First of all, I have to say that to build this API I used the Django Python Framework and, specifically, I used the Django REST Framework, which is a popular framework for building APIs. The database I used is the default database engine of Django: SQLite.

To test the HTTP requests, I used POSTMAN.

It means that in order to run this project, you must have installed Django and Django REST Framework:

- pip install django
- pip install djangorestframework

And then, run the server:

- python manage.py runserver
    - Type: *python manage.py runserver 80* if you want to run on port 80.

Once you browse ***http://127.0.0.1:8000***, you will see the Django Admin Panel. The credentials are:

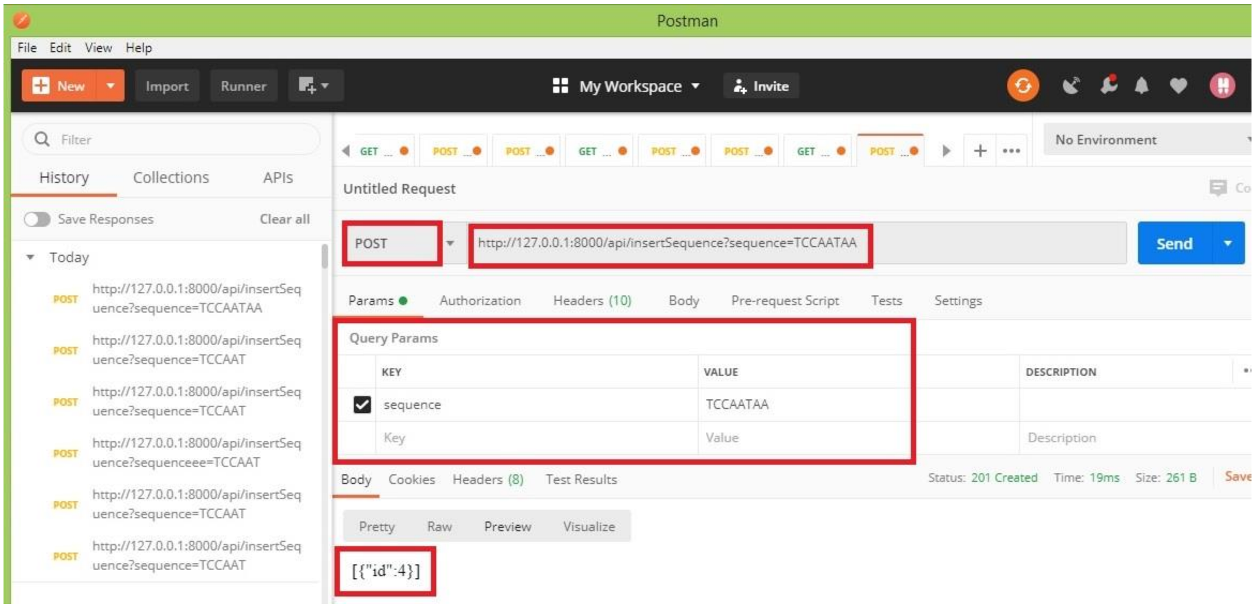
- User: **antonio**
- Password: **dna12345**

Once you log in, you will see site administration panel, and in ***http://127.0.0.1:8000/api/dnasequence/*** you will find all the sequences inserted in the database, as well as the possibility to manipulate them (add, delete, modify). Anyway, for adding, the idea is to use the *insert* method through an HTTP POST request in POSTMAN.

- **Method *insert***

This method can be tested generating an HTTP POST request via POSTMAN to: ***http://127.0.0.1:8000/api/insertSequence*** with the query param *sequence*, as follows:

http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAAA



POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAA
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAAT
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAAT
POST http://127.0.0.1:8000/api/insertSequence?sequenceee=TCCAAT
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAAT
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAAT

POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAA

Query Params

	KEY	VALUE	DESCRIPTION
☑	sequence	TCCAATAA	
	Key	Value	Description

Status: 201 Created Time: 19ms Size: 261 B

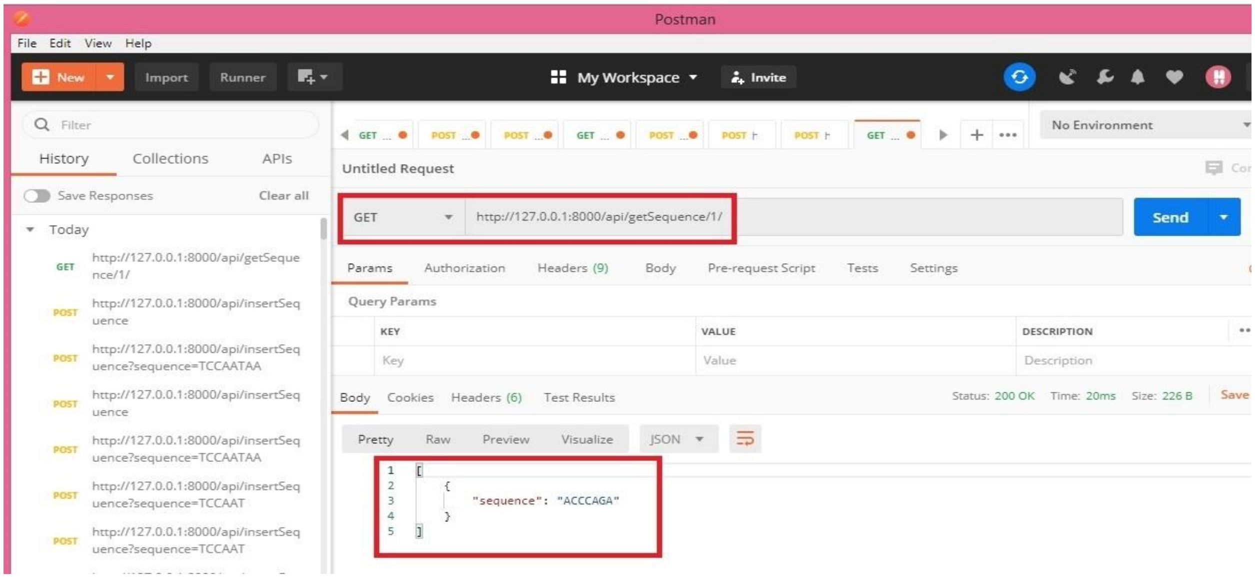
```
[{"id":4}]
```

- **Method *get***

This method can be tested generating an HTTP GET request via POSTMAN or through the browser:

http://127.0.0.1:8000/api/getSequence/<uid>/ where <*uid*> is the Unique Identifier of the sequence, which is the field *id* of the database. The *id* attribute is handled automatically by the Django’s ORM and increases by 1 for each insertion, starting by the id 1. Then, for example we have:

http://127.0.0.1:8000/api/getSequence/1/



GET http://127.0.0.1:8000/api/getSequence/1/
POST http://127.0.0.1:8000/api/insertSequence
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAA
POST http://127.0.0.1:8000/api/insertSequence
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAA
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAAT
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAAT

GET http://127.0.0.1:8000/api/getSequence/1/

Query Params

	KEY	VALUE	DESCRIPTION
	Key	Value	Description

Status: 200 OK Time: 20ms Size: 226 B

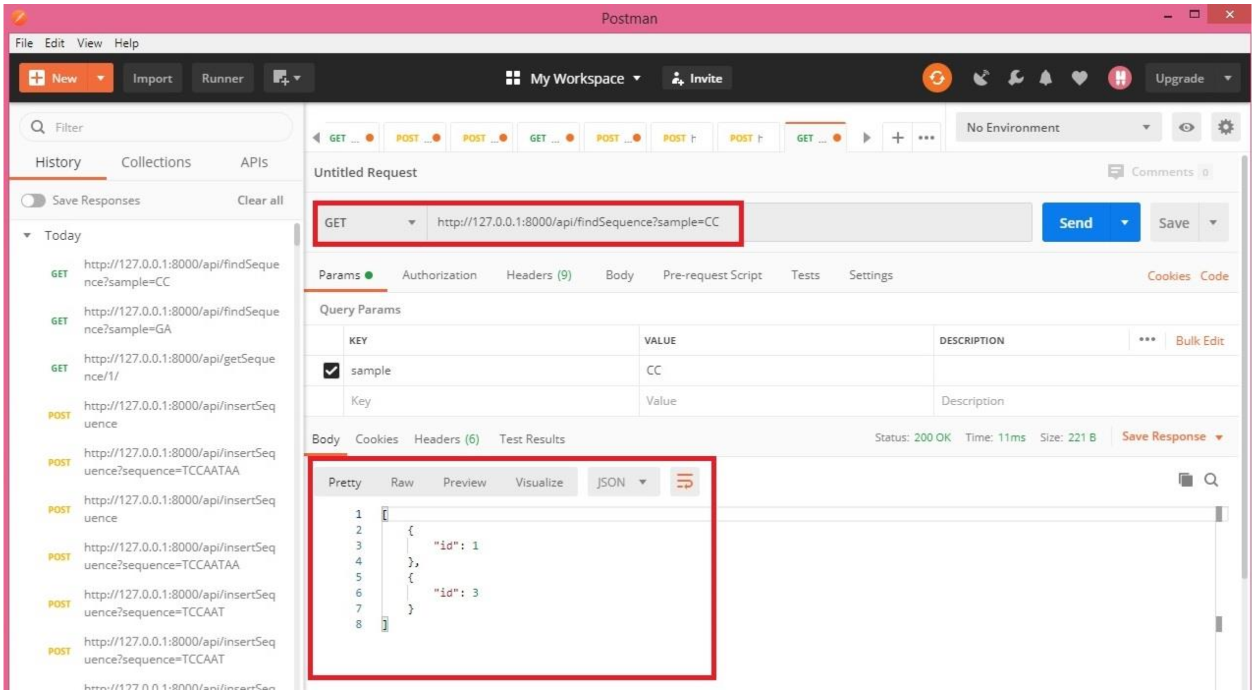
```
[
    {
        "sequence": "ACCCAGA"
    }
]
```

