



exchange BTC

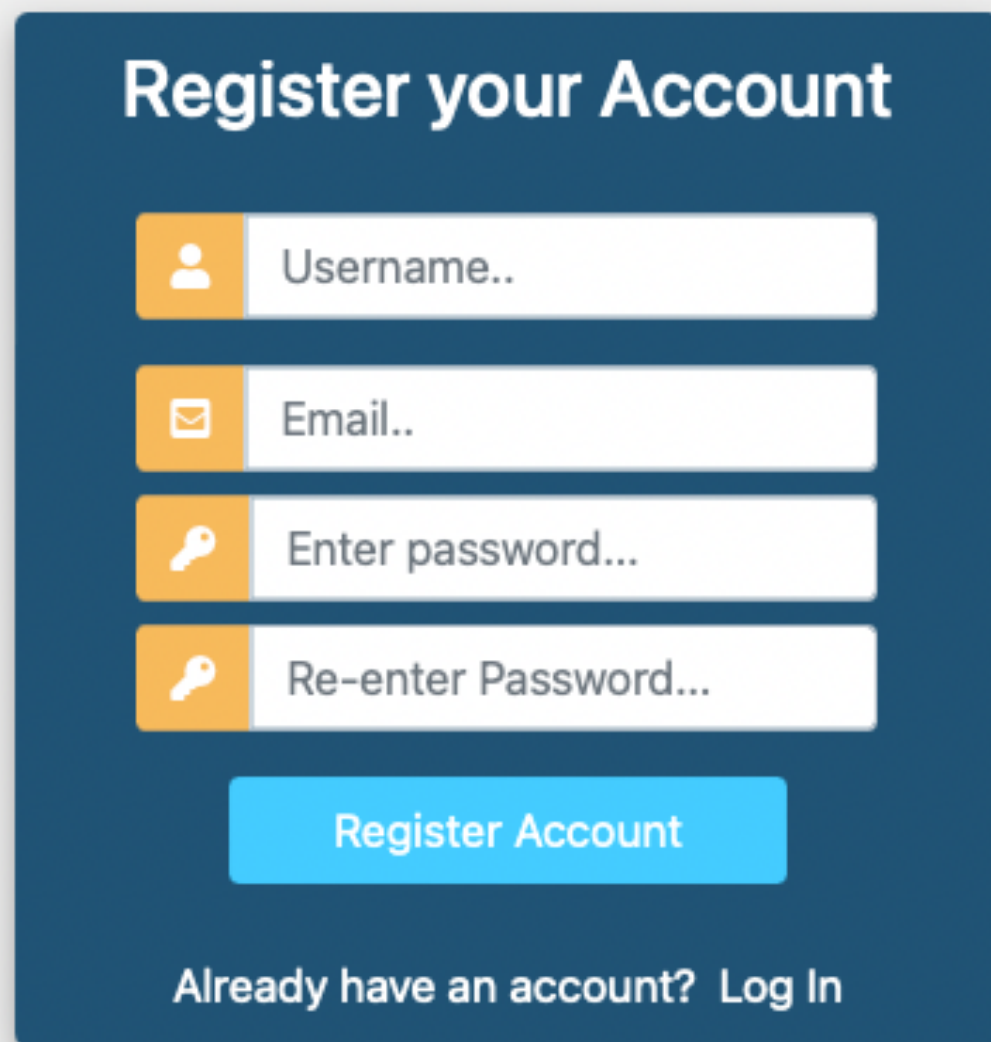
Implementing a web platform for exchange BTC

with framework Django and MondoDB database

Project request:

- The web platform must provide an endpoint to manage user registration and access.
- Assigns each registered user a variable amount between 1 and 10 bitcoins.
- Each user can publish one or more orders to sell or buy a certain amount of bitcoins at a certain price. If the buy price of the order is equal to or higher than the sell price of any other user, record the transaction and mark both orders as executed.
- Create an endpoint to get all active buy and sell orders and another one to calculate the total profit or loss from each user's trades.

