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VIRTUAL INTERNSHIP

DATA SCIENCE

LISP01

CLOUD AND API DEPLOYMENT

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24 – march – 2021

Content

I. INTRODUCTION

This document contains the detailed report of all steps carried out in order to understand how to realize of API Deployment on Heroku

I will use the IDE Visual Studio Code, Google Chrome web browser, Mozilla Firefox web browser, github repository, and python programming language as well as its different packages and libraries.

The files on https://github.com/marelly1/Deployment_Flask contain the model that I need to create de APP on Heroku

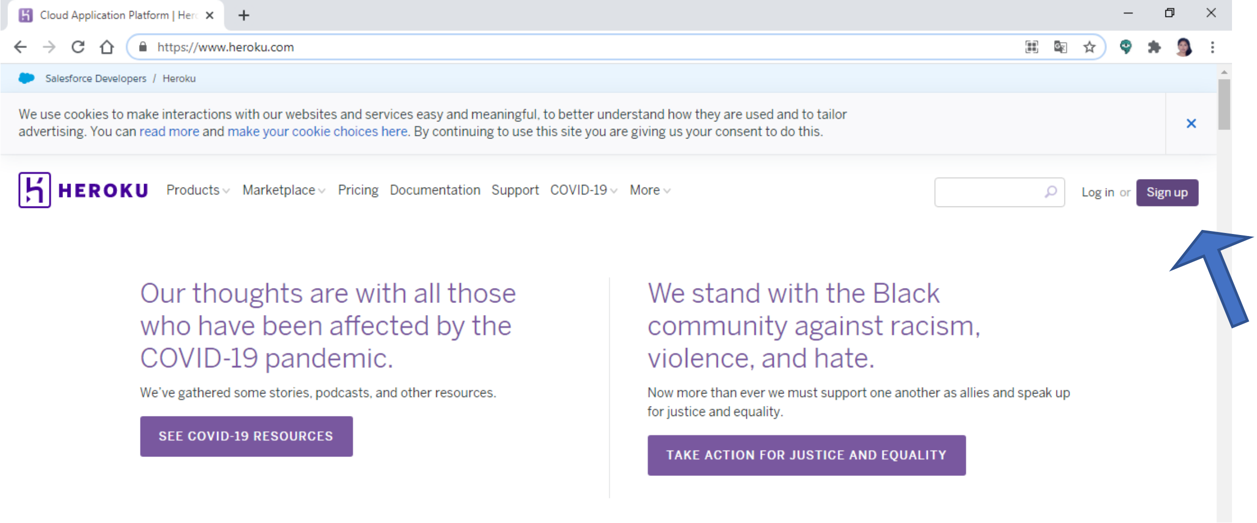
The following contents will be found in this document: APP Deployment on Hereku by github and APP Deployment on Heroku by visual studio code will allow us to reach the objective.

II. API DEPLOYMENT ON HEROKU BY GITHUB

Heroku integrates with GitHub to make it easy to deploy code living on GitHub to apps running on Heroku. When GitHub integration is configured for a Heroku app, Heroku can automatically build and release (if the build is successful) pushes to the specified GitHub repo.

In this segment, I will use Google Chrome, Github repository

1. Use http://www.heroku.com and create an account in Heroku using Sign Up



We use cookies to make interactions with our websites and services easy and meaningful, to better understand how they are used and to tailor advertising. You can read more and make your cookie choices here. By continuing to use this site you are giving us your consent to do this.

Our thoughts are with all those who have been affected by the COVID-19 pandemic.

We've gathered some stories, podcasts, and other resources.

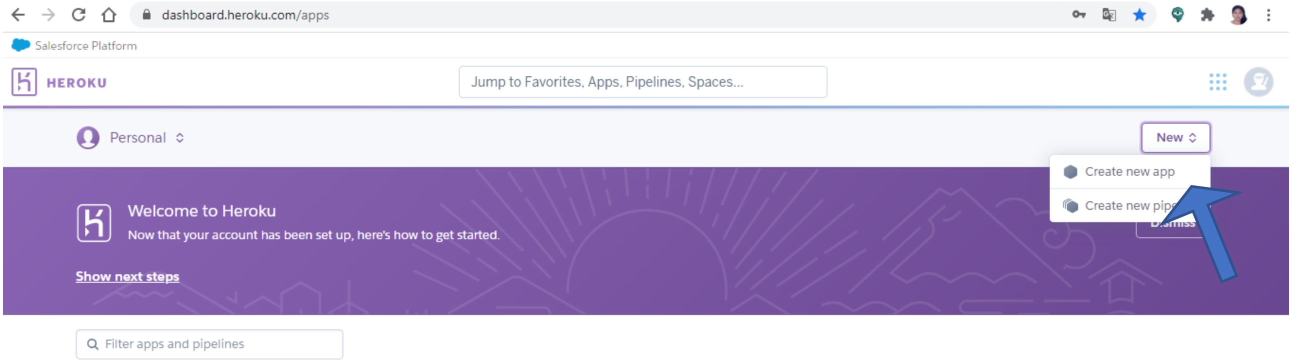
SEE COVID-19 RESOURCES

We stand with the Black community against racism, violence, and hate.

Now more than ever we must support one another as allies and speak up for justice and equality.

