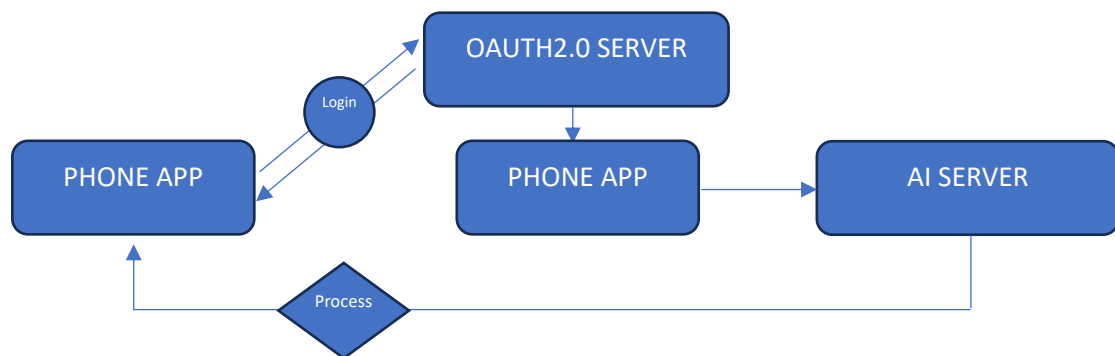


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1 – Instruction install AI Enviroment

Install anaconda version 23.7.4

https://anaconda.org/conda-forge/conda/files?sort=time&sort_order=desc&version=23.7.4

Install python version 3.11.5

hydragroup.info@gmail.com

```
(base) C:\Apache24\htdocs\VHost\hydra-cam0.ddns.net\API\bill_capture\ACCESS_PYTHON_API>conda --version
conda 23.7.4

(base) C:\Apache24\htdocs\VHost\hydra-cam0.ddns.net\API\bill_capture\ACCESS_PYTHON_API>python --version
Python 3.11.5
```

Access anaconda enviroment and install by pip these packages bellow

pip install easyocr

pip install torch torchvision torchaudio --index-url <https://download.pytorch.org/whl/cu118>

pip install numpy

pip install cv2

pip install imutils

pip install screeninfo

These packages (base64, sys, codecs, fileinput, json, pathlib, math, difflib are build-in/standard of Python

=====

If use NVIDIA RTX3060 12GB need install pytorch

pip install torch torchvision torchaudio --index-url <https://download.pytorch.org/whl/cu118>

If use other GPU, please check by:

Open cmd, type

1 – To check information of VGA card

nvidia-smi

2 – To check version of Cuda ToolKit

nvcc --version

If don't have NVIDIA driver, please go to this website and install suitable version

1 – NVIDIA Driver

<https://www.nvidia.com/en-us/drivers/>

2 – CUDA Toolkit

<https://developer.nvidia.com/cuda-toolkit>

3 – cuDNN (use for Tensorflow/Pytorch)

<https://developer.nvidia.com/cudnn>

To modify key value, please go to

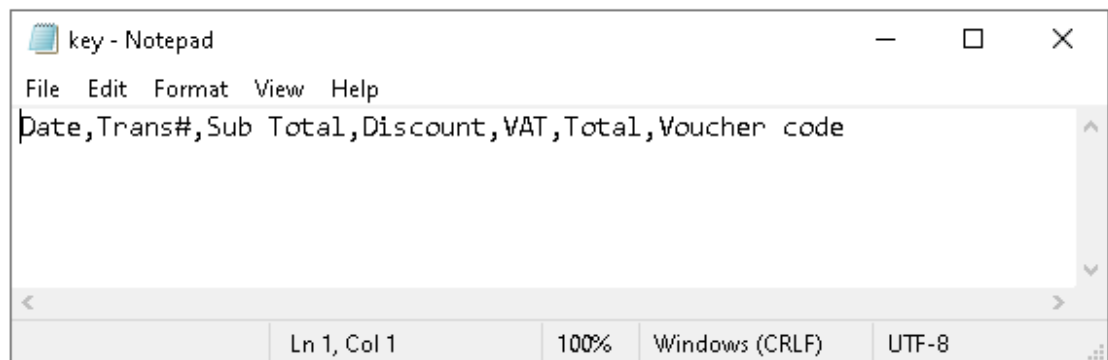
hydragroup.info@gmail.com

Go to this folder

~\htdocs\VHost\hydra-cam0.ddns.net\API\bill_capture\ACCESS_PYTHON_API\

Code will auto detect all string, but if you want to use any key, please list them to this array, or you can change in this file - key.txt

| | | | |
|------------------------|------------------|--------------------|-------|
| 661f66e777612 | 24/04/2024 12:03 | File folder | |
| uid01 | 30/12/2024 23:01 | File folder | |
| base64_imgstring | 29/11/2024 12:05 | Text Document | 95 KB |
| decode_base64_to_image | 31/12/2024 00:34 | Python Source File | 9 KB |
| extractBill | 22/04/2024 14:00 | Python Source File | 2 KB |
| key | 31/12/2024 00:23 | Text Document | 1 KB |



