



START2IMPACT

Django & MongoDB

Project

BITCOIN

Exchange

Project Requirements



- Sign-up and Sign-in system
- Automatic assignment of Bitcoin after registration
- Possibility for the users to post buy and sell orders
- Registration of the transaction when two orders are matched
- Endpoint with all the active orders
- Endpoint with the transactions and info about profit and loss

Sign-up & Login

Exchange BTC

Sign Up

Username: Required. 150 characters or fewer. Letters, digits and @/./+/-/_ only.

Email address:

Password:

Your password can't be too similar to your other personal information.

Your password must contain at least 8 characters.

Your password can't be a commonly used password.

Your password can't be entirely numeric.

Password confirmation: Enter the same password as before, for verification.



Exchange BTC

Login

Username:

Password:




Homepage

Exchange BTC

Below you can find your BTC and USD balance

BTC balance	USD balance
4.423	10000.0 \$



Create an Order

Welcome user2 - [Order list](#) - [Transaction list](#) - [Log Out](#)

This page shows the BTC and USD balance, and gives the possibility to the user to reach the other pages of the Webapp.

Create an order

Exchange BTC


Place a Buy or a Sell Order

New Order

Order type:

Btc amount:

Btc unit price:



Welcome user2 - [Control your balance](#) - [Transaction list](#) - [Log Out](#)

← → ↻ ⓘ 127.0.0.1:8000/create_order/

You don't have enough USD for a buy order

← → ↻ ⓘ 127.0.0.1:8000/create_order/

You don't have enough BTC for a sell order

On this endpoint each user can create a buy order or a sell order.
If they don't have enough BTC or USD, an `HttpResponse` will appear
as in the images above.

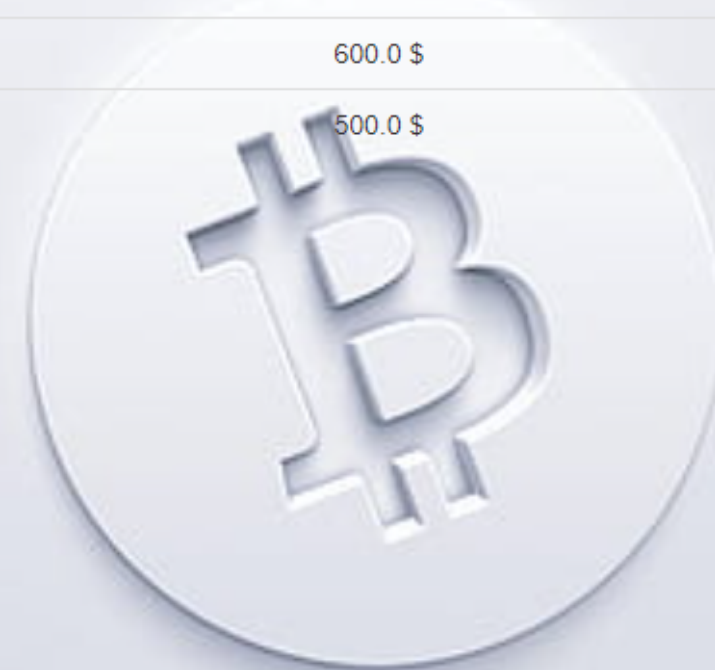


Order list

Exchange BTC

Below you can find the order list

User	Order type	Order status	Btc amount	Btc unit price	Total price	Date
user1	sell	open	1.0	1000.0 \$	1000.0 \$	April 25, 2023, 3:43 p.m.
user1	buy	open	0.3	200.0 \$	60.0 \$	April 25, 2023, 3:42 p.m.
user2	sell	open	2.7	700.0 \$	1890.0 \$	April 25, 2023, 3:34 p.m.
user2	sell	open	1.0	400.0 \$	400.0 \$	April 25, 2023, 3:34 p.m.
user2	buy	open	1.4	600.0 \$	840.0 \$	April 25, 2023, 3:33 p.m.
user2	buy	open	1.0	500.0 \$	500.0 \$	April 25, 2023, 3:33 p.m.



Create an order

Welcome user1 - [Control your balance](#) - [Order list](#) - [Transaction list](#) - [Log Out](#)

This page shows the list of all the active orders inside the Webapp.