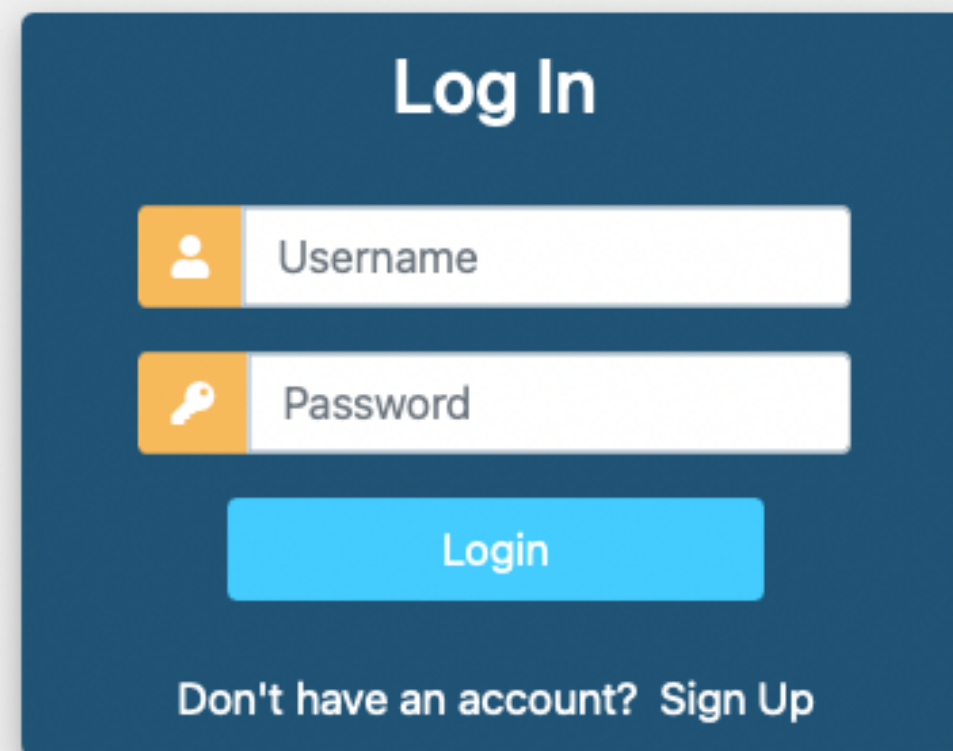
Endpoint for registration and login:



Register your Account

[Register Account](#)

[Already have an account? Log In](#)