TAKE ACTION FOR JUSTICE AND EQUALITY

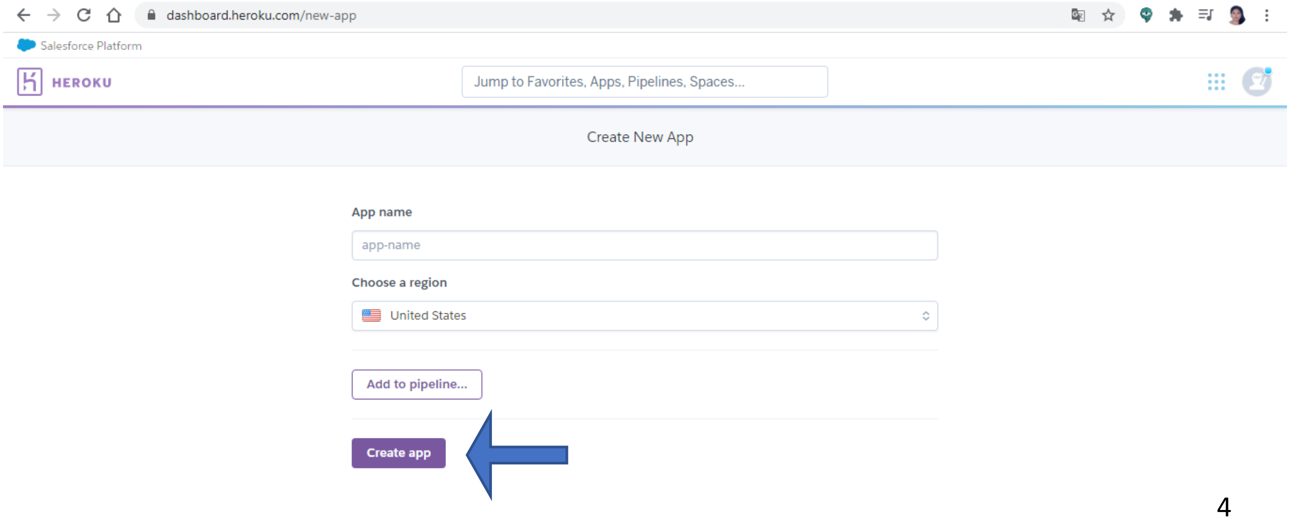
2. Create a new app in Heroku



dashboard.heroku.com/apps
Salesforce Platform
HEROKU
Jump to Favorites, Apps, Pipelines, Spaces...
Personal
New
Create new app
Create new pip
Show next steps
Filter apps and pipelines

Welcome to Heroku

Now that your account has been set up, here's how to get started.



dashboard.heroku.com/new-app
Salesforce Platform
HEROKU
Jump to Favorites, Apps, Pipelines, Spaces...
Add to pipeline...
Create app

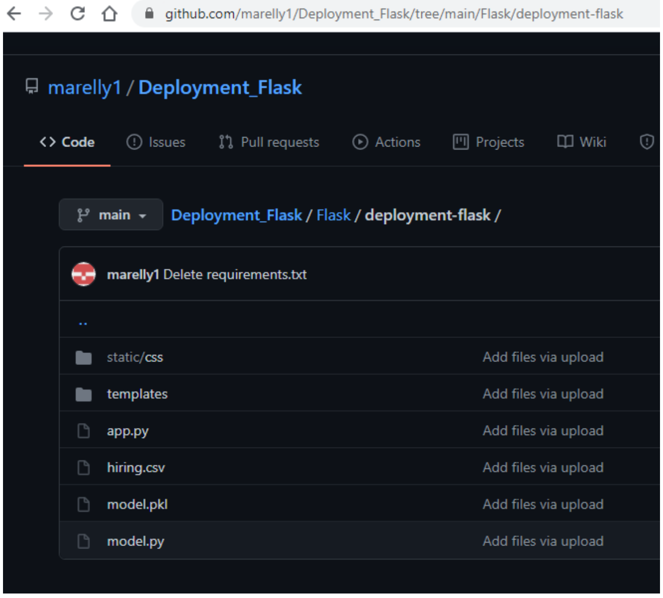
Create New App

App name: app-name

Choose a region: United States

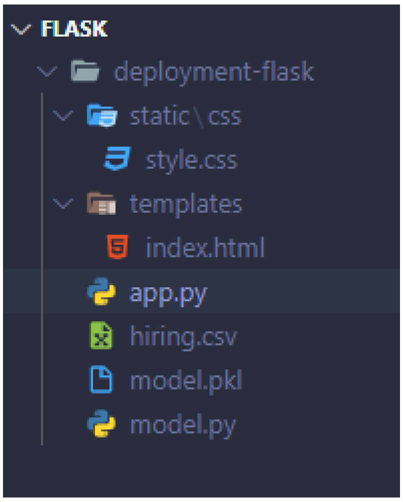
3. To keep on the next step, we need to have a repository with the app that content our model

3.1. This is the content of my repo that contain my app


github.com/marelly1/Deployment_Flask/tree/main/Flask/deployment-flask
marelly1 / Deployment_Flask
<> Code
Issues
Pull requests
Actions
Projects
Wiki
main
Deployment_Flask / Flask / deployment-flask /

marelly1 Delete requirements.txt

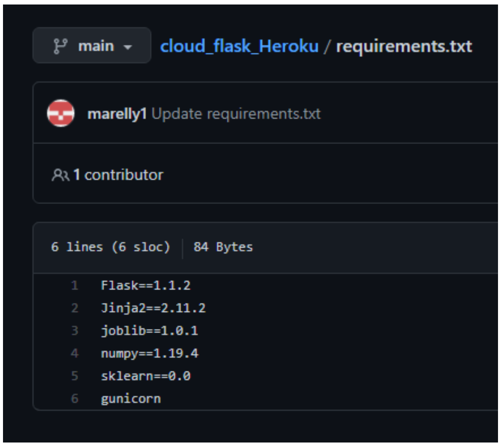
..	
static/css	Add files via upload
templates	Add files via upload
app.py	Add files via upload
hiring.csv	Add files via upload
model.pkl	Add files via upload
model.py	Add files via upload



```
FLASK
  deployment-flask
    static\css
      style.css
    templates
      index.html
    app.py
    hiring.csv
    model.pkl
    model.py
```

