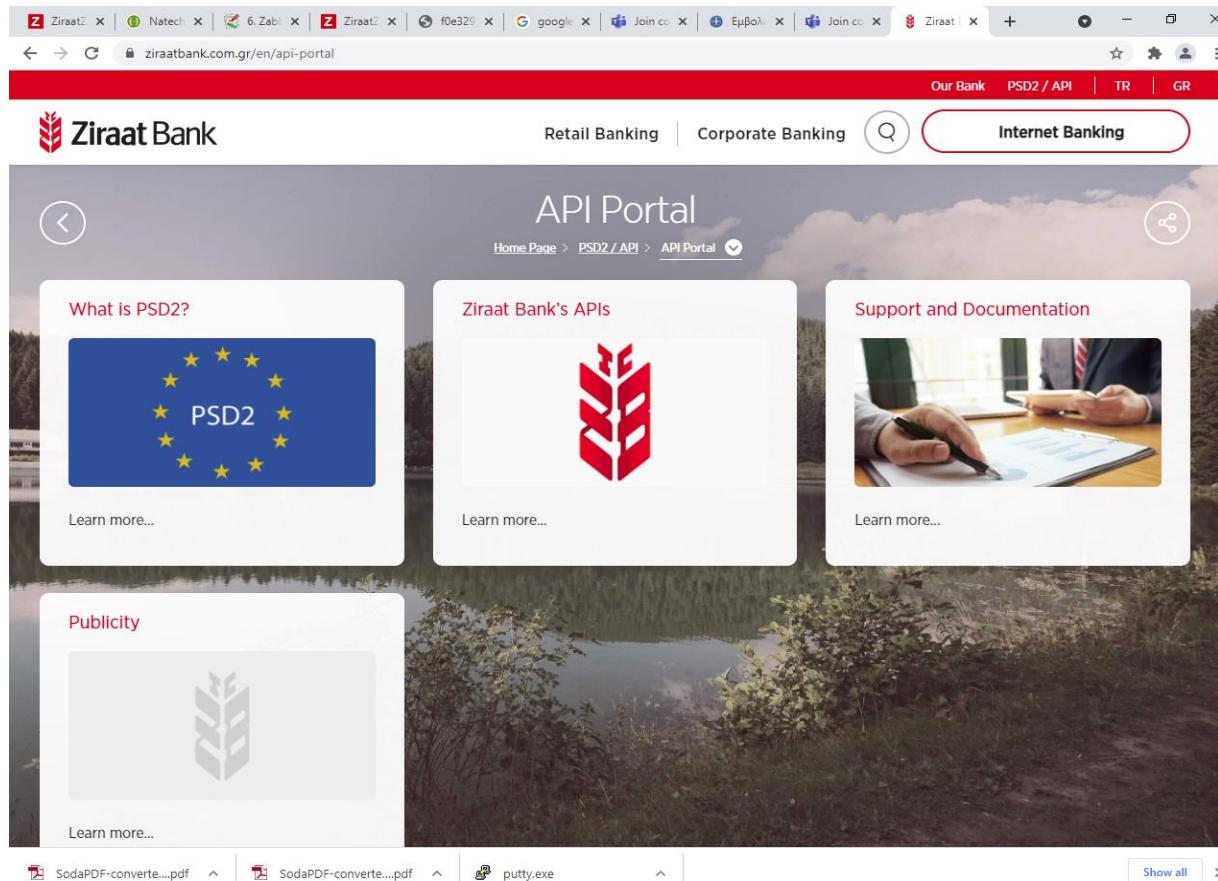


API monitoring procedure from Ziraat bank website

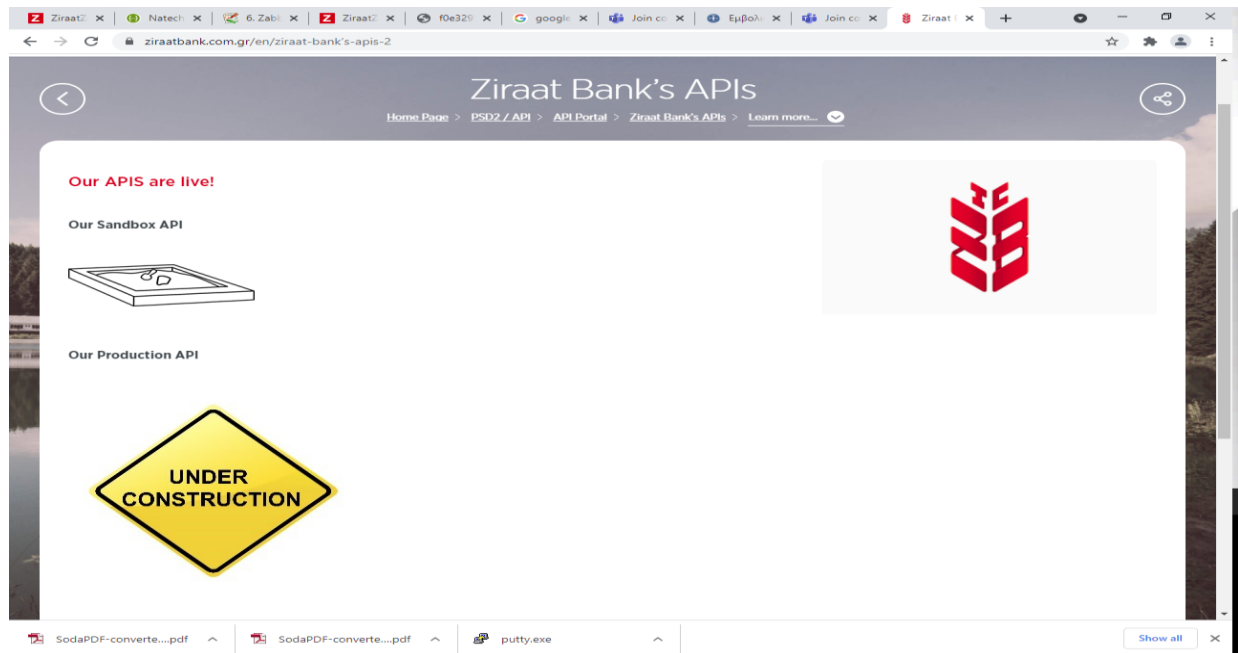
From the bank's website <https://www.ziraatbank.com.gr/> initially the user selects PSD2 → API



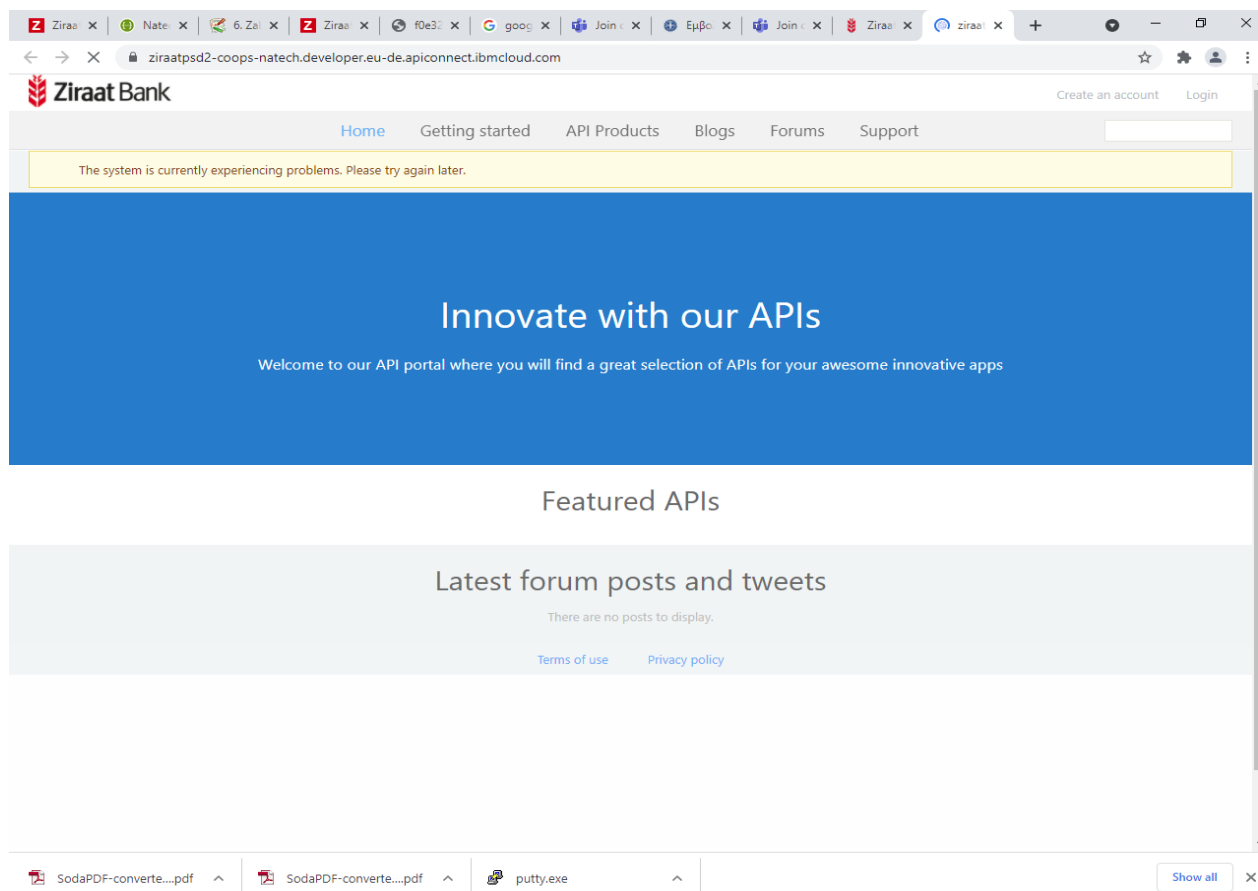
Then the user selects → Ziraat Bank's APIs



Then the user selects → Ziraat Bank's APIs



And then the user is directed to the following page where the API's are monitored :
(<https://ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com/>)