Log In

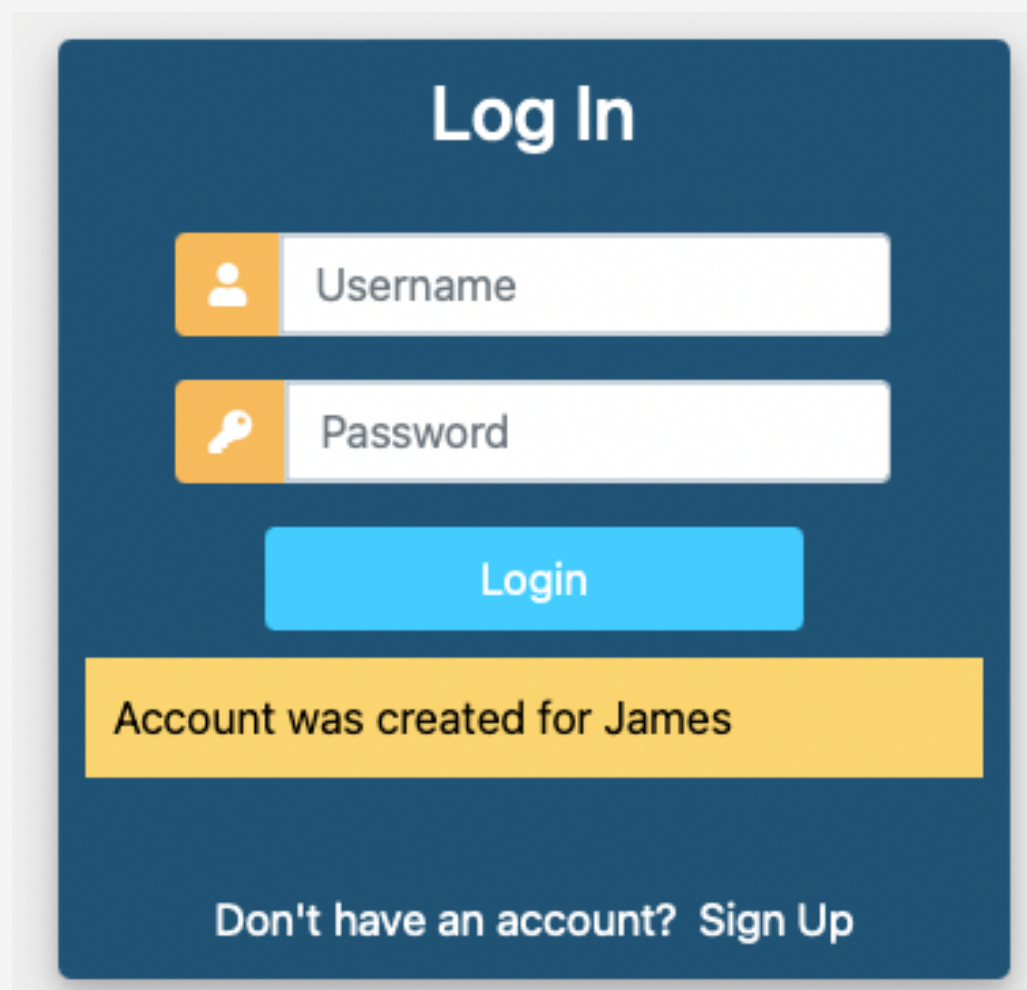
[Login](#)

[Don't have an account? Sign Up](#)

Are you a registered user?

Using Django framework login and User creation form in web Exchange app we implemented two end point [register/ and login/] to permit the registration for a new user and login existing user.

Assignment BTC at registration:



Log In

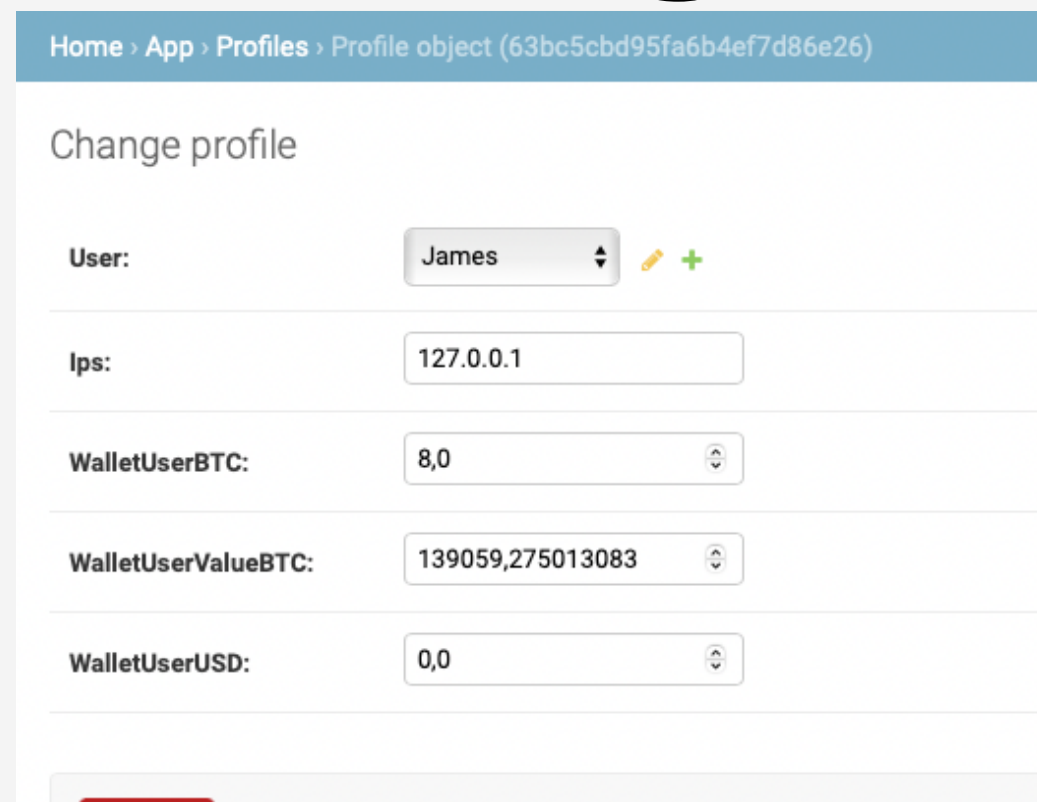
Username

Password

Login

Account was created for James

Don't have an account? Sign Up



Home > App > Profiles > Profile object (63bc5cbd95fa6b4ef7d86e26)