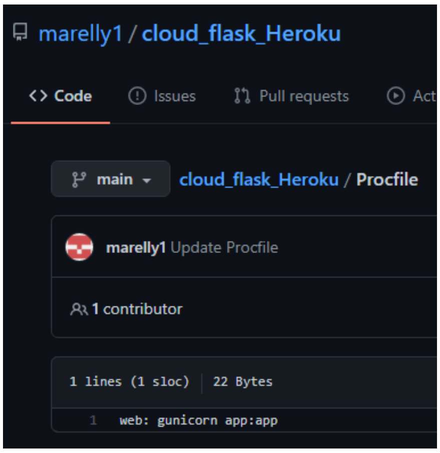
3.2. Create a new repository and save all folder and file necessary to run the app and as well we need to add two files:

- You must install all the dependencies necessary in the file called "requirements.txt", it will tell heroku that this project will require all these libraries to run the application correctly.


main
cloud_flask_Heroku / requirements.txt
marelly1 Update requirements.txt
1 contributor
6 lines (6 sloc) | 84 Bytes

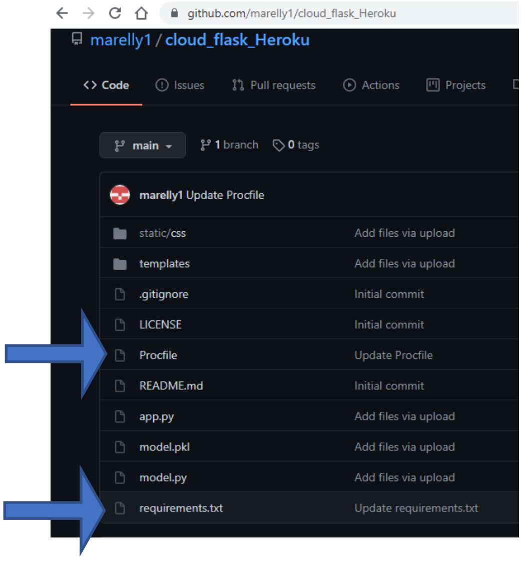
```
Flask==1.1.2
Jinja2==2.11.2
joblib==1.0.1
numpy==1.19.4
sklearn==0.0
gunicorn
```

- Heroku requires "Procfile" to be present in the root directory of your application. It will tell Heroku how to run the application. Make sure it is a simple file with no extension.


marelly1 / cloud_flask_Heroku
<> Code
Issues
Pull requests
Act
main
cloud_flask_Heroku / Procfile
marelly1 Update Procfile
1 contributor
1 lines (1 sloc) | 22 Bytes

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

3.3. Make sure the Procfile file and the requirements.txt are present in the root directory of your application.



github.com/marelly1/cloud_flask_Heroku

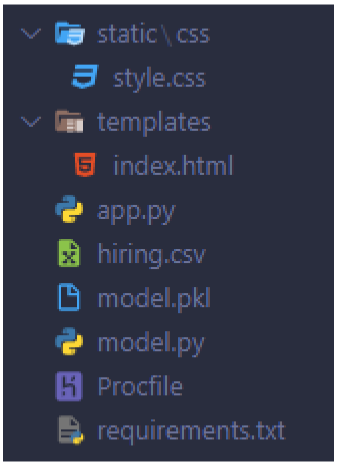
marelly1 / cloud_flask_Heroku

Code | Issues | Pull requests | Actions | Projects

main | 1 branch | 0 tags

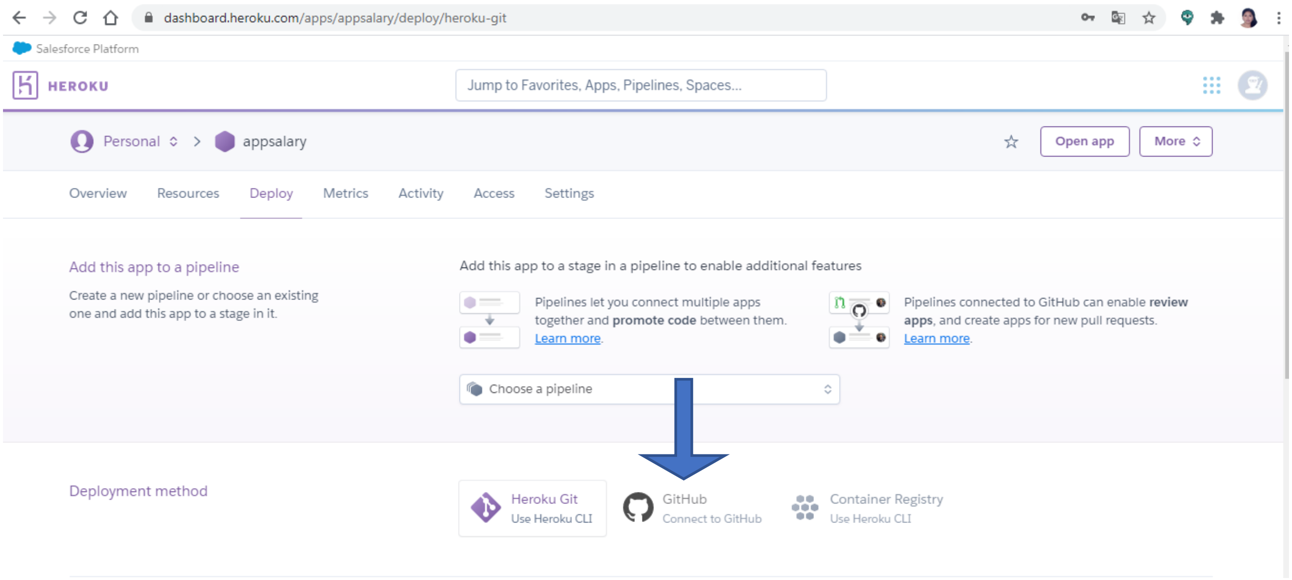
marelly1 Update Procfile

static/css	Add files via upload
templates	Add files via upload
.gitignore	Initial commit
LICENSE	Initial commit
Procfile	Update Procfile
README.md	Initial commit
app.py	Add files via upload
model.pkl	Add files via upload
model.py	Add files via upload
requirements.txt	Update requirements.txt



```
static\css
    style.css
templates
    index.html
app.py
hiring.csv
model.pkl
model.py
Procfile
requirements.txt
```

4. In Heroku Connect to GitHub



dashboard.heroku.com/apps/appsalary/deploy/heroku-git

Salesforce Platform

HEROKU

Jump to Favorites, Apps, Pipelines, Spaces...