2 – Server AI server

2.1- Install Apache 2.4 / PHP , MySQL

| | | |
|-------------------|--------------------|---------------------|
| logs | File folder | 06/04/2024 11:41:39 |
| ~ | File folder | 24/04/2024 17:22:30 |
| login | File folder | 05/06/2024 21:13:23 |
| vendor | File folder | 28/11/2024 18:58:03 |
| user | File folder | 28/11/2024 18:58:44 |
| ACCESS_PYTHON_API | File folder | 28/11/2024 19:26:25 |
| db_connect.php | 890 PHP Sourc... | 21/11/2024 12:27:55 |
| CreateKey.php | 67 PHP Sourc... | 28/11/2024 19:04:49 |
| dbconfig.php | 201 PHP Sourc... | 25/12/2024 20:05:33 |
| portconfig.conf | 14 CONF File | 26/12/2024 12:53:59 |
| sys_config.php | 119 PHP Sourc... | 26/12/2024 15:15:30 |
| take_photo.php | 6,366 PHP Sourc... | 26/12/2024 17:37:22 |

Database:

dbconfig.php

User database of bill tracking app. It's used to login the bill tracking app.

hydragroup.info@gmail.com

✓ Showing rows 0 - 0 (1 total, Query took 0.0002 seconds.)

```
SELECT * FROM `user`
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 | Filter rows:

Extra options

| | id | user_id | user_email | user_password | name |
|---|----|---------|-----------------|---------------|-------|
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 1 | uid01 | admin@gmail.com | 123456 | admin |

☐ Check all | With selected: ☐ Edit ☐ Copy ☐ Delete ☐ Export

☐ Show all | Number of rows: 25 | Filter rows:

phpMyAdmin

Recent Favourites

hydracy2_bill_tracking