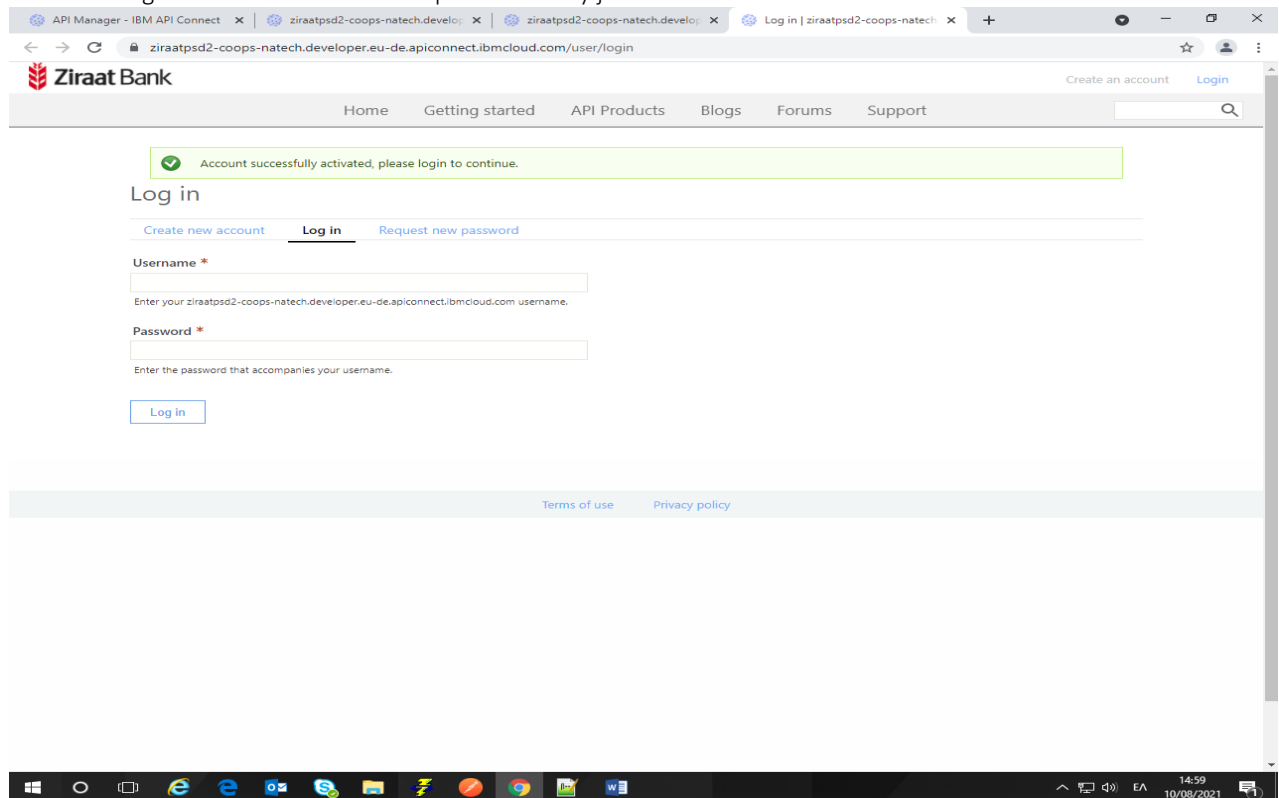


To access the API Products each user must create a User Account via the Create Account option located at the top right of the page. The user has to fill in his personal details in all the fields marked with * and then press the button at the bottom of the page that says Create New Account.

The screenshot shows the Ziraat Bank user registration page. The browser address bar displays the URL: `ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com/user/register`. The page header includes the Ziraat Bank logo and navigation links: Home, Getting started, API Products, Blogs, Forums, and Support. A search bar is also present. The main content area is titled "Create new account" and includes links for "Log in" and "Request new password". The registration form consists of several fields, each marked with an asterisk (*): "First name", "Last name", "Developer organization", "E-mail address", "Password", and "Confirm password". Below the "E-mail address" field, a note states: "A valid e-mail address. All e-mails from the system will be sent to this address. Your e-mail address will also be your username." Under the "Password" field, "Password Requirements" are listed: "Password must contain characters of at least 3 different types (lowercase, uppercase, digit or punctuation)." and "Password must be at least 8 characters in length." A "CAPTCHA" section follows, with the text: "This question is for testing whether or not you are a human visitor and to prevent automated spam submissions." The CAPTCHA image shows the characters "r N2 W3". At the bottom of the form, there is a question: "What code is in the image?". The Windows taskbar at the bottom shows the time as 14:32 on 10/08/2021.

After selecting Create New Account the following message appears: "You have been sent an account activation email. You need to click on the link in it to activate your account before you can login."

The screenshot shows the Ziraat Bank API portal home page. The browser address bar displays the URL: `ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com`. The page header includes the Ziraat Bank logo and navigation links: Home, Getting started, API Products, Blogs, Forums, and Support. A search bar is also present. A green notification banner at the top states: "You have been sent an account activation email. You need to click on the link in it to activate your account before you can login." The main content area has a blue header with the text "Innovate with our APIs" and a sub-header: "Welcome to our API portal where you will find a great selection of APIs for your awesome innovative apps". Below this, there is a section titled "Featured APIs". At the bottom, there is a section titled "Latest forum posts and tweets" with the text: "There are no posts to display." and links for "Terms of use" and "Privacy policy". The Windows taskbar at the bottom shows the time as 14:47 on 10/08/2021.

[illegible]

Enter the passwords we created (username / password) and login to the page.

API Manager - IBM x ziraatpsd2-coops-n... x User account | ziraat x Ziraat Bank Ппорт... x Natech Web Platfor x Issues - Ziraat Bank x +

ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com/user/login

Ziraat Bank Create an account Login

Home Getting started API Products Blogs Forums Support

User login

[Create new account](#) **[Log in](#)** [Request new password](#)

Username *
it_athens@ziraatbank.com
Enter your ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com username.

Password *
.....
Enter the password that accompanies your username.

[Log in](#)

[Terms of use](#) [Privacy policy](#)



We notice that after the successful log in in the upper right position of the page are written the name of the company that the user registered during the registration together with his username / email and the number of notifications (initially it is 0).

API Manager - IBM x ziraatpsd2-coops-n... x ziraatpsd2-coops-n... x Ziraat Bank Ппорт... x Natech Web Platfor x Issues - Ziraat Bank x +

ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com

Ziraat Bank 11 test it_athens@ziraatbank.com

Home Getting started API Products Apps Blogs Forums Support

Innovate with our APIs

Welcome to our API portal where you will find a great selection of APIs for your awesome innovative apps

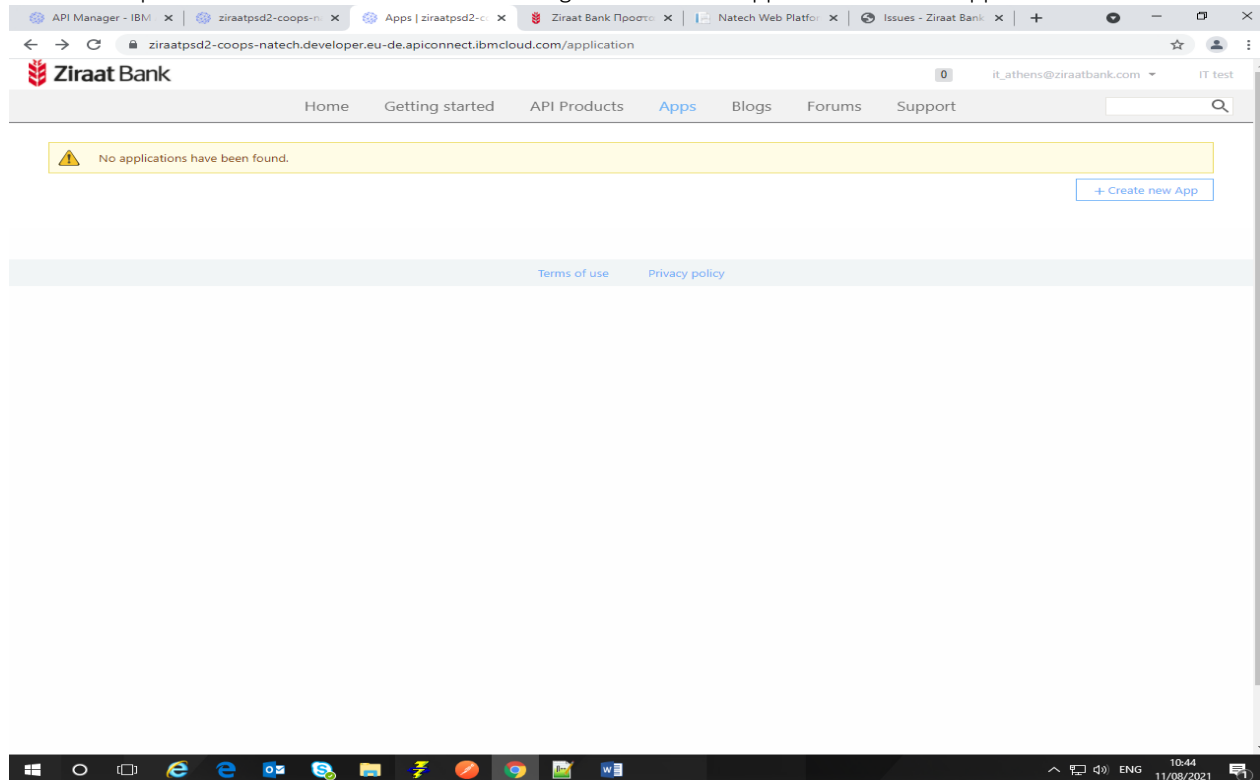
Featured APIs

Latest forum posts and tweets

There are no posts to display.

[Terms of use](#) [Privacy policy](#)

The next step is for the user to create a client through the selection Apps → Create New App.



By selecting the Create New App option the user is asked to state the following information:

- Title → Name for the application created.
- Description → Short Description.
- Oath Redirect URI → Web address entry for redirecting authorization code.
- Certificate → Registration of a certified certificate either by EBA or Bog or by a certified authority.

A screenshot of the 'Register application' form in the Ziraat Bank API Manager. The browser tabs and address bar are the same as in the previous screenshot. The page title is 'Ziraat Bank' and the navigation menu is identical. The main content area is titled 'Register application'. It contains four input fields: 'Title *' (a single-line text box), 'Description' (a multi-line text area), 'OAuth Redirect URI' (a multi-line text area), and 'Certificate' (a multi-line text area). Below the 'Certificate' field, there is a small text note: 'The URL authenticated OAuth flows for this application should be redirected to.' and another instruction: 'Paste the content of your application's x509 certificate.' At the bottom left of the form is a 'Submit' button. The Windows taskbar at the bottom shows the system clock indicating 10:47 on 11/08/2021.

After all the fields are filled in, select submit to complete the process of opening a new app.

Register application

Title *

Stress_Test

Description

OAuth Redirect URI

https://ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com/node/100

The URL authenticated OAuth flows for this application should be redirected to.