Personal > appsalary | Open app | More

Overview | Resources | Deploy | Metrics | Activity | Access | Settings

Add this app to a pipeline

Create a new pipeline or choose an existing one and add this app to a stage in it.

Add this app to a stage in a pipeline to enable additional features

Pipelines let you connect multiple apps together and **promote code** between them. Learn more.

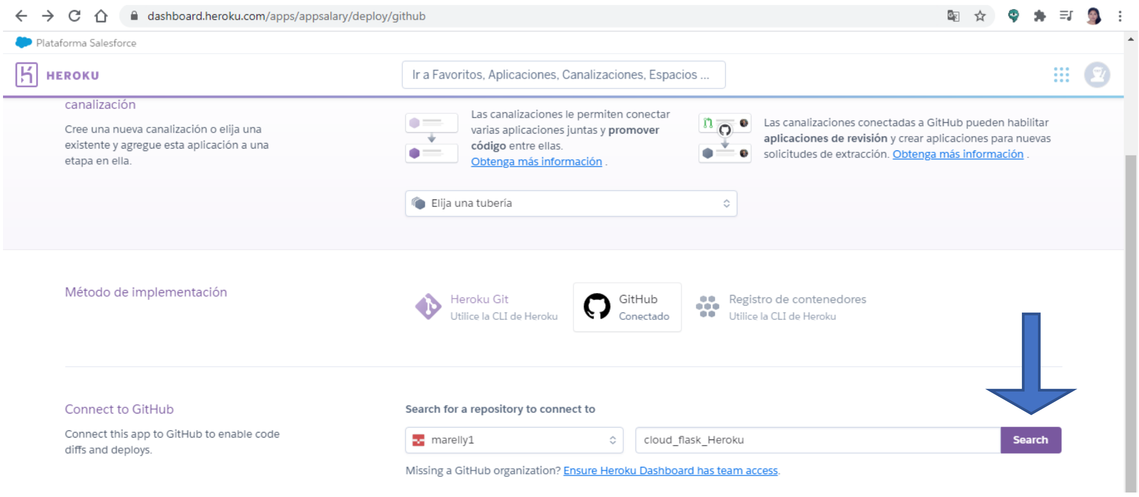
Pipelines connected to GitHub can enable **review apps**, and create apps for new pull requests. Learn more.

Choose a pipeline

Deployment method

Heroku Git — Use Heroku CLI | GitHub — Connect to GitHub | Container Registry — Use Heroku CLI

5. Write the repo-name and Search



dashboard.heroku.com/apps/appsalary/deploy/github

Plataforma Salesforce

HEROKU

Ir a Favoritos, Aplicaciones, Canalizaciones, Espacios ...

canalización

Cree una nueva canalización o elija una existente y agregue esta aplicación a una etapa en ella.

Las canalizaciones le permiten conectar varias aplicaciones juntas y **promover código** entre ellas. Obtenga más información .

Las canalizaciones conectadas a GitHub pueden habilitar **aplicaciones de revisión** y crear aplicaciones para nuevas solicitudes de extracción. Obtenga más información .

Elija una tuberia

Método de implementación

Heroku Git — Utilice la CLI de Heroku | GitHub — Conectado | Registro de contenedores — Utilice la CLI de Heroku

Connect to GitHub

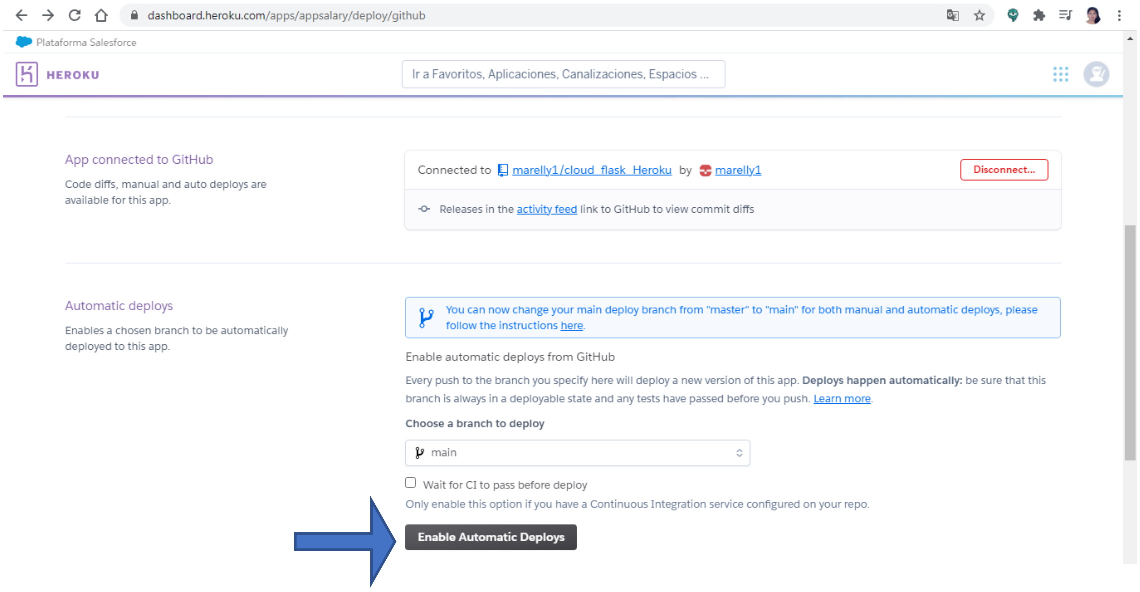
Connect this app to GitHub to enable code diffs and deploys.

Search for a repository to connect to

marelly1 | cloud_flask_Heroku | Search

Missing a GitHub organization? Ensure Heroku Dashboard has team access.