```

1 <?php
2 /*****
3 define('DB_USER', "root");
4 define('DB_PASSWORD', "123456789");
5 define('DB_DATABASE', "hydracy2_bill_tracking");
6 define('DB_SERVER', "localhost");
7 ?>

```

Figure 1. user database table

2.2 – API

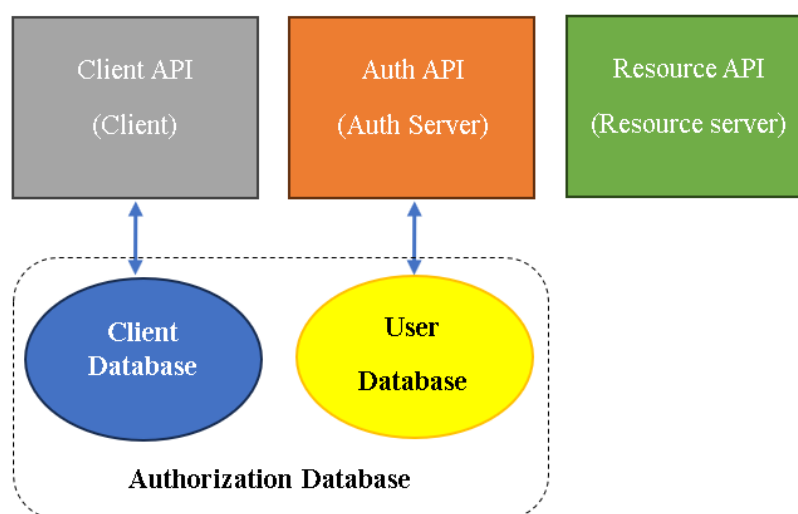
| | | |
|-------------------|--------------------|---------------------|
| logs | File folder | 06/04/2024 11:41:39 |
| ~ | File folder | 24/04/2024 17:22:30 |
| login | File folder | 05/06/2024 21:13:23 |
| vendor | File folder | 28/11/2024 18:58:03 |
| user | File folder | 28/11/2024 18:58:44 |
| ACCESS_PYTHON_API | File folder | 28/11/2024 19:26:25 |
| db_connect.php | 890 PHP Sourc... | 21/11/2024 12:27:55 |
| CreateKey.php | 67 PHP Sourc... | 28/11/2024 19:04:49 |
| dbconfig.php | 201 PHP Sourc... | 25/12/2024 20:05:33 |
| portconfig.conf | 14 CONF File | 26/12/2024 12:53:59 |
| sys_config.php | 119 PHP Sourc... | 26/12/2024 15:15:30 |
| take_photo.php | 6,366 PHP Sourc... | 26/12/2024 17:37:22 |

Register.php: to create new user**login/login.php:** login to the app and return access token**login/check_login.php:** Check the access token is valid or not.**take_photo.php:** upload the image image and call the python api to analyze and return the informations of bill.

At last, the take_photo.php write an event to logs/log.txt

3 – Oauth 2.0 server

Install Apache 2.4 / PHP , MySQL



3.1- Install Apache 2.4 / PHP , MySQL

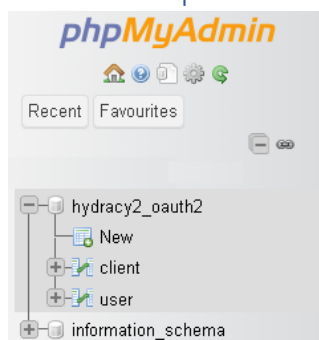


Figure 2. Database construction of oauth2 server

Oauth2.0 database include 2 table: user and client.

3.1.1- Client database (client table): contain the information of the client app that registered the Oauth service with Oauth server.

Setup 'client' table:

hydragroup.info@gmail.com

Table name: Add column(s) Go

| Name | Type | Length/Values | Default | Collation | Attributes | Null | Index |
|---------------|---------|---------------|---------|------------------|------------|-------------------------------------|-------|
| id | INT | | None | utf8mb4_unicode_ | | <input checked="" type="checkbox"/> | --- |
| client_email | VARCHAR | 255 | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |
| client_id | VARCHAR | 255 | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |
| client_secret | VARCHAR | 255 | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |
| redirect_uri | VARCHAR | 255 | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |

Table comments:
 Collation:
 Storage Engine:

PARTITION definition:
 Partition by: (Expression or column list)
 Partitions:

Figure 3. Setup 'client' table

The most important information are client_id, client_secret and redirect_url. They will be sent with O-authentication request.

Showing rows 0 - 0 (1 total, Query took 0.0001 seconds.)

`SELECT * FROM `client``

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: Filter rows:

Extra options

| | id | client_email | client_id | client_secret | redirect_uri |
|---|----|------------------------|---|---------------------------|----------------------------|
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 1 | admin@bill-capture.com | 844862967330-o8o0cl442gf4pjs2vtps8kk3pj5snu5j.apps... | fcvdsuifgcvdwufghilnwdhfg | http://hydra-cam0.ddns.net |

☐ Check all With selected: ☐ Edit ☐ Copy ☐ Delete

Figure 4. Client informations.

3.1.2- User database (user table): contain the resources of the user that the App want to access. The user will be authenticated with email and password in Authentication page.

Table name: Add column(s) Go

| Name | Type | Length/Values | Default | Collation | Attributes | Null | Index |
|-----------|---------|---------------|---------|------------------|------------|-------------------------------------|-------|
| id | INT | | None | utf8mb4_unicode_ | | <input checked="" type="checkbox"/> | --- |
| user_id | VARCHAR | 20 | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |
| email | VARCHAR | 20 | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |
| password | VARCHAR | 20 | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |
| user_name | VARCHAR | 20 | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |
| code | VARCHAR | | None | utf8mb4_unicode_ | | <input type="checkbox"/> | --- |

Table comments:
 Collation:
 Storage Engine:

PARTITION definition:
 Partition by: (Expression or column list)
 Partitions:

hydragroup.info@gmail.com

Figure 5. Setup 'user' table

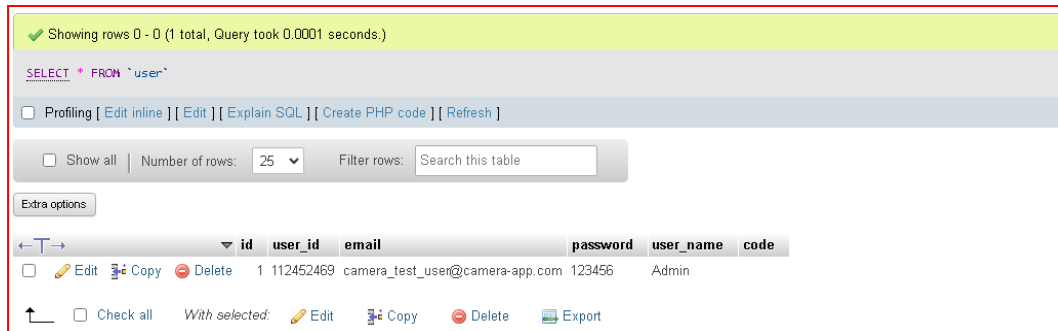


Figure 6. User informations.

3.2- O-auth 2.0 API

The O-auth2 server

Client API: Include the api that redirect the user to authentication server and handle the authentication result (authentication code, access token).

Auth API: Include the api and UI for user login. It will return a return url with authorization code .

Resource API: Contain the api that's parse the access token.

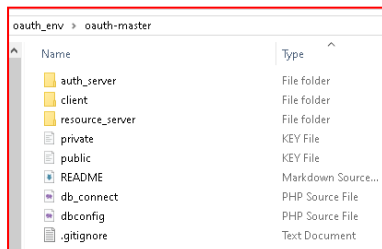


Figure 7. oauth server api repository

3.2.1 – Public and private keys

Public and private keys will be used to parse the access token. The authentication server use the public key to generate the access token. And prive key will be used to parse the access token in Resource server.

3.2.2- Encryption keys

Encryption keys is used to generate the authentication code. Public key, private key and Encryption key were generated following the link:

<https://oauth2.thephpleague.com/installation/>

hydragroup.info@gmail.com

3.2.3 - Client API (client repository)

| Name | Size | Last Modified | Type | Permissions |
|-----------------------|-----------|-----------------------|----------------------|-------------|
| vendor | 188 bytes | Apr 23, 2024, 6:15 PM | httpd/unix-directory | 0755 |
| .env | 501 bytes | Today, 5:07 PM | text/x-generic | 0644 |
| .gitignore | 8 bytes | Apr 23, 2024, 6:15 PM | text/x-generic | 0644 |
| bootstrap.php | 1.37 KB | Today, 2:19 PM | text/x-generic | 0644 |
| composer.json | 102 bytes | Apr 23, 2024, 6:15 PM | text/x-generic | 0644 |
| composer.lock | 35.53 KB | Apr 23, 2024, 6:15 PM | text/x-generic | 0644 |
| error_log | 27.12 KB | Today, 6:24 PM | text/x-generic | 0644 |
| index.html | 240 bytes | Apr 23, 2024, 6:15 PM | text/html | 0644 |
| init_oauth - Copy.php | 287 bytes | Apr 23, 2024, 6:15 PM | text/x-generic | 0644 |
| init_oauth.php | 2.03 KB | Today, 3:52 PM | text/x-generic | 0644 |
| parse_token.php | 1.63 KB | Today, 6:24 PM | text/x-generic | 0644 |
| process_auth_code.php | 1.39 KB | Today, 5:58 PM | text/x-generic | 0644 |

Figure: client api repository

Init environment file (.env):