Matching orders system

Exchange BTC

Place a Buy or a Sell Order

New Order

Order type:

Btc amount:

Btc unit price:

```
{
  "_id" : ObjectId("6447fec0c3902906b9b39e48"),
  "author_id" : NumberInt(22),
  "datetime" : ISODate("2023-04-25T16:24:32.456+0000"),
  "order_type" : "buy",
  "status" : "closed",
  "btc_amount" : 0.0,
  "btc_unit_price" : 1100.0,
  "total_price" : 1100.0
}
```

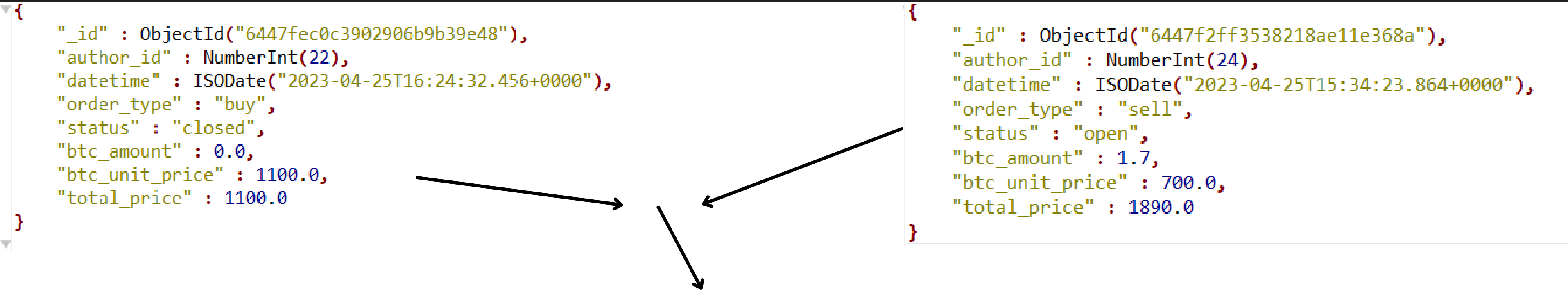
MATCHED



After creating the order, the system will search an opposite order in the app. If the unit price of the buy order is greater than or equal to the unit price of the sell order, the system will create a transaction and mark the orders as closed (only if the btc amount is equal to zero, otherwise it will continue to find a match).



Matching orders system (MongoDB)



```
{
  "_id" : ObjectId("6447fec0c3902906b9b39e49"),
  "buyer_id" : NumberInt(22),
  "seller_id" : NumberInt(24),
  "btc_amount" : 1.0,
  "btc_unit_price" : 700.0,
  "total_price" : 700.0,
  "profit_loss" : 400.0,
  "datetime" : ISODate("2023-04-25T16:24:32.473+0000")
}
```

Sell order is still open because his btc amount was greater then the btc amount of the buy order.



Database: MongoDB



The bitcoin exchange platform is based on the MongoDB database, 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. I used Studio 3T for MongoDB to control the structure of the collections "user", "order" and "transaction".

```
1 db.getCollection("auth_user").find({})
2

Raw shell output Find Query (line 1) x
50 Documents 1 to 3

1 {
2   "_id" : ObjectId("6447b53373ed1fa4b335c258"),
3   "id" : NumberInt(22),
4   "password" : "pbkdf2_sha256$260000$ADfchl70Pm2BYzPf6AoUQQ$jghpjnarfS90e5x7skHo1QT6d7edrFbL2vprwQ4rCWo=",
5   "last_login" : ISODate("2023-04-25T15:50:12.954+0000"),
6   "is_superuser" : true,
7   "username" : "AndreaAdmin",
8   "first_name" : "",
9   "last_name" : "",
10  "email" : "andreaadmin@gmail.com",
11  "is_staff" : true,
12  "is_active" : true,
13  "date_joined" : ISODate("2023-04-25T11:10:43.127+0000")
14 }
```

```
1 db.getCollection("app_transaction").find({})
2

Raw shell output Find Query (line 1) x
50 Documents 1 to 1

1 {
2   "_id" : ObjectId("6447fec0c3902906b9b39e49"),
3   "buyer_id" : NumberInt(22),
4   "seller_id" : NumberInt(24),
5   "btc_amount" : 1.0,
6   "btc_unit_price" : 700.0,
7   "total_price" : 700.0,
8   "profit_loss" : 400.0,
9   "datetime" : ISODate("2023-04-25T16:24:32.473+0000")
10 }
```

```
1 db.getCollection("app_order").find({})

Raw shell output Find Query (line 1) x
50 Documents 1 to 8

1 {
2   "_id" : ObjectId("6447f2ca3538218ae11e3684"),
3   "author_id" : NumberInt(24),
4   "datetime" : ISODate("2023-04-25T15:33:30.354+0000"),
5   "order_type" : "buy",
6   "status" : "open",
7   "btc_amount" : 1.0,
8   "btc_unit_price" : 500.0,
9   "total_price" : 500.0
10 }
```



Transaction list

Exchange BTC

Below you can find your transaction list

Buyer	Seller	Btc amount	Btc unit price	Date	Profit/Loss
AndreaAdmin	user2	1.0	700.0 \$	April 25, 2023, 4:24 p.m.	+ 400.0 \$

This page shows the list of the user transaction list with info about profit and loss, calculated through the difference between the price I was willing to pay and what I paid instead.



THANK YOU FOR YOUR ATTENTION



Link Git Hub for the project:

https://github.com/andreagenos/bitcoin_exchange.git

Username: AndreaAdmin - Password: prova123

Username: user1 - Password: prova123

Username: user2 - Password: prova123