6. Click in Enable Automatic Deploys


dashboard.heroku.com/apps/appsalary/deploy/github
Plataforma Salesforce
HEROKU
Ir a Favoritos, Aplicaciones, Canalizaciones, Espacios ...
Disconnect...
Enable Automatic Deploys

App connected to GitHub

Code diffs, manual and auto deploys are available for this app.

Connected to marelly1/cloud_flask_Heroku by marelly1

Releases in the activity feed link to GitHub to view commit diffs

Automatic deploys

Enables a chosen branch to be automatically deployed to this app.

You can now change your main deploy branch from "master" to "main" for both manual and automatic deploys, please follow the instructions here.

Enable automatic deploys from GitHub

Every push to the branch you specify here will deploy a new version of this app. **Deploys happen automatically:** be sure that this branch is always in a deployable state and any tests have passed before you push. Learn more.

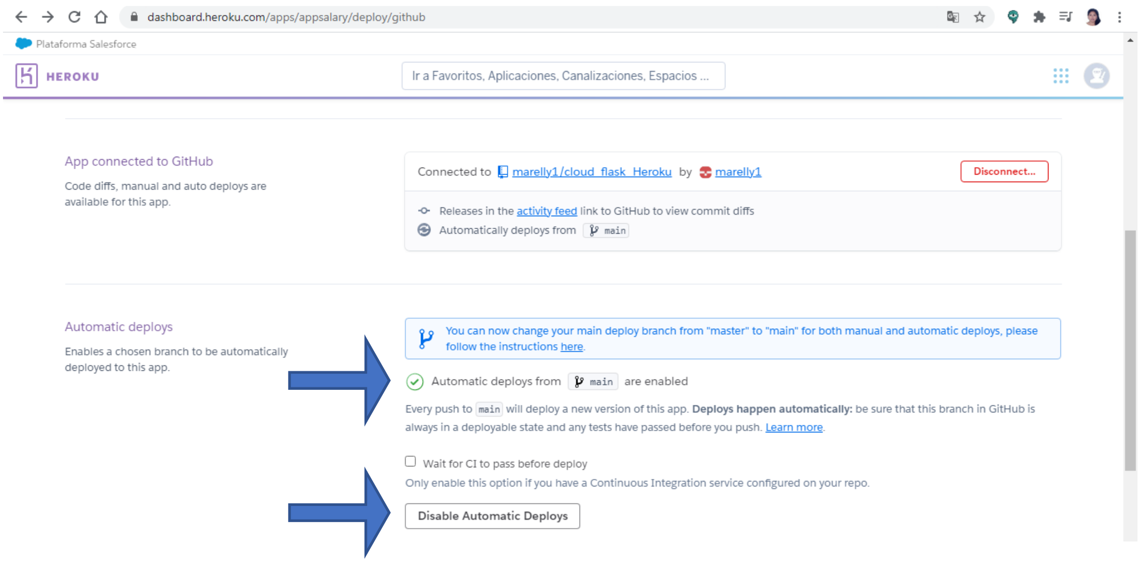
Choose a branch to deploy

main

□ Wait for CI to pass before deploy

Only enable this option if you have a Continuous Integration service configured on your repo.

You can see both changes.


dashboard.heroku.com/apps/appsalary/deploy/github
Plataforma Salesforce
HEROKU
Ir a Favoritos, Aplicaciones, Canalizaciones, Espacios ...
Disconnect...
Disable Automatic Deploys

App connected to GitHub

Code diffs, manual and auto deploys are available for this app.

Connected to marelly1/cloud_flask_Heroku by marelly1

Releases in the activity feed link to GitHub to view commit diffs

Automatically deploys from main

Automatic deploys

Enables a chosen branch to be automatically deployed to this app.

You can now change your main deploy branch from "master" to "main" for both manual and automatic deploys, please follow the instructions here.

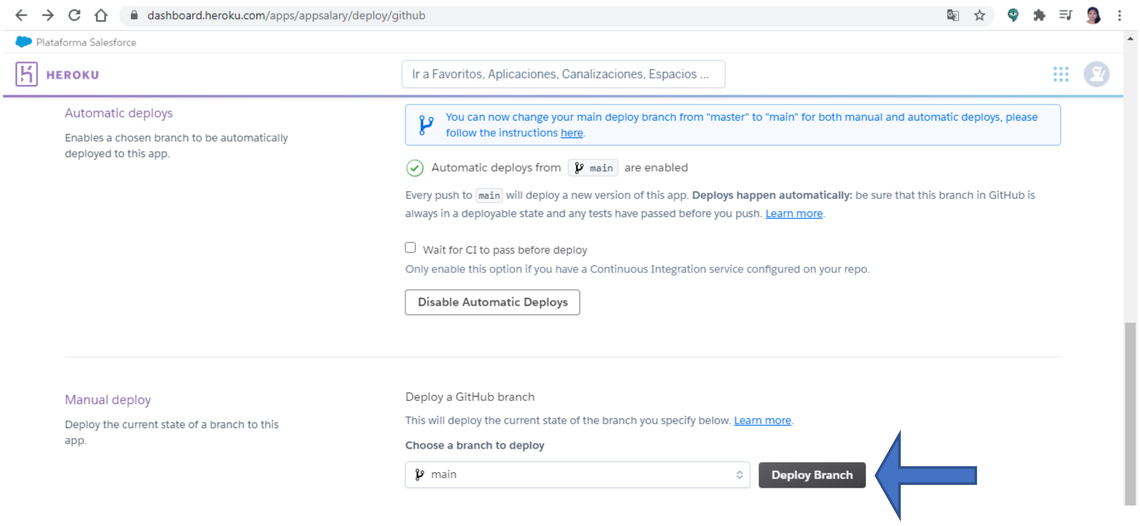
✓ Automatic deploys from main are enabled

Every push to main will deploy a new version of this app. **Deploys happen automatically:** be sure that this branch in GitHub is always in a deployable state and any tests have passed before you push. Learn more.

