

Heroku Hosting - python

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Deploying a Python Flask app on Heroku



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In my previous post I described on a high level how I developed an API using Flask. I talked briefly about how I hosted it via Heroku. In this post, I am going to go deeper and show you how to deploy the API to Heroku step by step.

Let`s Get started

After developing application on your local machine you always have the desire to share it with others far away but... you won`t carry your PC and go show them. So, you will then need to host it on the internet so that you provide them a public URL where they can view your work or product.

Heroku is a Platform as a service(PaaS) which abstracts us from dealing with servers, all we have to do is sign up, download a few tools and then upload our code to the platform effortlessly.

Before we continue, please ensure you have basic knowledge of Git, how it works as well as knowledge of how to use the terminal (Command line).

Heroku CLI

You need to download the Heroku CLI which will enable us deploy and manage our application.

After installation login into the Heroku Cli by running this command in the terminal.

```
heroku login
```

You will be prompted to enter your email address and password. You will only be logged in if these details match the credentials you signed up with on the Heroku platform.

The application

We are going to deploy the API application I developed and wrote about in this post, though you can follow along with your own application.

I have the application code hosted here on my Github account. Follow along with me if you do not have an application to use.

Let us start by cloning the application. Open the terminal and paste in this command to clone the application. A gentle reminder that this step will only work if you have Git installed on your computer.

```
git clone https://github.com/jokamjohn/bucket_api_heroku.git
```

Open the folder `bucket_api_heroku` with your favorite text editor or IDE. Create a virtual environment and install the dependencies by running.

```
pip install -r requirements.txt
```

***Note:** if you are using your own application, make sure you have added a `requirements.txt` file by running `pip freeze > requirements.txt` so that all the application dependencies are added.*

Adding a Procfile

In order for us to successfully deploy any application to Heroku, we must add a `Procfile` to that application.

Before we can add a `Procfile`, we need to first install a web server called Gunicorn. Run the following command within the application folder.

```
pip install gunicorn
```

Update the requirements file by running

```
pip freeze > requirements.txt
```

Create a new file with `Procfile` as the name and do not add any extension. Add this line below

```
web: gunicorn app:app
```

`web` is used by Heroku to start a web server for the application. The `app:app` specifies the module and application name. In our application we have the `app` module and our flask application is also called `app`. If yours are different you can change them.

Deployment

We are now ready to deploy our application. In the application folder run

```
heroku create kbucket-api-heroku
```

`k-bucket` is the name of the application, this has to be unique across Heroku. So change it to yours otherwise you will be unable to deploy. *You can completely discard the application name for Heroku to assign for you a unique name.*

The output of that command will be similar to this below. Take note of the application URL because it is where your app lives.

```
(venv) G:\PyProjects\bucket_api_heroku>heroku create kbucket-api-heroku
Creating kbucket-api-heroku... done
https://kbucket-api-heroku.herokuapp.com/ |
https://git.heroku.com/kbucket-api-heroku.git
```

This `https://git.heroku.com/kbucket-api-heroku.git` is the Heroku git remote repository where our application lives on Heroku. We now have to push our application to the master branch of the above git URL. Here is the state of our application at this stage. Clone the repository if you have not been following along and push to the Heroku master .

Now head over to your application URL to see the application API documentation as the homepage.

INTRODUCTION

REFERENCE

User Registration

Login

Logout

Bucket Resources

Single Bucket Resources

Bucket Item Resources

Single Bucket Items

Resource

User Registration

POST

Register a user



You can create a user by sending a json request with an email and password. The password must be four(4) characters and more.

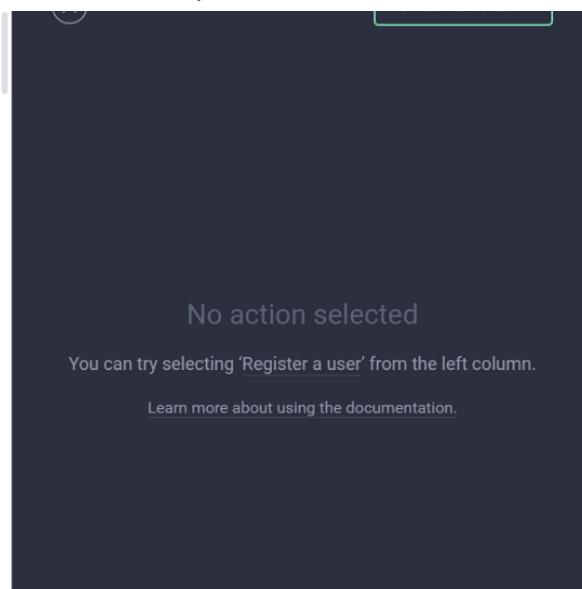
Login

POST

Login a user



You can login a user by sending their email and password. Please take note of the auth token for you will need it for all user requests.