- **Method *find***

This method can be tested generating an HTTP GET request via POSTMAN or through the browser:

http://127.0.0.1:8000/api/findSequence?sample=<sample> where <*sample*> is the sample input. For example:

http://127.0.0.1:8000/api/findSequence?sample=CC



History:

- GET http://127.0.0.1:8000/api/findSequence?sample=CC
- GET http://127.0.0.1:8000/api/findSequence?sample=GA
- GET http://127.0.0.1:8000/api/getSequence/1/
- POST http://127.0.0.1:8000/api/insertSequence
- POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAA
- POST http://127.0.0.1:8000/api/insertSequence
- POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAA
- POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAAT
- POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAAT

GET http://127.0.0.1:8000/api/findSequence?sample=CC

KEY	VALUE	DESCRIPTION
☑ sample	CC	
Key	Value	Description

Status: 200 OK Time: 11ms Size: 221 B

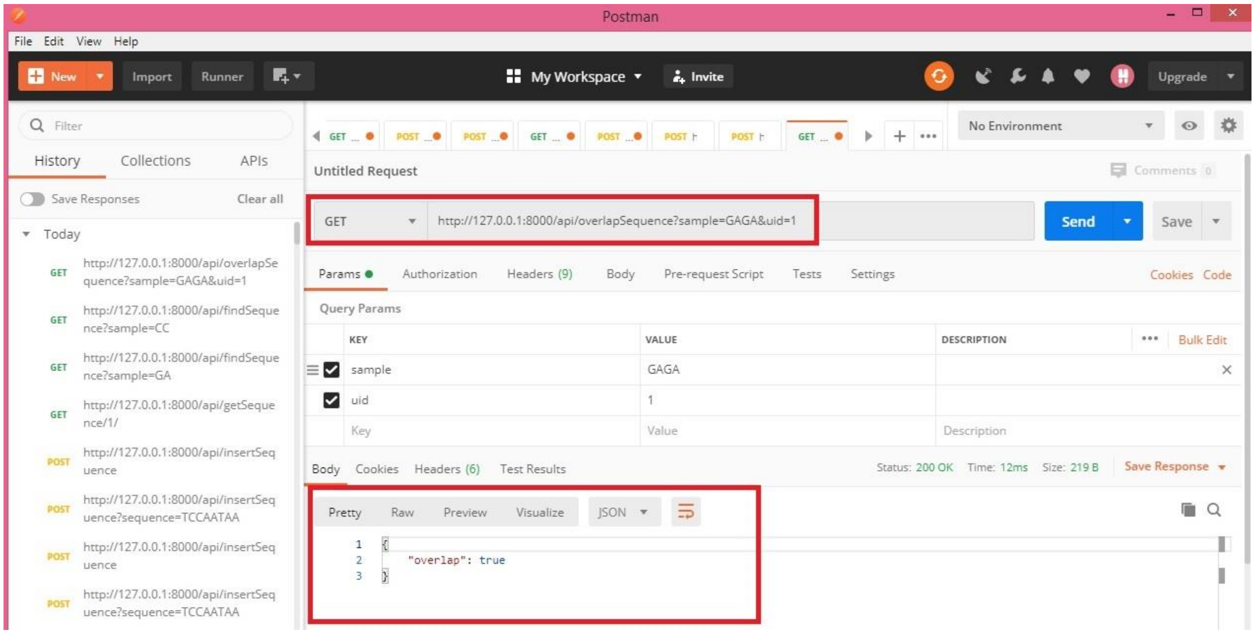
```
[
    {
        "id": 1
    },
    {
        "id": 3
    }
]
```

- **Method *overlap***

This method can be tested generating an HTTP GET request via POSTMAN or through the browser:

http://127.0.0.1:8000/api/overlapSequence?sample=<sample>&uid=<uid> where <*sample*> is the sample input, and <*uid*> is the Unique Identifier of the sequence. Then, for example we have:

http://127.0.0.1:8000/api/overlapSequence?sample=GAGA&uid=1



GET http://127.0.0.1:8000/api/overlapSequence?sample=GAGA&uid=1
GET http://127.0.0.1:8000/api/findSequence?sample=CC
GET http://127.0.0.1:8000/api/findSequence?sample=GA
GET http://127.0.0.1:8000/api/getSequence/1/
POST http://127.0.0.1:8000/api/insertSequence
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAA
POST http://127.0.0.1:8000/api/insertSequence
POST http://127.0.0.1:8000/api/insertSequence?sequence=TCCAATAA

GET http://127.0.0.1:8000/api/overlapSequence?sample=GAGA&uid=1

	KEY	VALUE	DESCRIPTION
☑	sample	GAGA	
☑	uid	1	
	Key	Value	Description

Status: 200 OK Time: 12ms Size: 219 B

```
{
    "overlap": true
}
```