□ Wait for CI to pass before deploy

Only enable this option if you have a Continuous Integration service configured on your repo.

7. Click in Deploy Branch


dashboard.heroku.com/apps/appsalary/deploy/github
Plataforma Salesforce
HEROKU
Ir a Favoritos, Aplicaciones, Canalizaciones, Espacios ...
Disable Automatic Deploys
Deploy Branch

Automatic deploys

Enables a chosen branch to be automatically deployed to this app.

You can now change your main deploy branch from "master" to "main" for both manual and automatic deploys, please follow the instructions here.

✓ Automatic deploys from main are enabled

Every push to main will deploy a new version of this app. **Deploys happen automatically:** be sure that this branch in GitHub is always in a deployable state and any tests have passed before you push. Learn more.

□ Wait for CI to pass before deploy

Only enable this option if you have a Continuous Integration service configured on your repo.

Manual deploy

Deploy the current state of a branch to this app.

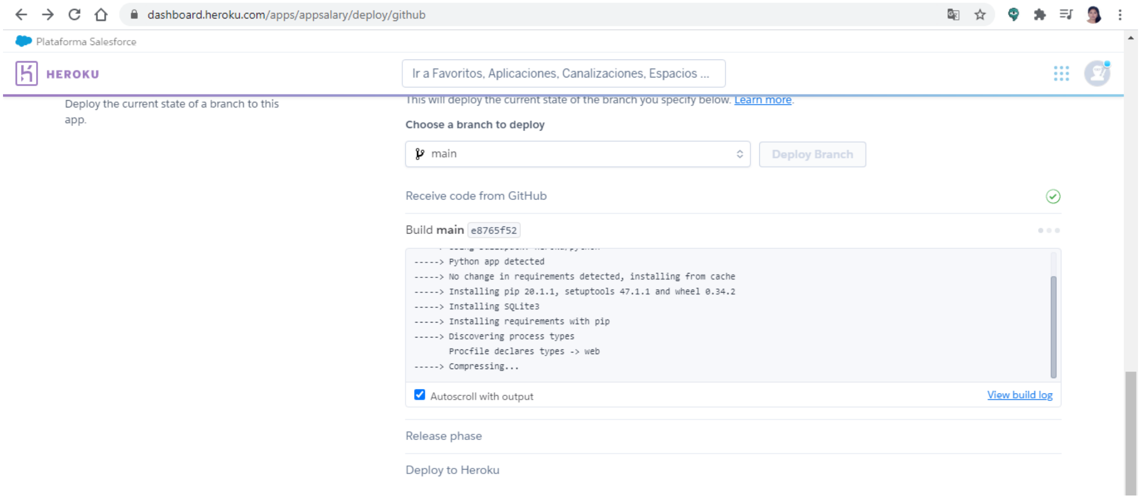
Deploy a GitHub branch

This will deploy the current state of the branch you specify below. Learn more.

Choose a branch to deploy

main

8. It starts to build then Heroku show the link to see our app



dashboard.heroku.com/apps/appsalary/deploy/github

Deploy the current state of a branch to this app.

This will deploy the current state of the branch you specify below. Learn more.

Choose a branch to deploy

main | Deploy Branch

Receive code from GitHub ✓

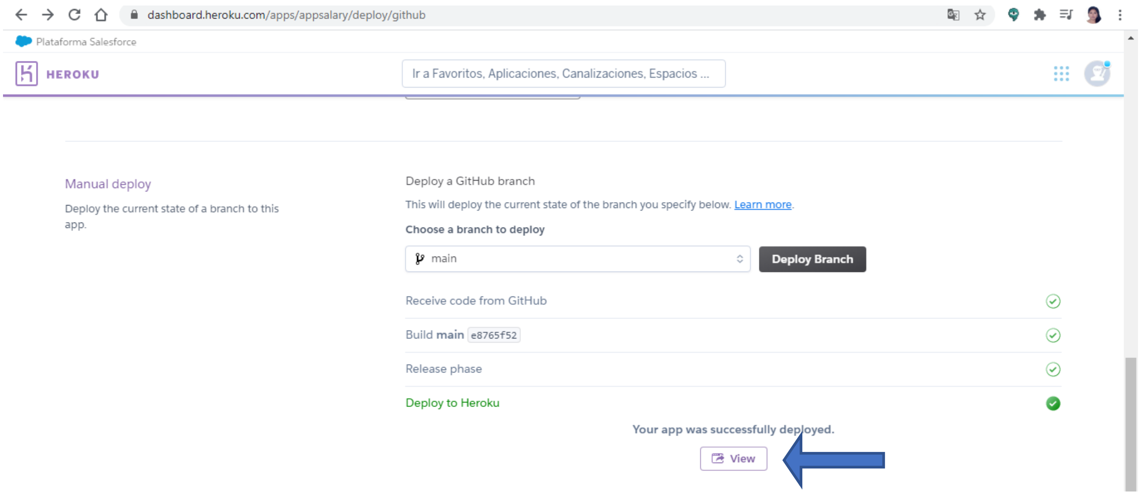
Build main e8765f52

```
-----> Python app detected
-----> No change in requirements detected, installing from cache
-----> Installing pip 20.1.1, setuptools 47.1.1 and wheel 0.34.2
-----> Installing SQLite3
-----> Installing requirements with pip
-----> Discovering process types
       Procfile declares types -> web
-----> Compressing...
```

☑ Autoscroll with output | View build log

Release phase

Deploy to Heroku



dashboard.heroku.com/apps/appsalary/deploy/github

Manual deploy

Deploy the current state of a branch to this app.

Deploy a GitHub branch

This will deploy the current state of the branch you specify below. Learn more.