Change profile

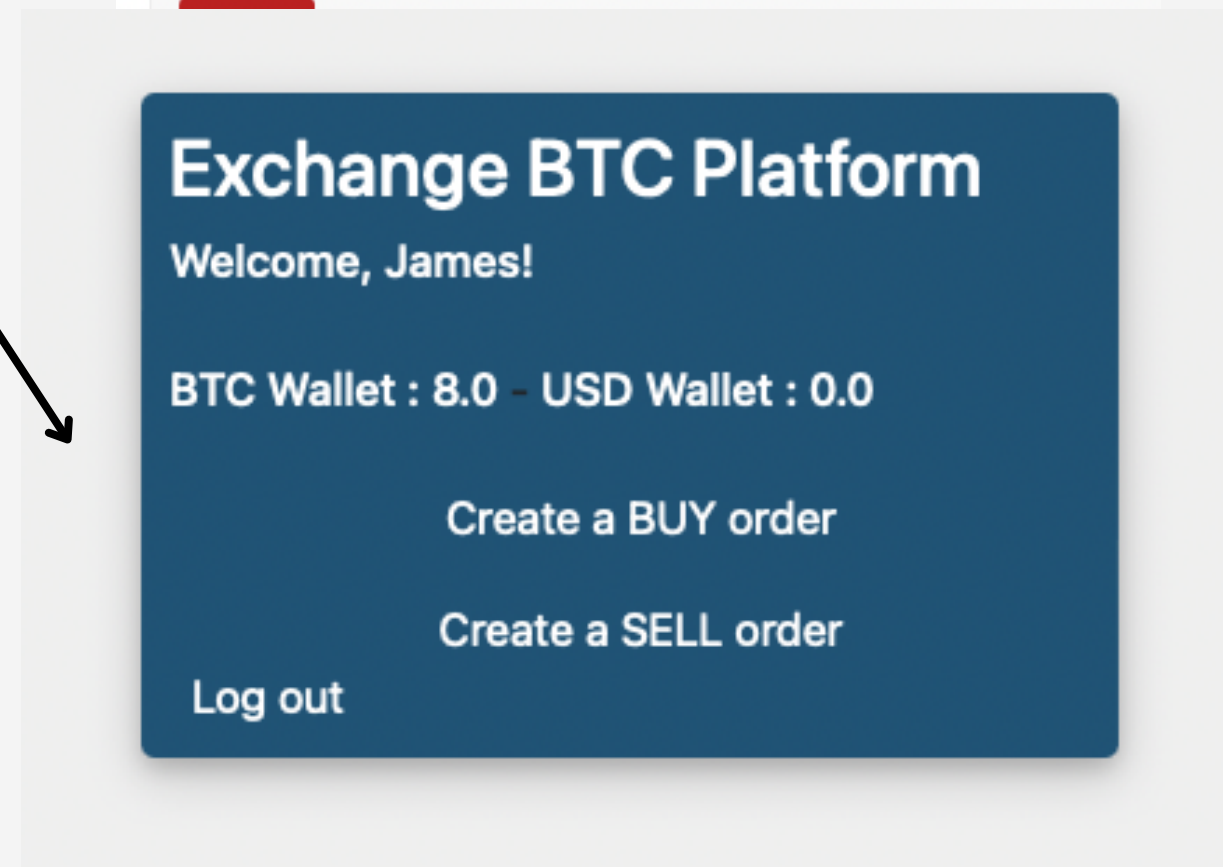
User: James

Ips: 127.0.0.1

WalletUserBTC: 8,0

WalletUserValueBTC: 139059,275013083

WalletUserUSD: 0,0



Exchange BTC Platform

Welcome, James!

BTC Wallet : 8.0 - USD Wallet : 0.0

Create a BUY order

Create a SELL order

Log out

How many BTC do you want?

After the login, the new user will receive a variable amount between 1 and 10 BTC in his user profile.

The initial value of this BTC, donated at the registration, is the value at that moment from CoinMarketCup API.

The user profit will depend due to all the trade (buy and sell orders) that the user will do on the platform and the value of BTC in the market.

From the home page of the exchange web app, all users can check their wallet balance with the BTC Wallet and the USD Wallet status that could be used to buy new BTC with buy orders.

Order publish: buy and sell

In the web application you could exchange BTC with a sell order or buy BTC with a buy order. If you balance of BTC ord USD Wallet could support your quantity and price order you could publish the order in the platform.

Buy Order BTC

Price: 17000



Quantity: 1



Publish

[Return to Home Page](#)

Sell Order BTC

Price: 16985



Quantity: 1



Publish

[Return to Home Page](#)

Match between buy and sell orders:

When a user insert a Buy order or Sell order if there are one or most orders that respect the price the order chose the best one and the orders will be closed and write the transaction in a collection in MondoDB database where all the transaction closed will be recorded.

Order Collection: Sell open order:

```
_id: ObjectId('63cbc4a2b25a73e8297750fe')
id: 187
profile_id: 24
orderType: "Sell"
orderStatus: "Open"
dateTime: 2023-01-21T10:55:30.158+00:00
priceOrder: 22850
profitOrder: 0
quantity: 0.5

_id: ObjectId('63cbc4c0b25a73e829775100')
id: 188
profile_id: 26
orderType: "Sell"
orderStatus: "Open"
dateTime: 2023-01-21T10:56:00.749+00:00
priceOrder: 22900
profitOrder: 0
quantity: 0.2

_id: ObjectId('63cbc4e5b25a73e829775102')
id: 189
profile_id: 25
orderType: "Sell"
orderStatus: "Open"
dateTime: 2023-01-21T10:56:37.762+00:00
priceOrder: 22910
profitOrder: 0
quantity: 0.7
```

Order buy from user:

Buy Order BTC

Enter the unit price BTC and the quantity to purchase

Price:

Quantity:

[Return to Home Page](#)

```
_id: ObjectId('63cbc593b25a73e82977510a')
id: 190
profile_id: 20
orderType: "Buy"
orderStatus: "Closed"
dateTime: 2023-01-21T10:59:31.653+00:00
priceOrder: 22910
profitOrder: 0
quantity: 0
```