Certificate

R1NBHCUG8QAJkYBBjAbBgEAI5GAQYB8gcEAI5GAQYB8gcEAI5GAQYDMEAGCCsGAQUFB8EBBDQwMjAwBggrBgEFBQcwAYYkQzpcVXN1cnNcYSSnaw9oYmxc1xpbmR1cm11ZG1hdGUuY33sMDUGA1UdHwQulCwKwKqAoCaG3Eh6XFVzZXJzXGEuZ21vaGFnYXNcaw50ZXJtZHRpYXR1LmNybDANBgkqhkiG9w0BAQsFAAOCAgEAV3/Z5S2XxHX90VF3/jaDc+JukX1zw90jpsJxe/ve1502mbZv0Ec/LFQvIHIXgOynV6qTDFm8N1e8B5Z7fpXLxPa3YYLixRiueL1kYul4H0z7gTTP0Sg3cAlqA2pu0kBi9wbKZIOFPpH//0RtE/IHUV4Yw41gdOR7XAwD1a1zqfTW60rzEzL78TtiQFGSYd9e2C6SOLR2Ew0ZjFoQHHi+d/yvz+HuRZK12L0miBgThi3d+tPo78obbESGxjJf11yK/D4dudOUXmR1ouSm4Y684Ev2fgnmAGckfCbHAZTDn/+ZHUBrCUzHqS6vWlNphh0moQach6sQs9cVpkJ/eukIHe9XZ81CQ2cEm6m0zHyu8kLCr15/oYIXz+p+f141vZhtag3y/pB1Te0/UctgZ0m0z0gmryr+V8twJLewJ1zRoyzE5adhoTcu7HHXUdv7mdUbFFC13BSUTfIF3/yLbV+/adUmxbEmID6+RyCxbSejGe5V5hgH3Sm01XNj0y9erCAGhmedXLH3JFFu3930dd+IG1AJzNefG1fQv1zL2w0h0knlwgqyrtqtQ4LjmnZV6g0bwH3BDF+z97LvL68n0eIGLrgtnH1463T+1aQ/GsCj0wG3KZmh02S1LYZURJ2fyn2Fx5y9AUIF46/+5FtRvdHL85xSCRzk1+c/9+VrQ=

Paste the content of your application's x509 certificate.

Submit

Upon successful completion of the process, the user sees the following page:

Application created successfully.

Your client secret is: *****

Show Client Secret

Now that you've registered your app, you can browse the [available APIs](#) and subscribe.

Make a note of your client ID and client secret. These may be needed for your application to access the API.

Your client secret will only be displayed once. If you forget or lose it, you can verify the secret to see if it's correct or reset it to get a new one.

Stress_Test_

Analytics | Notification settings | Delete

Details

Stress_Test_

Update

OAuth Redirection URL

https://ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com/node/100

Credentials

Default

Client ID

Show

Reset

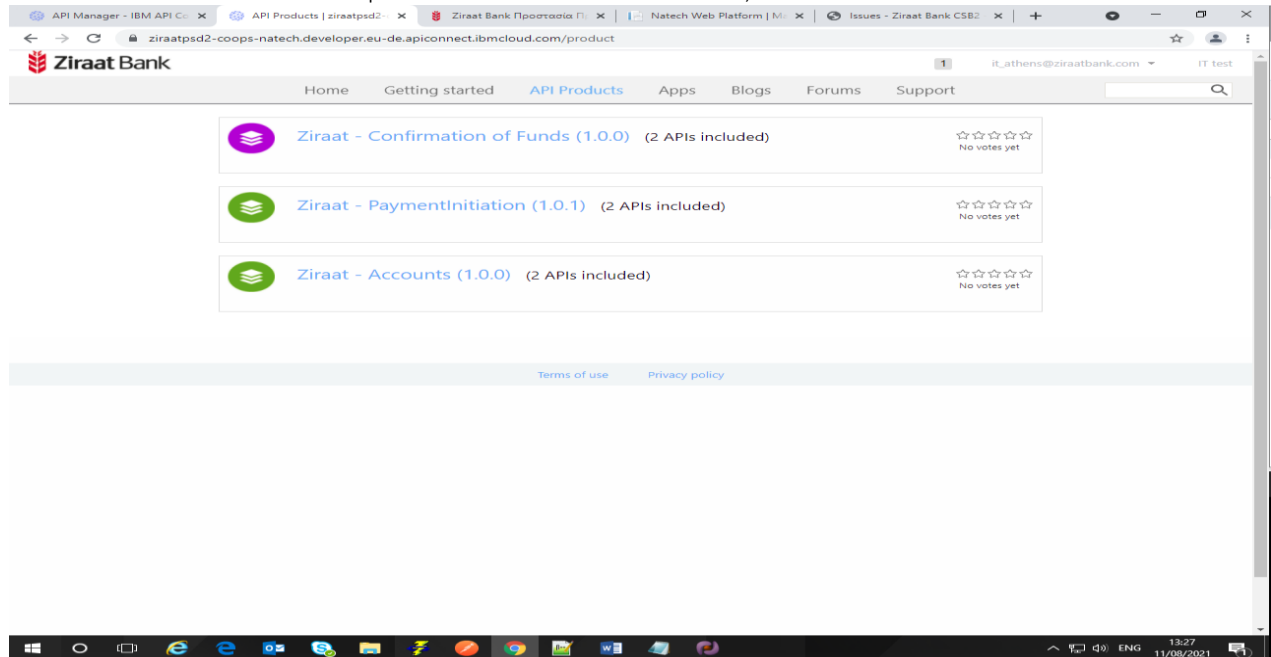
Client Secret

Verify

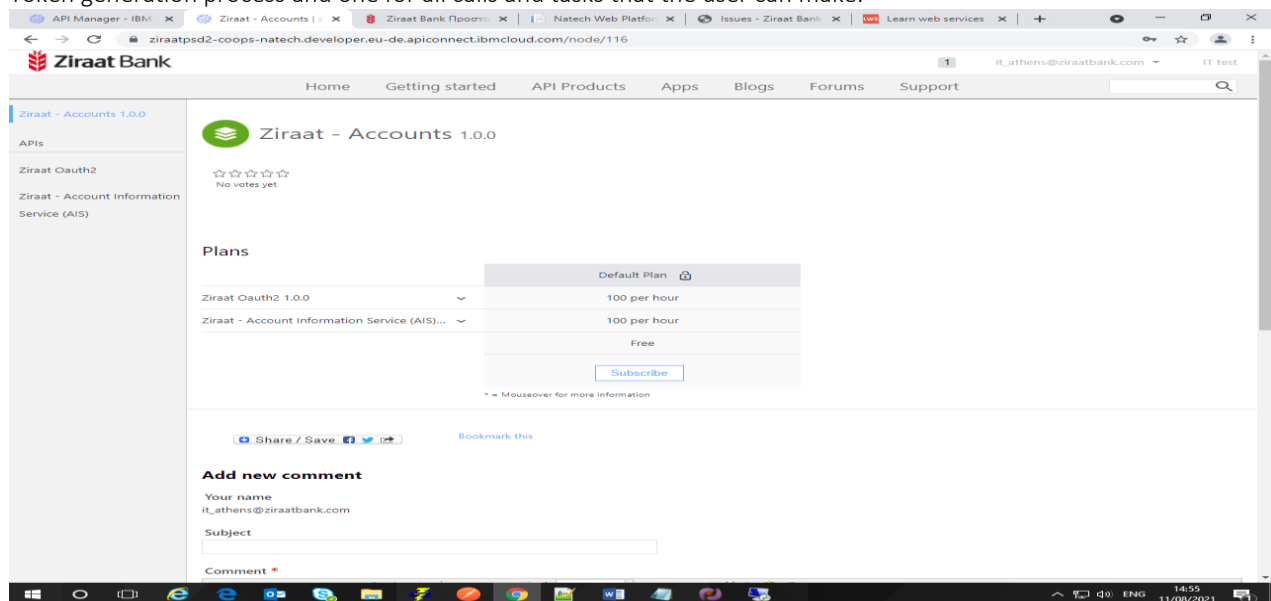
Reset

From the above page the only thing the user has to keep is the Client ID. The Client Secret is not used in our case because we will do authorization through Tokens. At this point the user has created the app and is now ready to proceed to the next step which is creating the API Products.

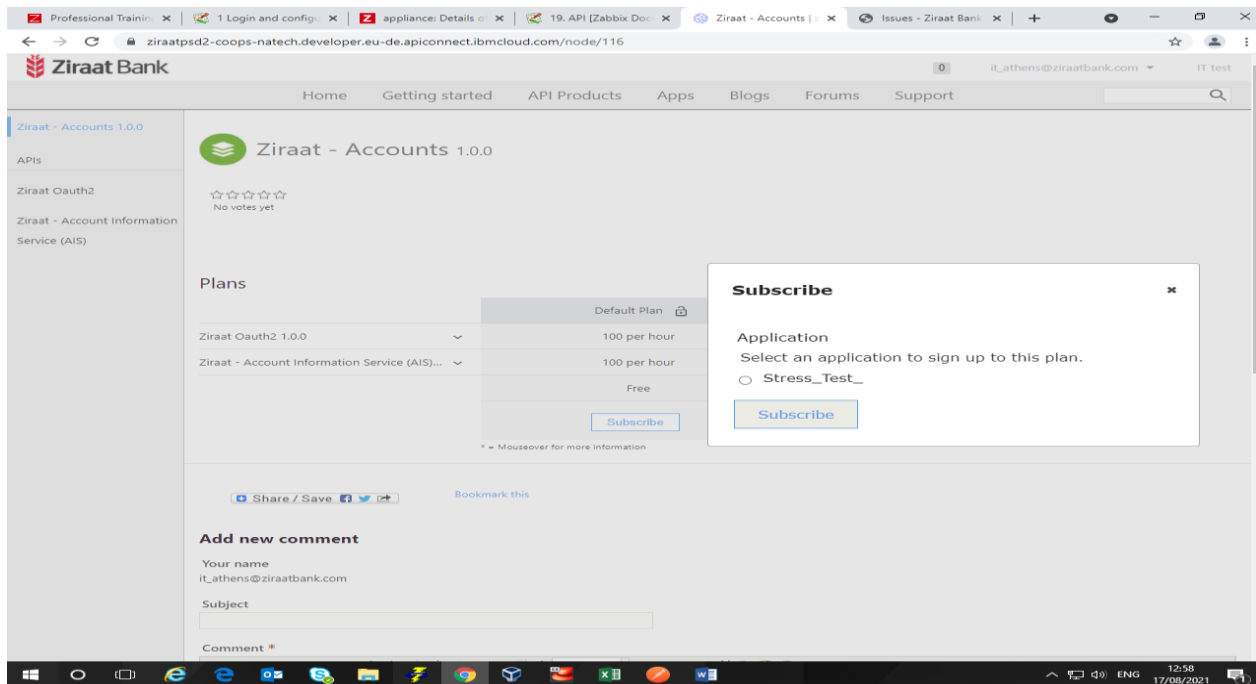
The user clicks the API Products option as shown in the screen below, in which there are all available APIs to watch.