Choose a branch to deploy

main | Deploy Branch

Receive code from GitHub ✓

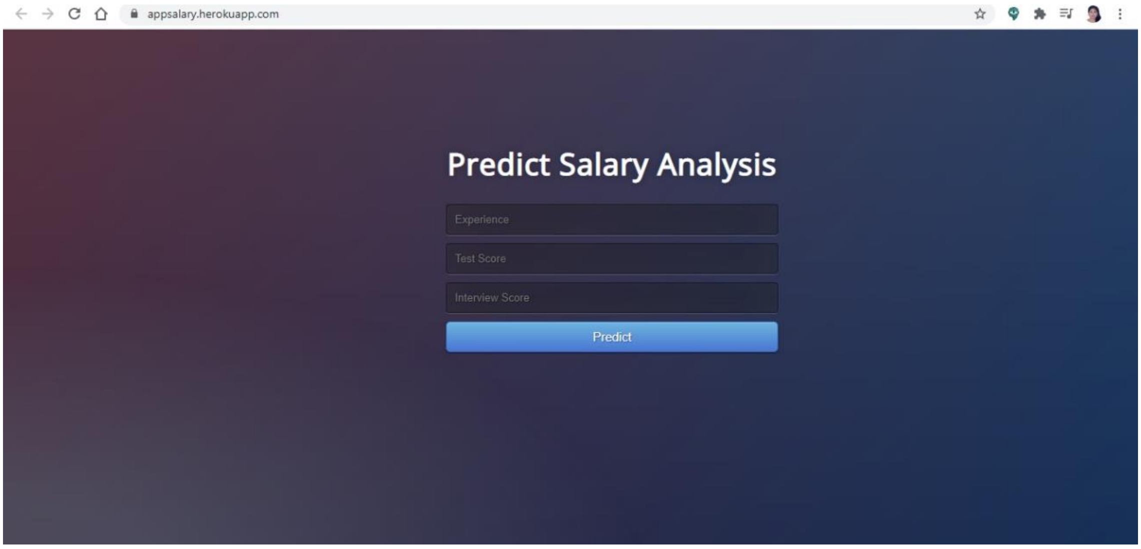
Build main e8765f52 ✓

Release phase ✓

Deploy to Heroku ✓

Your app was successfully deployed.

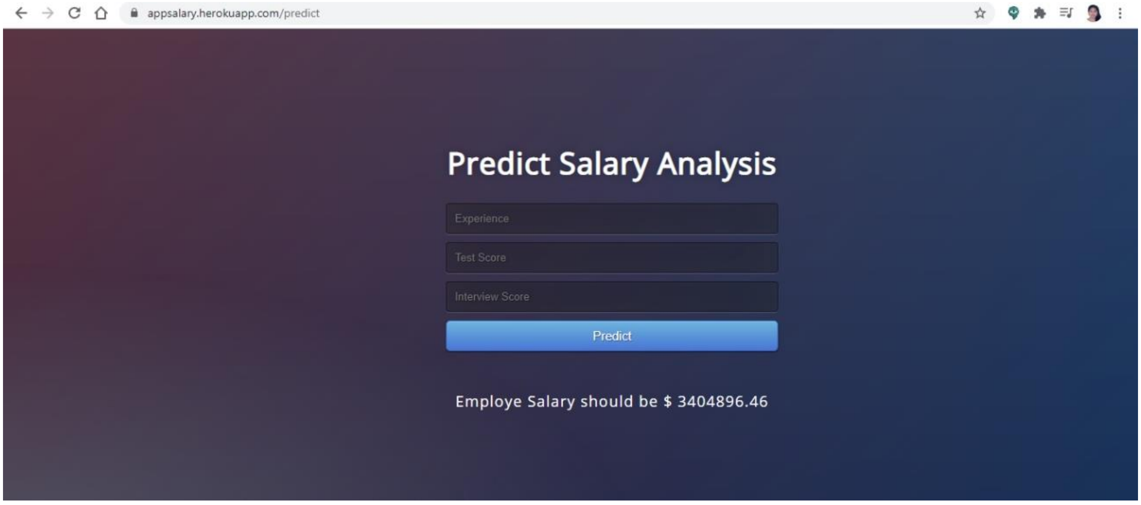
9. The web app of Predict Salary Analysis



appsalary.herokuapp.com

Predict Salary Analysis

10. Testing the model Predict Salary Analysis



appsalary.herokuapp.com/predict

Predict Salary Analysis

Experience

Test Score

Interview Score

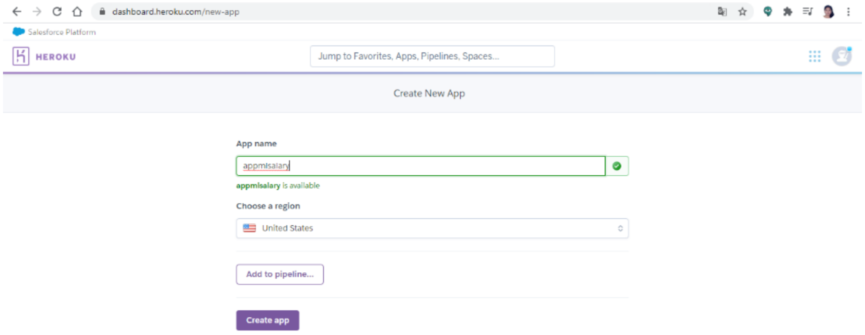
Predict

Employe Salary should be $ 3404896.46

III. API DEPLOYMENT ON HEROKU BY HEROKU GIT

In this segment, i will use Visual Studio Code, Heroku Git, Google Chrome and Mozilla Firefox

1. Create a new app in Heroku



dashboard.heroku.com/new-app

Salesforce Platform

HEROKU

Jump to Favorites, Apps, Pipelines, Spaces...