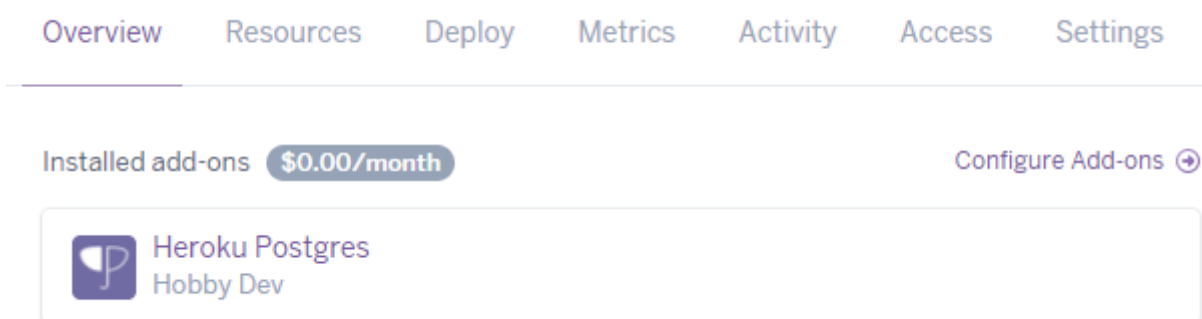


Homepage

Database

As you might already know by now, our application needs a database to save data. It uses the Postgresql database to persist this data.

Heroku is intelligent enough to scan through our application code and assign it a Postgres database. If you look at the your Heroku application dashboard under overview you will see a configured add-on called Heroku Postgres as shown below.



Dashboard overview

Do not get very excited yet, we still have to populate the database with our tables. To do this we add one more line in our Procfile .

```
release: python manage.py db upgrade
```

The command `db upgrade` from the `manage.py` file populates the table schema from the database migration file into the database.

Commit the changes and push to the Heroku master git repository or clone and use this repository.

Testing the application

We can now finally test out our live API application. Head over to the application homepage and click on the `Register a user` under the reference section. Then click on `switch to console` choose `production` so that the data we send can be persisted into the database. Click on `body` to display the sample email and password data.

The screenshot shows the API documentation for the Bucketlist API. On the left, there is a sidebar with navigation links: INTRODUCTION, REFERENCE, User Registration, Login, Logout, Bucket Resources, Single Bucket Resources, Bucket Item Resources, Single Bucket Items, and Resource. The main content area is titled 'User Registration' and includes a 'POST' button and a 'Register a user' button. Below this, there is a description: 'You can create a user by sending a json request with an email and password. The password must be four(4) characters and more.' A 'Login' section is also visible. On the right, there is a console interface with a 'Switch to Example' button. The console shows the 'Body' tab selected, displaying a JSON request:

```
{  "email": "example@gmail.com",  "password": "123456"}
```

. Below the JSON, there are buttons for 'Reset Values', 'Production' (with a dropdown arrow), and 'Call Resource'. At the bottom, there are buttons for 'Sent', 'Compare', and 'Code Example'.

API documentation and console

A `201` code is returned when a user is successfully created as shown below.

The screenshot shows the console interface after a successful user creation. The status code `201` is displayed. Below it, the 'HEADERS' section is expanded, showing the following headers: `connection:keep-alive` and `server:gunicorn/19.7.1`. A 'Switch to Example' button is visible in the top right corner.

```
date:Wed, 27 Sep 2017 17:35:20 GMT
content-type:application/json
content-length:227
via:1.1 vegur, 1.1 vegur
x-newrelic-app-
data:PxQDVFVRCQITV1ZRDgcFV0YdFGQHBDcQUQxLA1tMXV1dSnwZQRNWERdcRE42LGtn
H0tLQB5BGVZcHQYdV1BaUgRTD1EAFBYAAV1bTRNZVgRdUgdUB1ELBQ1SUUAbV1YKF1Rr
```

BODY

```
01 {
02   "auth_token":
03     "eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJleHAiOiJlMDY2MjAxNDAsIiwiaWF0Ijoi
04     "status": "success"
05 }
```

Successful user creation

Congratulations you have deployed your first app to Heroku.



If you found this article helpful, hit the clap button and help me get it to more people who need help getting started hosting applications on Heroku. I appreciate your responses as well. You can also find me on Twitter

Thanks to Edmond Atto.

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