```
AUTHORIZATION_SERVER_AUTHORIZE_URL="https://hydra-cyborg.com/API/oauth-master/auth_server/authorize.php"
AUTHORIZATION_SERVER_ACCESS_TOKEN_URL="https://hydra-cyborg.com/API/oauth-master/auth_server/token.php"
RESOURCE_OWNER_URL="http://localhost:8012/resource_owner.php"
RESOURCE_SERVER_URL="http://localhost:8012/resource.php"
```

AUTHORIZATION_SERVER_AUTHORIZE_URL: authorize.php

AUTHORIZATION_SERVER_ACCESS_TOKEN_URL: token.php.

RESOURCE_OWNER_URL: resource_owner.php

RESOURCE_SERVER_URL: resource.php

Nhiệm vụ của các api này sẽ được mô tả chi tiết trong phần III.

hydragroup.info@gmail.com

3.2.4 – Authentication sever API

| Name | Size | Last Modified | Type | Permissions |
|---------------------------|-----------|-----------------------|----------------------|-------------|
| css | 38 bytes | Apr 23, 2024, 6:14 PM | httpd/unix-directory | 0755 |
| fonts | 65 bytes | Apr 23, 2024, 6:14 PM | httpd/unix-directory | 0755 |
| images | 37 bytes | Apr 23, 2024, 6:14 PM | httpd/unix-directory | 0755 |
| js | 21 bytes | Apr 23, 2024, 6:14 PM | httpd/unix-directory | 0755 |
| stylesheet | 77 bytes | Apr 23, 2024, 6:14 PM | httpd/unix-directory | 0755 |
| vendor | 4 KB | Apr 23, 2024, 6:15 PM | httpd/unix-directory | 0755 |
| .env | 291 bytes | Nov 23, 2024, 4:33 PM | text/x-generic | 0644 |
| .gitignore | 8 bytes | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| AccessTokenEntity.php | 290 bytes | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| AccessTokenRepository.php | 1.08 KB | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| approve.php | 3.7 KB | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| AuthCodeEntity.php | 362 bytes | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| AuthCodeRepository.php | 740 bytes | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| authorize.php | 2.07 KB | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| bootstrap.php | 1.34 KB | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| ClientEntity.php | 475 bytes | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| ClientRepository.php | 632 bytes | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| composer.json | 282 bytes | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| composer.lock | 65.6 KB | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |
| do_approve.php | 90 bytes | Apr 23, 2024, 6:14 PM | text/x-generic | 0644 |

Init environment file (.env):