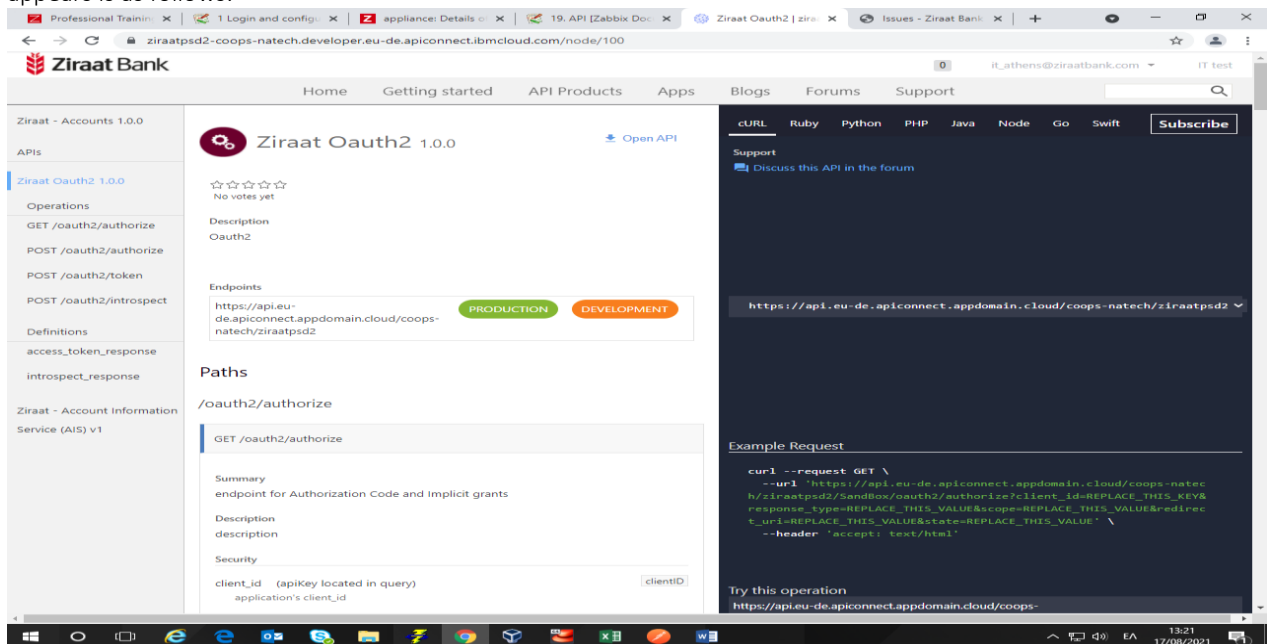
The next step the user needs to do is connect all the APIs they want to monitor to the APP they created in the previous step. Each of the API Products illustrated above consists of 2 individual APIs. One for the authentication and Token generation process and one for all calls and tasks that the user can make.



Therefore, the user has selected the API that he wants to connect, then click the Subscribe option. Then you are asked to select the APP that has already been created in order to complete its connection by clicking subscribe as shown in the image below.



Upon successful completion of the connection, the message is displayed: 'Successfully subscribed to this plan.'. The process is repeated for all the APIs that have been created. Then in order to start the authentication process we start again from the original API. From the API page that has been selected, right-click on Ziraat Oauth2. The screen that appears is as follows:



Then select → GET / oauth2 / authorize and fill in the required fields on the right side of the screen as shown in the image below:

client ID: It is already preset according to the APP created at the beginning.

accept: It remains as the default and no selection is required.

response_type: There we select code.

scope: Accounts Transactions FundsConfirmation (So as to have the same authorization code for everything).

Redirect uri: <https://ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com/node/100> (for our example / The uri is declared when creating the original APP).

state: Just put OK.

The screenshot shows the Ziraat Bank API documentation for the `/oauth2/authorize` endpoint. The left sidebar lists various API endpoints. The main content area displays the parameters for this endpoint:

- response_type** (Required in query): request an authorization code or or access token (implicit). Enum: `code`, `token`.
- scope** (Required in query): Scope being requested.
- redirect_uri** (Optional in query): URI where user is redirected to after authorization.
- state** (Optional in query): This string will be echoed back to application when user is redirected.
- Accept** (Optional in header): `text/html`.

The 'Responses' section shows:

- 200**: An HTML form for authentication or authorization of this request.
- 302**: Redirect to the clients `redirect_uri` containing one of the following:
 - authorization code** for Authorization code grant
 - access token** for Implicit grant
 - error** in case of errors, such as the user has denied the request

On the right, the 'Call operation' interface is shown with the following values:

- Client ID**: `Stress_Test_`
- Headers**: `accept: text/html`
- Parameters**:
 - `* response_type`: `code`
 - `* scope`: `Accounts Transactions FundsConfirmations`
 - `redirect_uri`: `https://ziraatpsd2-coops-natech.de`
 - `state`: `ok`

The **Call operation** button is highlighted.

Then, after all the necessary fields are filled in, click on the Call Operation option. When the execution of all the above elements is finished, the following screen with the answer is displayed:

The screenshot shows the result of the API call. The 'Request' section displays the full URL and headers used:

```
GET https://api.eu-de.apiconnect.appdomain.cloud/coops-natech/ziraatpsd2/Sandbox/oauth2/authorize?response_type=code&scope=Accounts Transactions FundsConfirmations&redirect_uri=https://ziraatpsd2-coops-natech.de.apiconnect.ibmcloud.com/node/100&state=ok&client_id=06a690fc-e38c-4880-9b57-0b5817fbcd4a
accept: text/html
```

The 'Response' section shows a message:

No response. This is a cross-origin call. Make sure the server accepts requests from this portal. Or if using self-signed SSL certificates then paste the URL above into your browser to accept the certificate before trying again (On internet Explorer it must be the same browser tab).

Below the message, the **0 error** status is displayed.

We check if an error has occurred at the bottom of the screen (in the above case it does not, so everything has worked smoothly) and then select the entire URL as shown above and copy-paste in the browser directly.

This screenshot is identical to the previous one, showing the result of the API call. The 'Request' section displays the full URL and headers used:

```
GET https://api.eu-de.apiconnect.appdomain.cloud/coops-natech/ziraatpsd2/Sandbox/oauth2/authorize?response_type=code&scope=Accounts Transactions FundsConfirmations&redirect_uri=https://ziraatpsd2-coops-natech.de.apiconnect.ibmcloud.com/node/100&state=ok&client_id=06a690fc-e38c-4880-9b57-0b5817fbcd4a
accept: text/html
```

The 'Response' section shows a message:

No response. This is a cross-origin call. Make sure the server accepts requests from this portal. Or if using self-signed SSL certificates then paste the URL above into your browser to accept the certificate before trying again (On internet Explorer it must be the same browser tab).

Below the message, the **0 error** status is displayed.

Pressing enter will display the page for the user to enter his personal information to log in.

API Connect - OAuth
Authorization Server Login

User name

Password

Log in

If you have forgotten your user name or password,
contact your system administrator.

Then entering the Username and password and pressing Log in the following screen will appear:

Request for Permission

Welcome user1

Stress_Test_1 is requesting your permission to access:

Accounts Accounts
Transactions Transactions
FundsConfirmation FundsConfirmation

Select "Allow Access" to grant the request or "No Thanks" to reject it.
Clicking "Allow Access" will redirect you to <https://ziraatpsd2-coops-natech.developer.eu-de.apiconnect.ibmcloud.com/node/100>.

No Thanks Allow Access

This requires the user's consent to connect and Allow Access must be selected.

Then from the following screen select POST / oauth2 / Token and fill in the required fields:

Grant_type: authorization_code.

Client_id: Has already been stated while creating the APP.

Code: It is selected by the browser directly from the command line starting after the point that states code = and up to &.

Redirect_uri: Has already been stated while creating the APP.

Scope: The same as stated in the GET Authorize process (Accounts Transactions FundsConfirmation).

Refresh_token: access_token.

Filling in all the required fields as in the screen below we select after Call Operation.

The screenshot shows the Ziraat Bank API documentation page for the POST /oauth2/token endpoint. The left sidebar lists various API sections, with 'Operations' selected. The main content area displays the endpoint details, including the URL, headers, parameters, and a 'Call operation' button. The parameters section shows the following fields:

Parameter	Type	Required
grant_type	string	Required
client_id	string	Optional
client_secret	string	Optional
code	string	Optional
redirect_uri	string	Optional
username	string	Optional
password	string	Optional
scope	string	Optional
refresh_token	string	Optional

The 'Call operation' button is highlighted in blue. The right sidebar shows the 'Parameters' section with the following values:

- grant_type: authorization_code
- client_id: 06a690fc-e38c-4880-9b57-0b5817fb0c
- client_secret:
- code: AAIbANfCDU1znpRclLtWak1PAriWLhvejjeZgWpxihWpDAKMnJQUVK-a_QLWc...
- redirect_uri: https://ziraatpsd2-coops-natech.de
- username:
- password:
- scope: Accounts Transactions FundsConfirm
- refresh_token: access_token

If everything is OK then the following screen will appear with the successful result of the previous action. The access Token that we are interested in and that we have to select and copy is the one that appears selected in blue as in the screen below.

The screenshot shows the Ziraat Bank API documentation page for the POST /oauth2/token endpoint, displaying the successful response. The left sidebar lists various API sections, with 'Operations' selected. The main content area displays the endpoint details, including the URL, headers, parameters, and a 'Call operation' button. The parameters section shows the following fields:

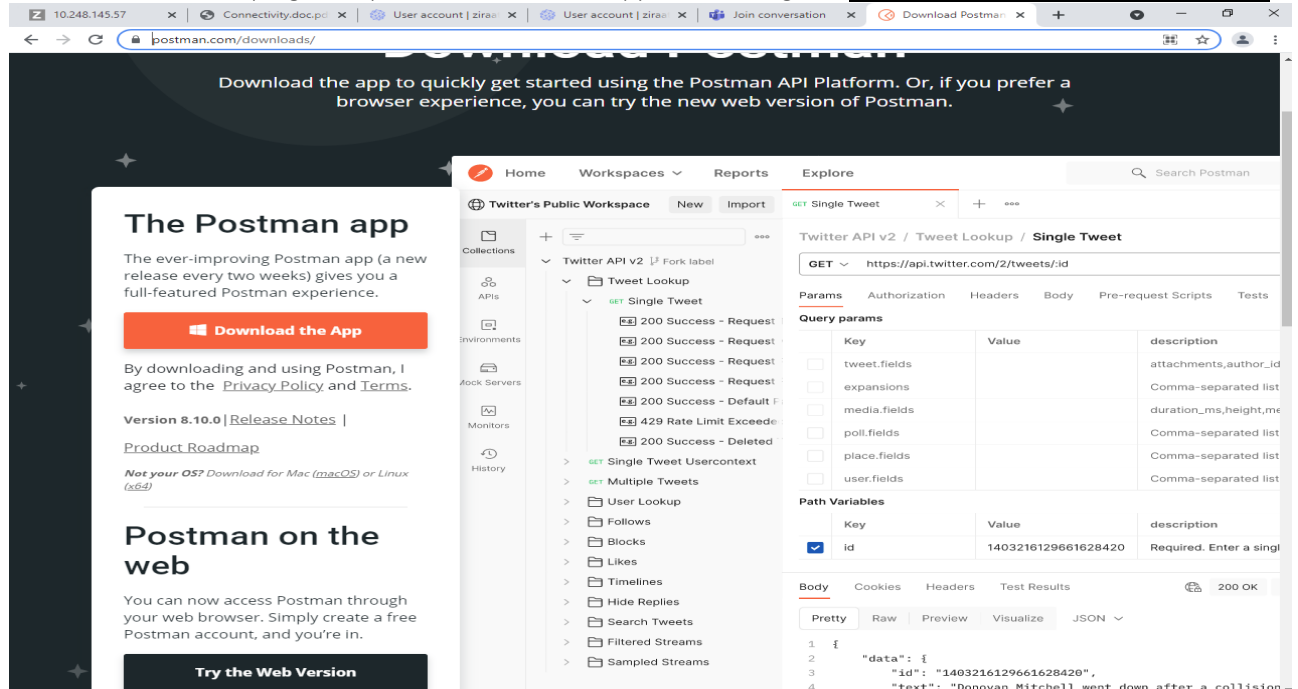
Parameter	Type	Required
client_id	string	Optional
client_secret	string	Optional
code	string	Optional
redirect_uri	string	Optional
username	string	Optional
password	string	Optional
scope	string	Optional
refresh_token	string	Optional