Order Collection: Sell order:

```
_id: ObjectId('63cbc4a2b25a73e8297750fe')
id: 187
profile_id: 24
orderType: "Sell"
orderStatus: "Closed"
dateTime: 2023-01-21T10:55:30.158+00:00
priceOrder: 22850
profitOrder: 30
quantity: 0

_id: ObjectId('63cbc4c0b25a73e829775100')
id: 188
profile_id: 26
orderType: "Sell"
orderStatus: "Closed"
dateTime: 2023-01-21T10:56:00.749+00:00
priceOrder: 22900
profitOrder: 2
quantity: 0

_id: ObjectId('63cbc4e5b25a73e829775102')
id: 189
profile_id: 25
orderType: "Sell"
orderStatus: "Open"
dateTime: 2023-01-21T10:56:37.762+00:00
priceOrder: 22910
profitOrder: 0
quantity: 0.39999999999999997
```

Transaction Collection Closed

```
_id: ObjectId('63c835098596036a6237aca4')
Buy User: "admin"
Buy Profile: "63c83288649b03d1de31ca46"
Order Type: "Buy"
BTC Quantity: 0.5
Price Buy: 20900
Sell Order Price: "20885.0"
Sell User: "James"
Sell Profile: "63c8333f8596036a6237ac97"
Seller Profit Order: "7.5"

_id: ObjectId('63c8350a8596036a6237aca6')
Buy User: "admin"
Buy Profile: "63c83288649b03d1de31ca46"
Order Type: "Buy"
BTC Quantity: 0.3
Price Buy: 20900
Sell Order Price: "20887.0"
Sell User: "Tim"
Sell Profile: "63c8335a8596036a6237ac99"
Seller Profit Order: "3.9"

_id: ObjectId('63c8350a8596036a6237aca8')
Buy User: "admin"
Buy Profile: "63c83288649b03d1de31ca46"
Order Type: "Buy"
BTC Quantity: 0.2
Price Buy: 20900
Sell Order Price: "20890.0"
Sell User: "Ilaria"
Sell Profile: "63c833268596036a6237ac95"
Seller Profit Order: "5.0"
```

Database: MongoDB

The web platform exchange is based on the MongoDB database. MongoDB is a non-relational document database that provides support for JSON-like storage. The MongoDB database has a flexible data model that enables you to store unstructured data, and it provides full indexing support and replication with rich and intuitive APIs. With MongoDB Compass App we could see the structure of the platform with the collection for "Profile" user registered, "Order" in the platform, and "transaction list" with the transactions closed.



Profile:

```
{
  "_id": ObjectId('63cbc185b25a73e8297750f7'),
  "user_id": 24,
  "ips": "127.0.0.1",
  "walletUserBTC": 7.5,
  "walletUserValueBTC": 182566.09630449107,
  "walletUserUSD": 11455
}
```

```
{
  "_id": ObjectId('63cbc196b25a73e8297750f9'),
  "user_id": 25,
  "ips": "127.0.0.1",
  "walletUserBTC": 4.3,
  "walletUserValueBTC": 114103.81019030692,
  "walletUserUSD": 6873
}
```

```
{
  "_id": ObjectId('63cbc1a4b25a73e8297750fb'),
  "user_id": 26,
  "ips": "127.0.0.1",
  "walletUserBTC": 1.8,
  "walletUserValueBTC": 45641.52407612277,
  "walletUserUSD": 4582
}
```

Order:

```
{
  "_id": ObjectId('63cbc4c0b25a73e829775100'),
  "id": 188,
  "profile_id": 26,
  "orderType": "Sell",
  "orderStatus": "Closed",
  "dateTime": 2023-01-21T10:56:00.749+00:00,
  "priceOrder": 22900,
  "profitOrder": 2,
  "quantity": 0
}
```

```
{
  "_id": ObjectId('63cbc4e5b25a73e829775102'),
  "id": 189,
  "profile_id": 25,
  "orderType": "Sell",
  "orderStatus": "Open",
  "dateTime": 2023-01-21T10:56:37.762+00:00,
  "priceOrder": 22910,
  "profitOrder": 0,
  "quantity": 0.39999999999999997
}
```

```
{
  "_id": ObjectId('63cbc593b25a73e82977510a'),
  "id": 190,
  "profile_id": 20,
  "orderType": "Buy",
  "orderStatus": "Closed",
  "dateTime": 2023-01-21T10:59:31.653+00:00,
  "priceOrder": 22910,
  "profitOrder": 0,
  "quantity": 0
}
```