```
RESOURCE_SERVER_LOGIN_URL="https://hydra-cyborg.com/API/oauth-master/auth_server/login.php"
RESOURCE_SERVER_APPROVE_URL="https://hydra-cyborg.com/API/oauth-master/auth_server/approve.php"
```

Figure: auth_server/.env

Using encryption key:

Use the encryption key that's generated in 3.3.2 and assign to \$encryptionKey in auth_server/bootstrap.php.

The auth_server/authorize.php endpoint will redirect the user to login and approve to use the resource.

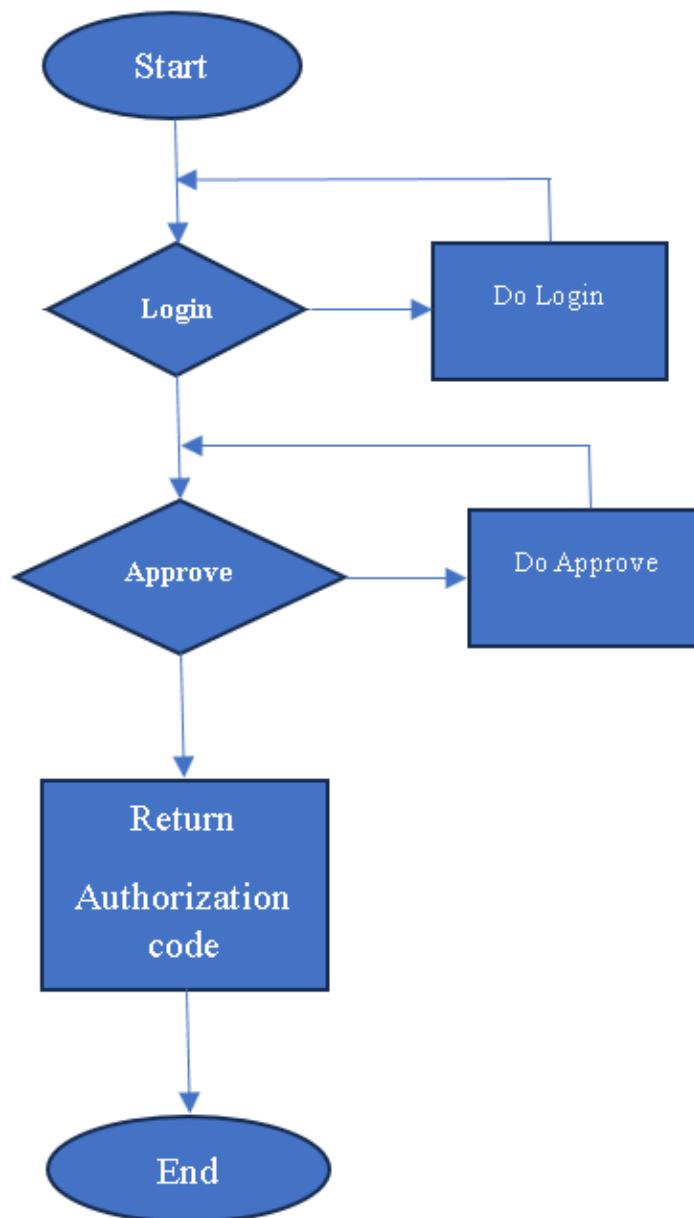


Figure 8. Authorization proccess in authentication server

3.2.5 – Resource sever API

After install client api and auth api, go to oauth-master folder, open command promp and run 'php -S localhost:8012 -t resource_server' command

4 – Demo with Phone App

Phone Application Made by Unity version 2022.3.20f1

hydragroup.info@gmail.com

Can run both on Android and iOS (Current version designed for Android)

Application don't approve sign-up for new user

The registered account will be created from Oauth2.0 server

Username: admin@gmail.com

Pass: 123456