The 'Call operation' button is highlighted in blue. The right sidebar shows the 'Response' section with the following JSON data:

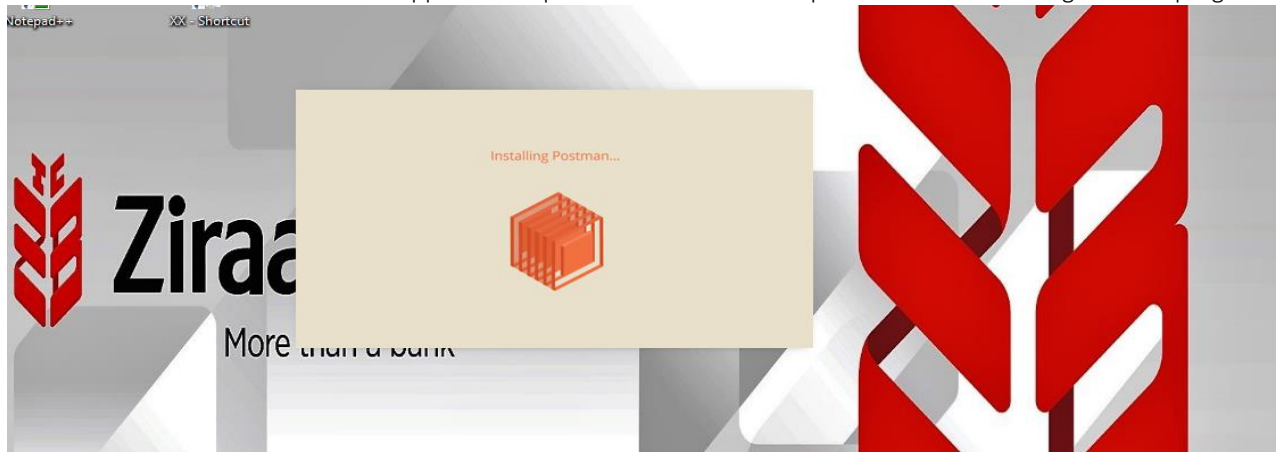
```
{  "token_type": "Bearer",  "access_token": "AAIKPDZHNjkwZmMlZTM4Yy00ODgwLTlTNTc1MGI1ODE3ZmIwYzRhIyV6aRnNSyNsQLd519gT8Pw0aYApGxy6gPOJ3kVzrrUJsnMq1EFRAeKcBHI_kCeZLW5-GPMyCsq7c8j4UJD38akIFzU453CUCheMfap8h107fktAfwfW8CHYx641W5",  "expires_in": 7775999,  "consented_on": 1629792723,  "scope": "Accounts Transactions FundsConfirmation"}
```

The user has received a token and has access to the bank files so all the processes required to be done from here are over. The next step is to install and configure Postman to make API calls.

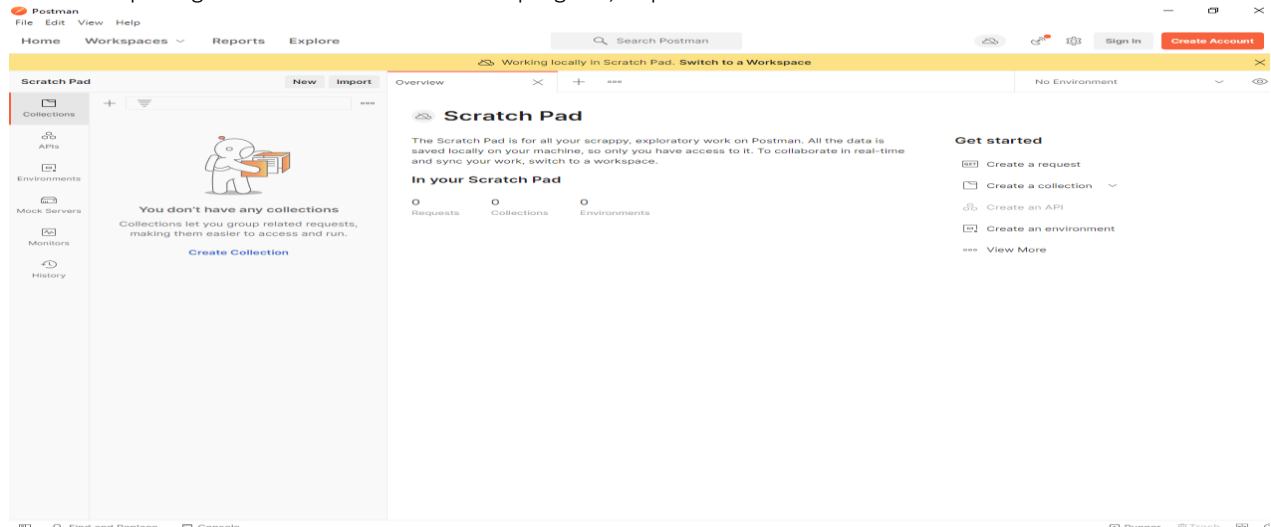
To install the Postman program, open the browser and copy the following link: <https://www.postman.com/downloads/>.



Then select Download the App and proceed with the process of installing the program.



After completing the installation of the program, open the Postman as shown in the screen below.

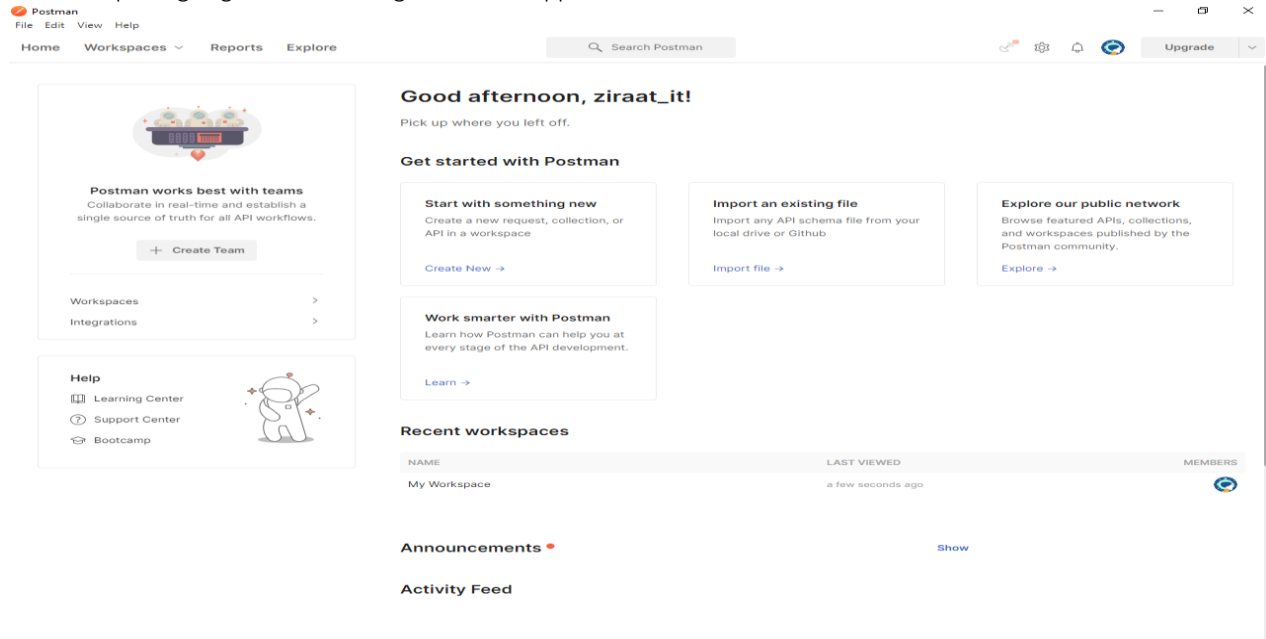


In the upper left screen the user selects Sign in and enters the following:

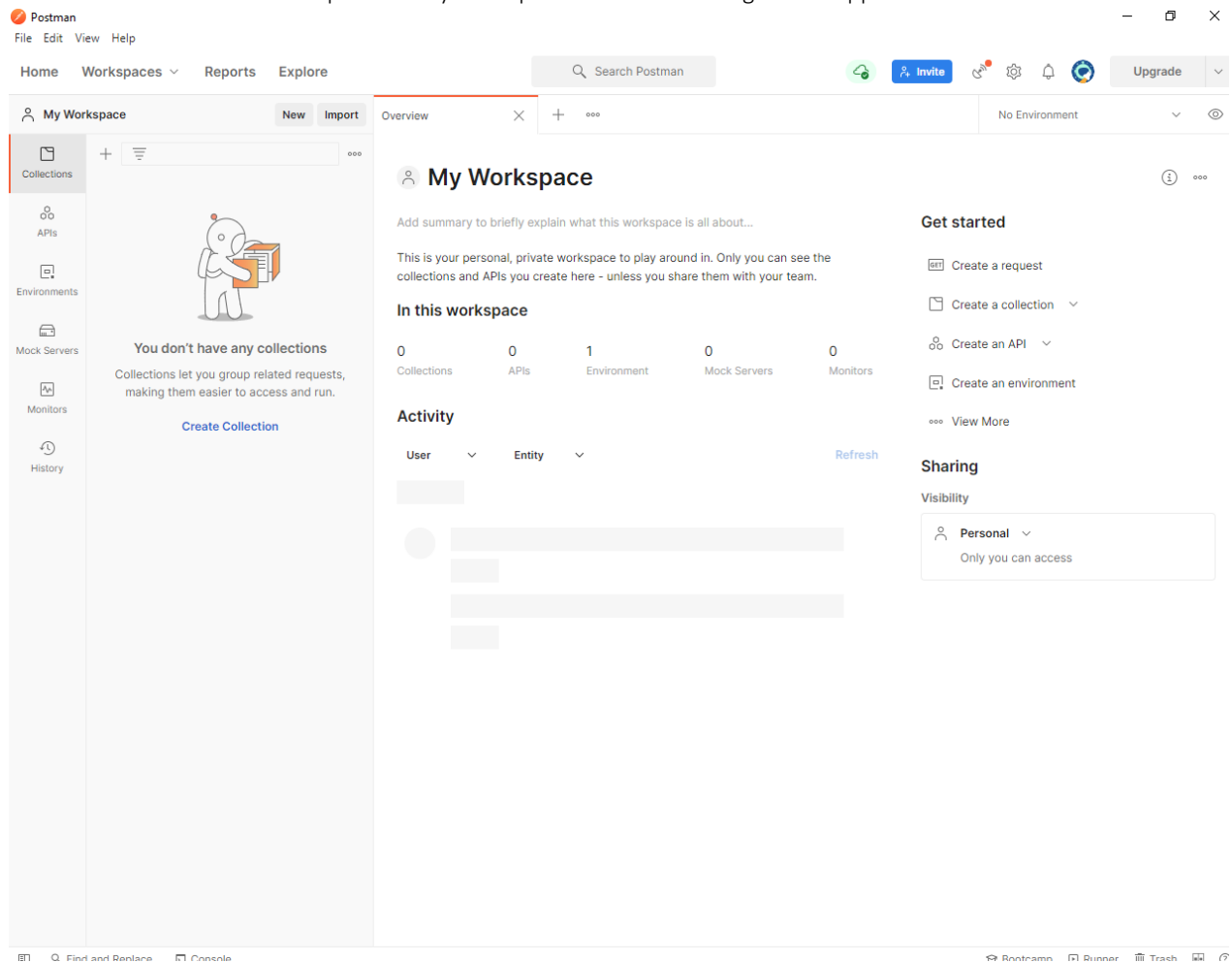
Username: itathens

Password: Zb123456@*

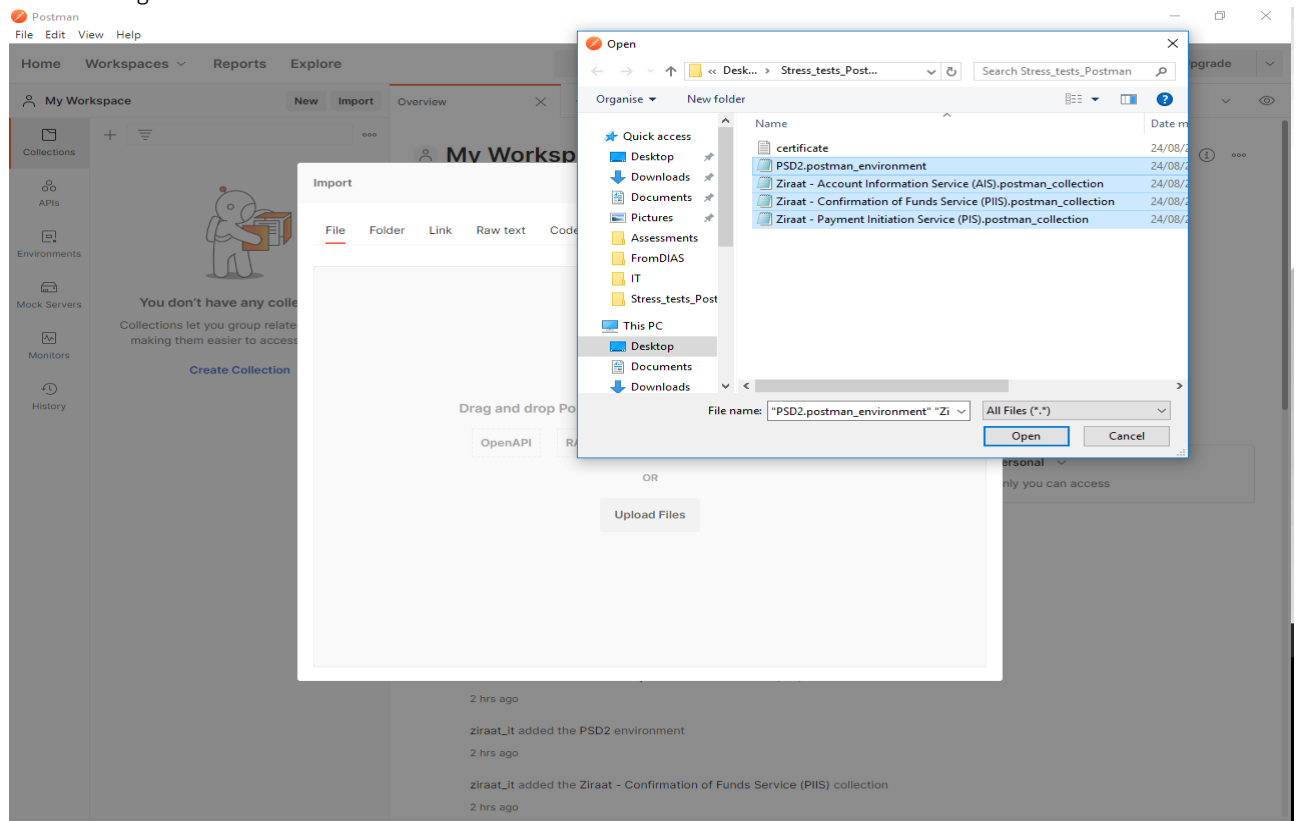
After completing Log In the following screen will appear:



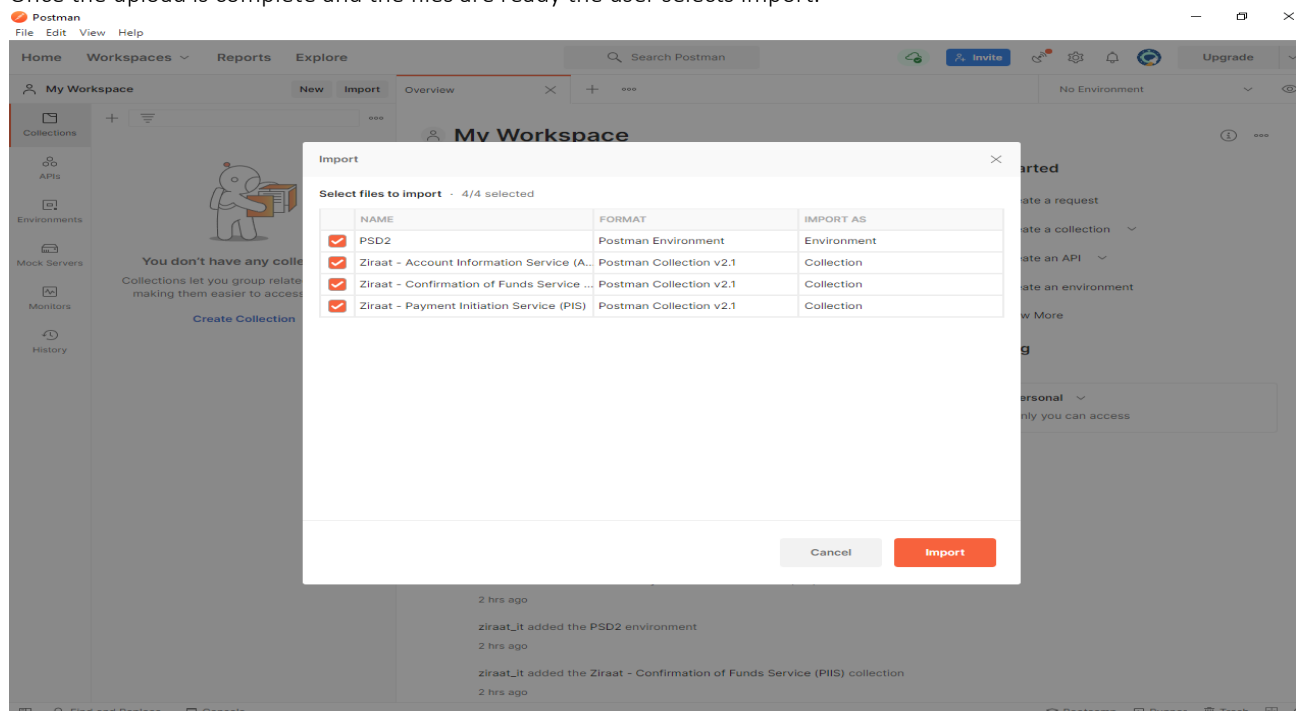
Then the user selects →Workspaces→ My workspace and the following screen appears:



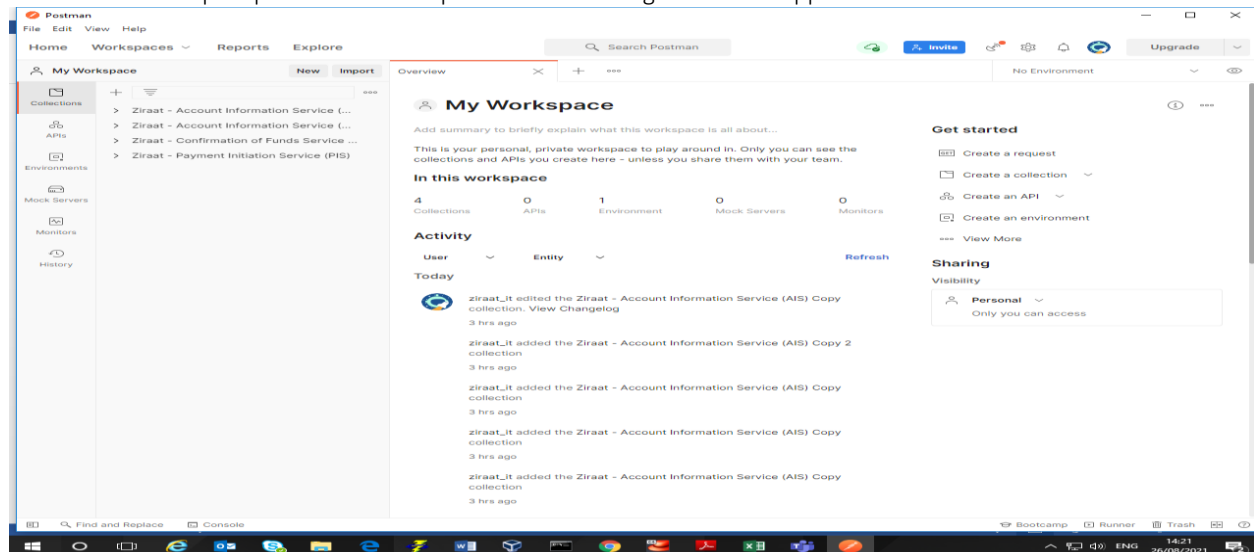
From the Import option the users selects the API call files which are ready together with the environment as shown in the following screen.



Once the upload is complete and the files are ready the user selects Import.