Transaction List:

```
{
  "_id": ObjectId('63cbc4a2b25a73e8297750fe'),
  "id": 187,
  "profile_id": 24,
  "orderType": "Sell",
  "orderStatus": "Closed",
  "dateTime": 2023-01-21T10:55:30.158+00:00,
  "priceOrder": 22850,
  "profitOrder": 30,
  "quantity": 0
}
```

```
{
  "_id": ObjectId('63cbc4c0b25a73e829775100'),
  "id": 188,
  "profile_id": 26,
  "orderType": "Sell",
  "orderStatus": "Closed",
  "dateTime": 2023-01-21T10:56:00.749+00:00,
  "priceOrder": 22900,
  "profitOrder": 2,
  "quantity": 0
}
```

```
{
  "_id": ObjectId('63cbc4e5b25a73e829775102'),
  "id": 189,
  "profile_id": 25,
  "orderType": "Sell",
  "orderStatus": "Open",
  "dateTime": 2023-01-21T10:56:37.762+00:00,
  "priceOrder": 22910,
  "profitOrder": 0,
  "quantity": 0.39999999999999997
}
```

Endpoint: open orders

```
[
  {
    "id_order": 165,
    "profile": "Ilaria",
    "orderType": "Sell",
    "orderStatus": "Open",
    "dateTime": "2023-01-18T18:01:00.740Z",
    "priceOrder": 20890.0,
    "quantity": 0.3
  },
  {
    "id_order": 169,
    "profile": "James",
    "orderType": "Sell",
    "orderStatus": "Open",
    "dateTime": "2023-01-18T18:17:48.926Z",
    "priceOrder": 20900.0,
    "quantity": 1.0
  },
  {
    "id_order": 170,
    "profile": "Tim",
    "orderType": "Sell",
    "orderStatus": "Open",
    "dateTime": "2023-01-18T18:18:27.797Z",
    "priceOrder": 20790.0,
    "quantity": 2.0
  }
]
```

List of all the orders in status Open:

The orders that didn't match with a Sell or Buy order remain in an "Open" status and they are waiting a Sell or Buy order that match with them. We created the endpoint `openorders/` with a return in Json to get all the orders in status "Sell".

The endpoint **`openorders/`** required only that the user is authenticated to the platform.

Endpoint: user's profit

Profit user detail:

For all the users registered in the web application with the endpoint *profitprofile/* visible only at the admin and at the staff, we could have a detail of the profit for each profile in JSON format.

The profit is the result of Sell and Buy order and the price market from Coin Market Cap.

The profit for each user is calculated with the difference between the initial value of the wallet in USD (when the user registered in the platform and the value of the balance of BTC wallet (at CoinMarketCap price) + the value in Wallet USD (a result of the sell and buy orders with profit or not) + Sell and Buy order pending valued at the price order.

```
{
  {
    "profile": "63cbc185b25a73e8297750f7",
    "User": "Ilaria",
    "Profit": -747.4862791656924
  },
  {
    "profile": "63cbc196b25a73e8297750f9",
    "User": "James",
    "Profit": -391.6737757870287
  },
  {
    "profile": "63cbc1a4b25a73e8297750fb",
    "User": "Laura",
    "Profit": -172.25767004467343
  }
}
```



Thank you for your attention

Link Git Hub for the project:

<https://github.com/matteo-foschi/exchangeBTC>

Personal Link

<https://www.linkedin.com/in/foschimatteo/>

Matteo Foschi