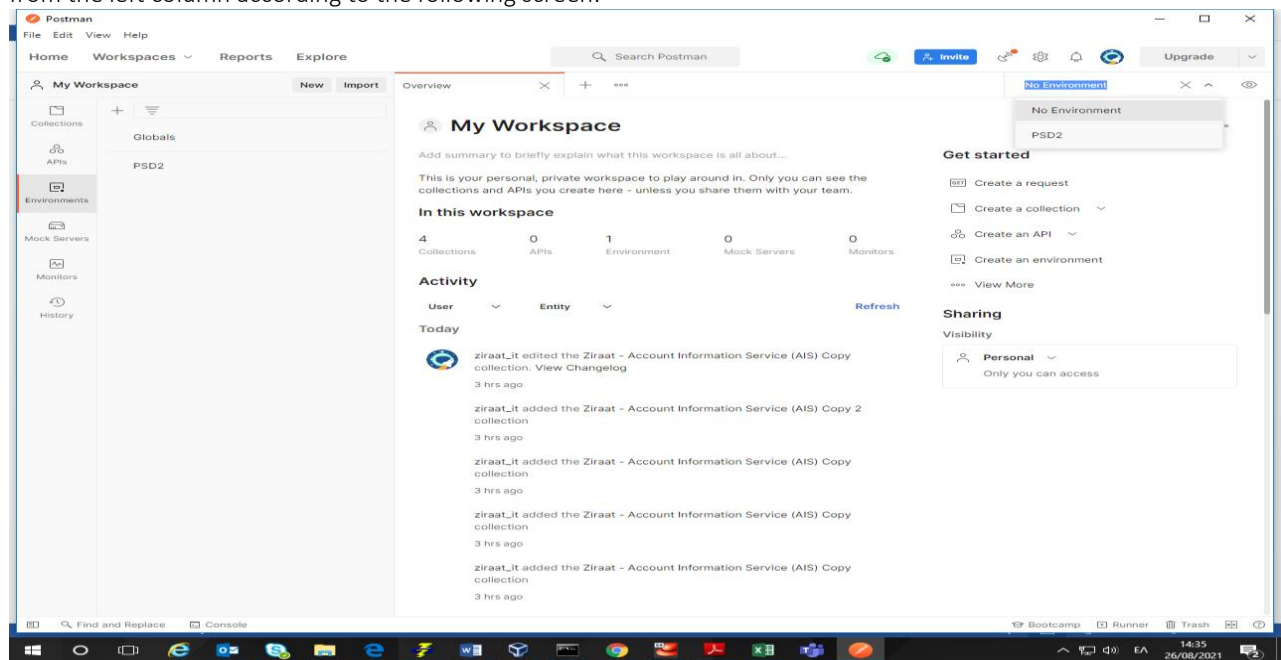
As soon as the import procedure is completed the following screen will appear:



At this point the 3 API calls we want to test and a user interface to enter variables are loaded. These are the following:

- Ziraat- Account Information Services.
- Ziraat- Confirmation of Pay.
- Ziraat- Payment Initiation Services.
- Environment (PSD2).

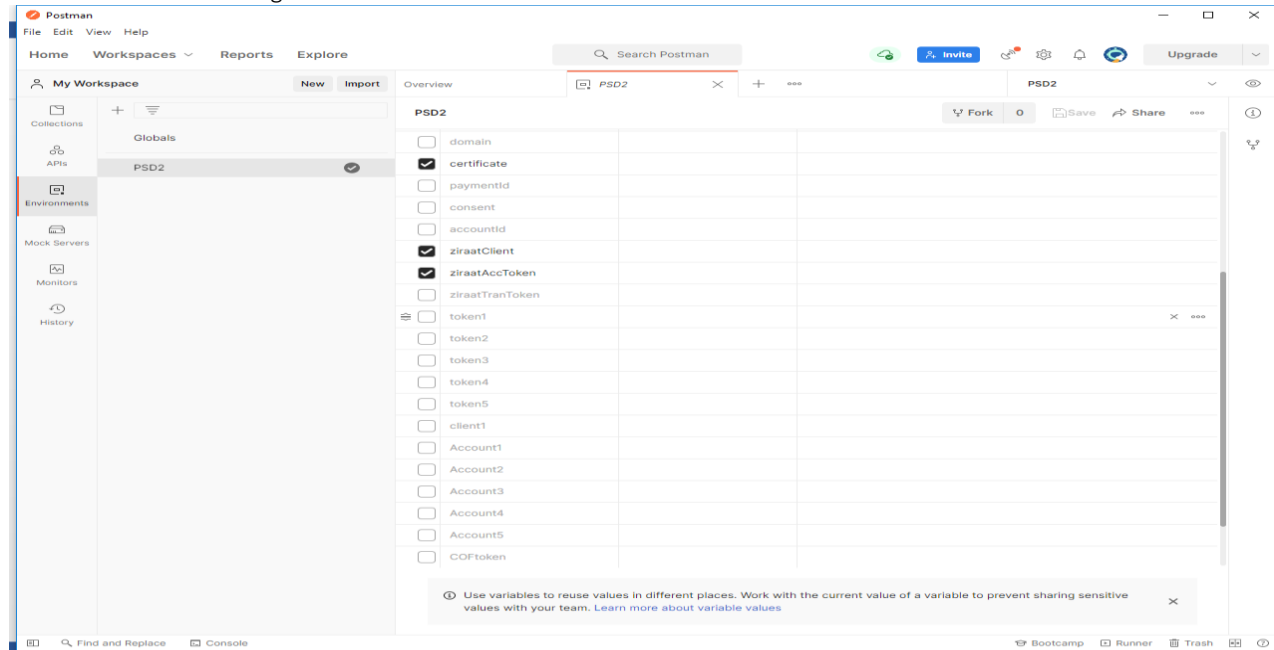
The next step is to enter the variables in the PSD2 environment. As a result, the user selects the Environments option from the left column according to the following screen:



Then, in the upper right corner as shown in the screen above, the user must select from the drop down menu the option PSD2 which is the interface for entering the required variables. The data of the variables required for registration are the following:

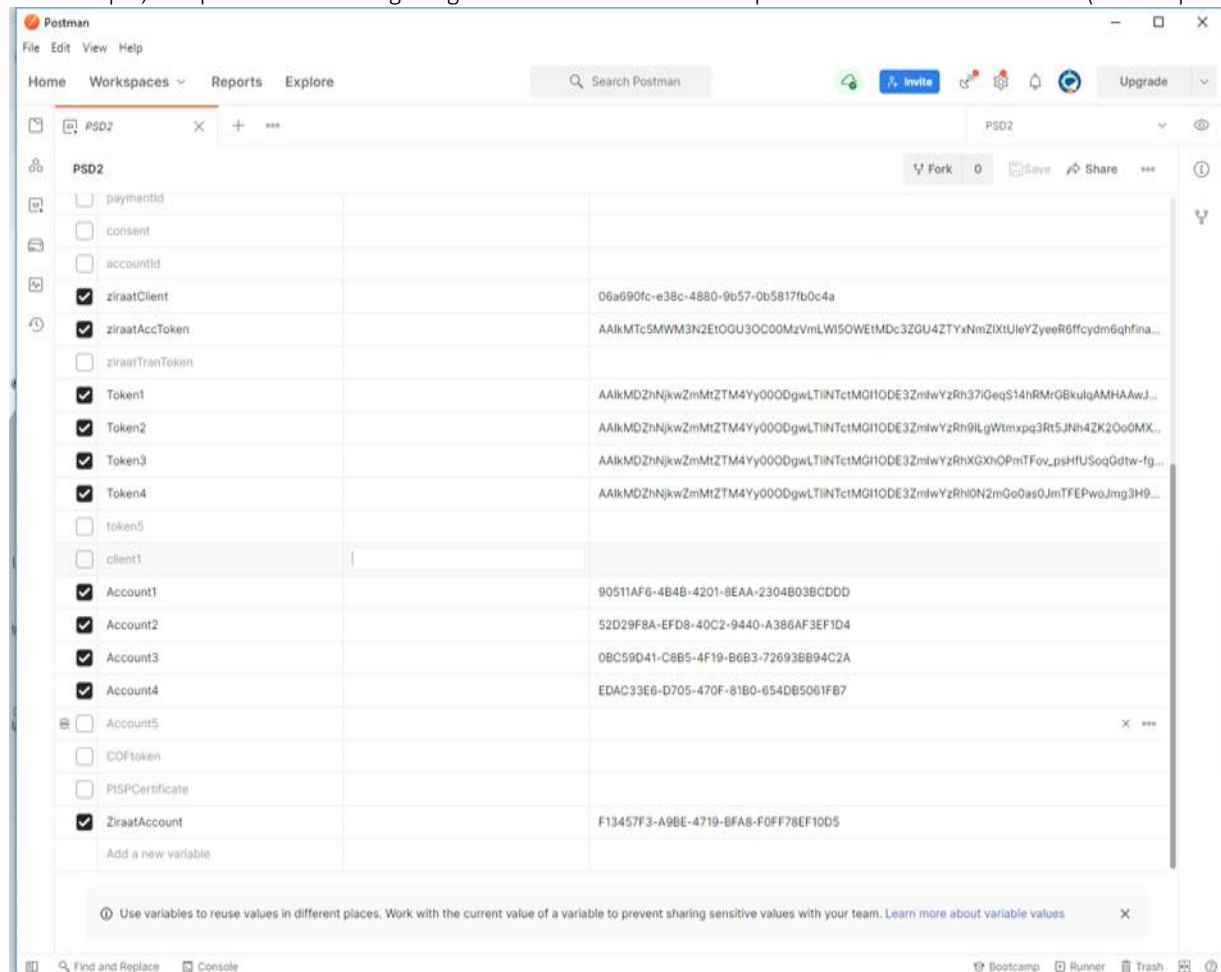
- Certificate
- ZiraatClient
- ZiraatAccToken
- ZiraatAccount

As shown in the following screen:

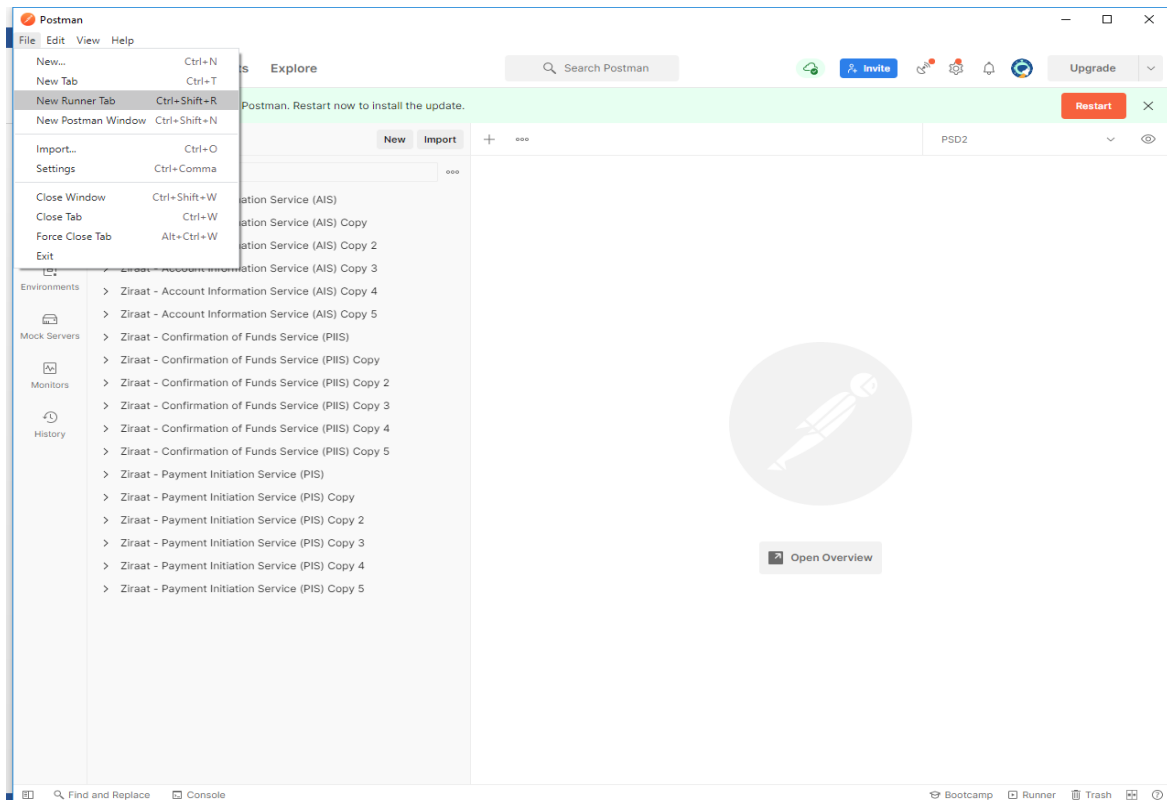


This information is provided by the Portal during the process of opening a new App.

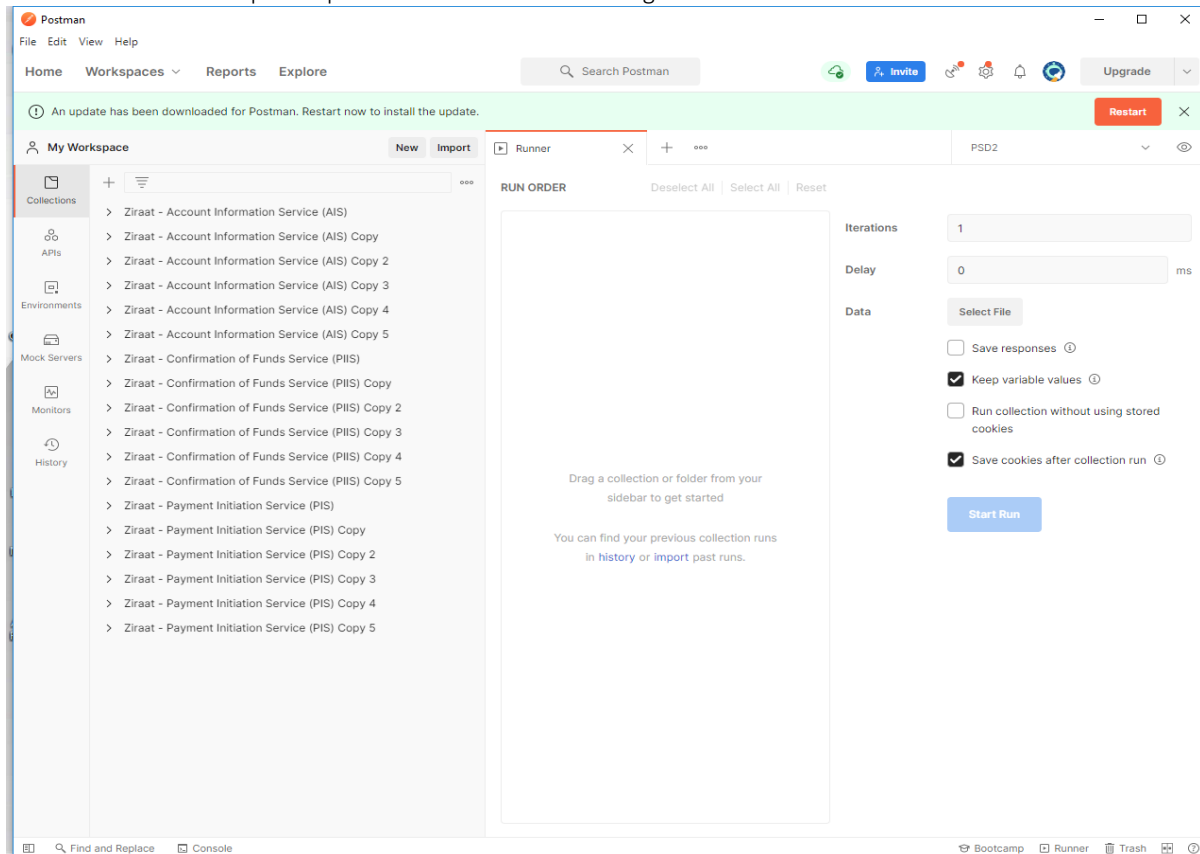
For example, we quote the following image with the above fields completed to make calls to the API (for test period).



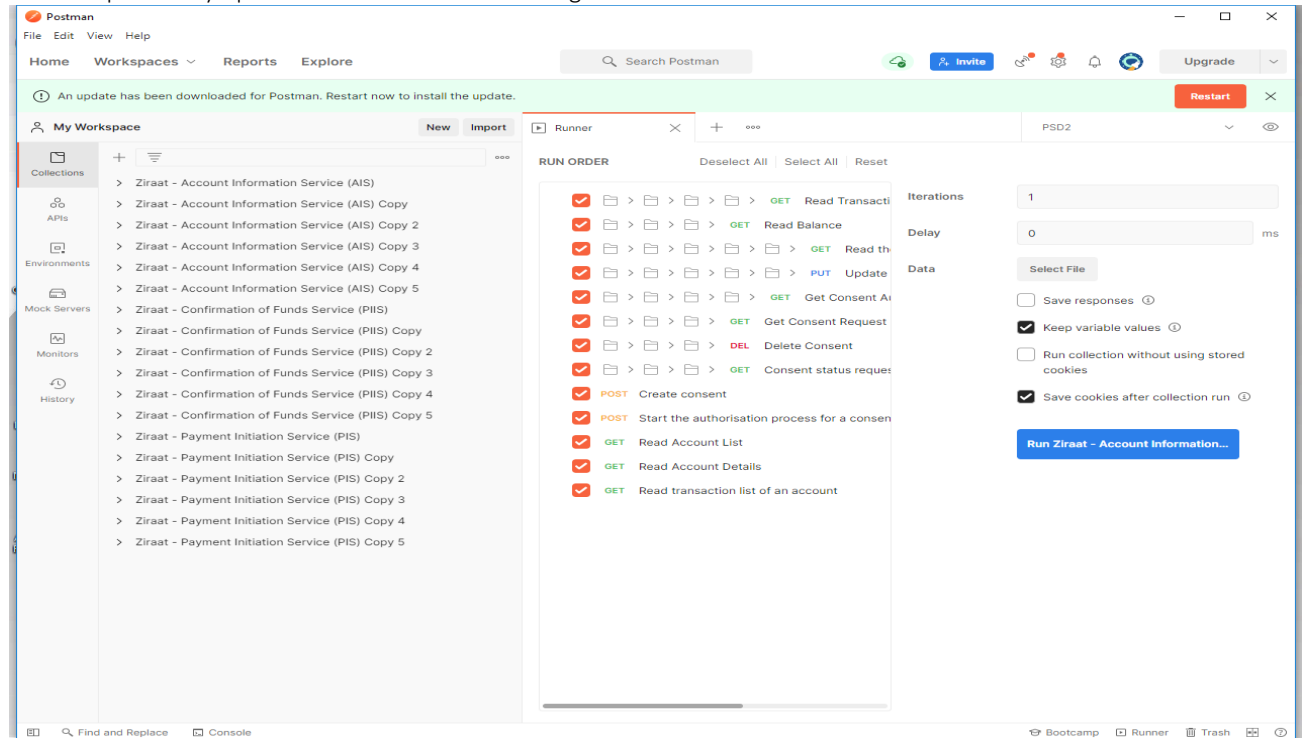
The next step is for the user in the Postman application to create the process for making the calls. From the Postman application the user selects File→New Runner Tab as shown in the screen below:



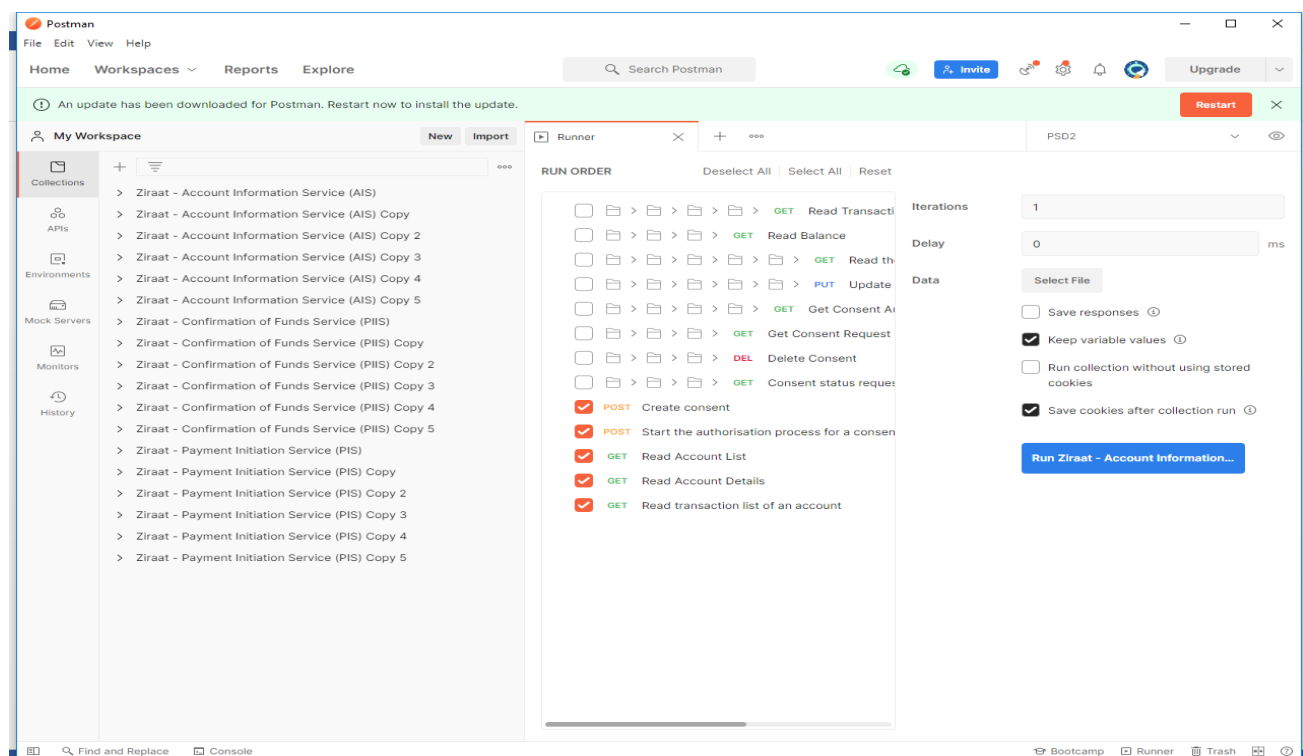
And then the Runner option opens as shown in the following screen:



Then the user with drag n 'drop selects the call (AIS) Account Information service and releases it next to the Runner that was previously opened as shown in the following screen:



Then for this call the user leaves the first 5 fields selected as shown in the screen below:



The user then selects the blue button to make the call→ Run Ziraat-Account Information service.
The same procedure is repeated for the next calls that the User wants to make.