Create New App

App name

appmlsalary

appmlsalary is available

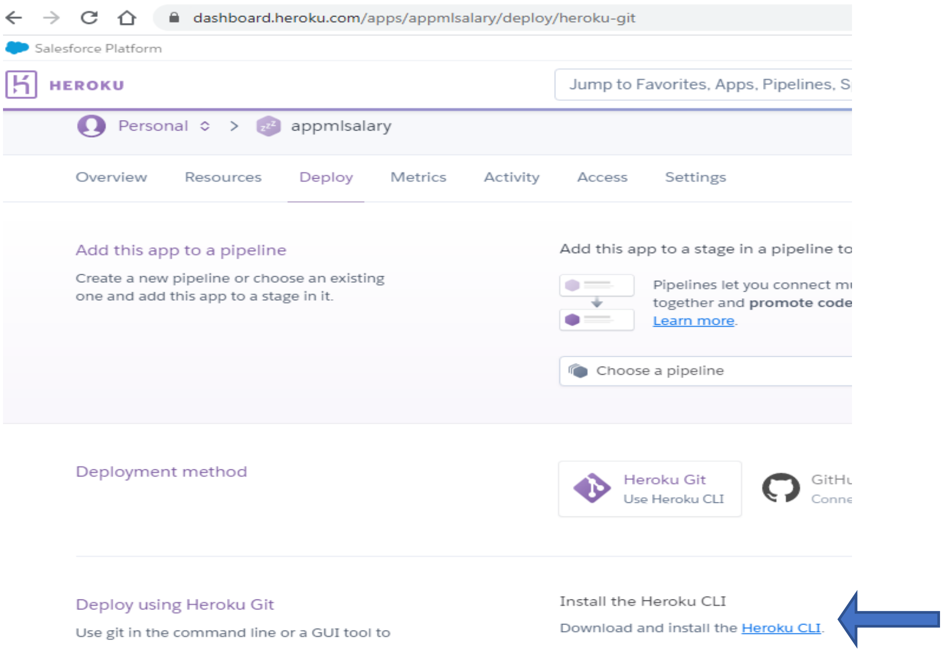
Choose a region

United States

Add to pipeline...

Create app

2. First of all, we need to install Heroku CLI heroku-x64



dashboard.heroku.com/apps/appmlsalary/deploy/heroku-git

Salesforce Platform

HEROKU

Jump to Favorites, Apps, Pipelines, S

Personal > appmlsalary

Overview Resources Deploy Metrics Activity Access Settings

Add this app to a pipeline

Create a new pipeline or choose an existing one and add this app to a stage in it.

Add this app to a stage in a pipeline to

Pipelines let you connect m together and promote code Learn more.

Choose a pipeline

Deployment method

Heroku Git
Use Heroku CLI

GitHu
Conne

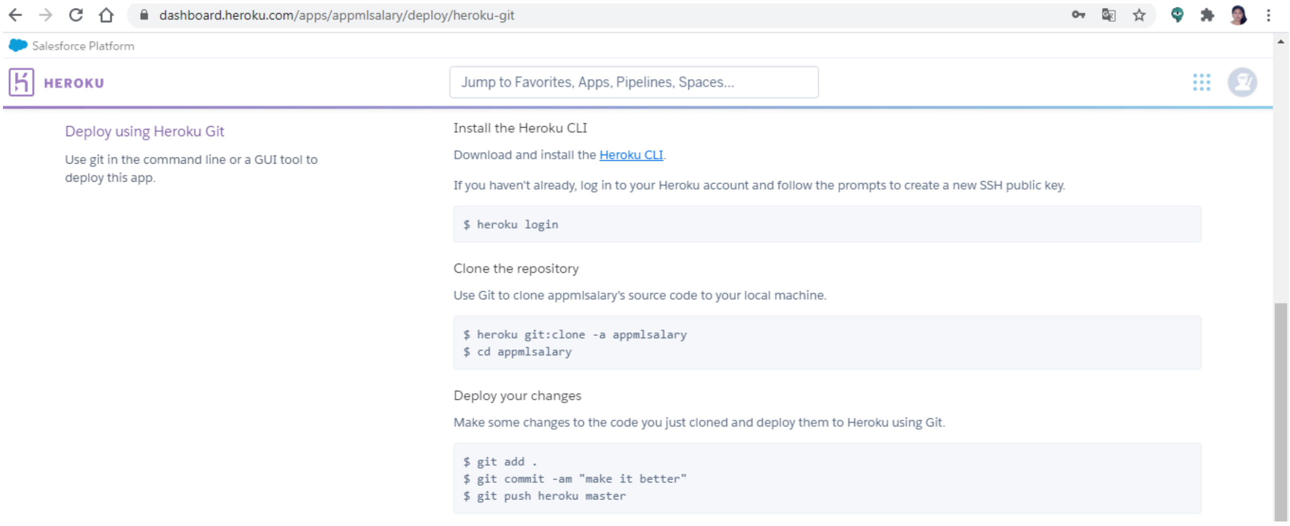
Deploy using Heroku Git

Use git in the command line or a GUI tool to

Install the Heroku CLI

Download and install the Heroku CLI.

3. Follow the codes described by Heroku CLI step by step



dashboard.heroku.com/apps/appmlsalary/deploy/heroku-git
Salesforce Platform
HEROKU
Jump to Favorites, Apps, Pipelines, Spaces...

Deploy using Heroku Git

Use git in the command line or a GUI tool to deploy this app.

Install the Heroku CLI

Download and install the Heroku CLI.

If you haven't already, log in to your Heroku account and follow the prompts to create a new SSH public key.

```
$ heroku login
```

Clone the repository

Use Git to clone appmlsalary's source code to your local machine.

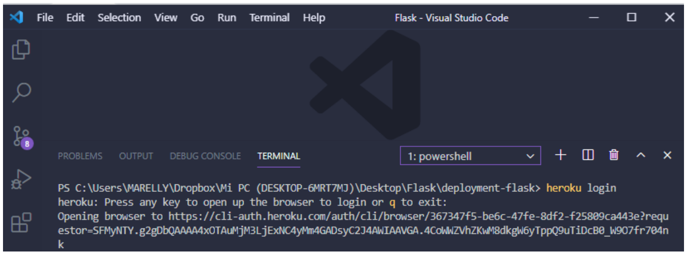
```
$ heroku git:clone -a appmlsalary
$ cd appmlsalary
```

Deploy your changes

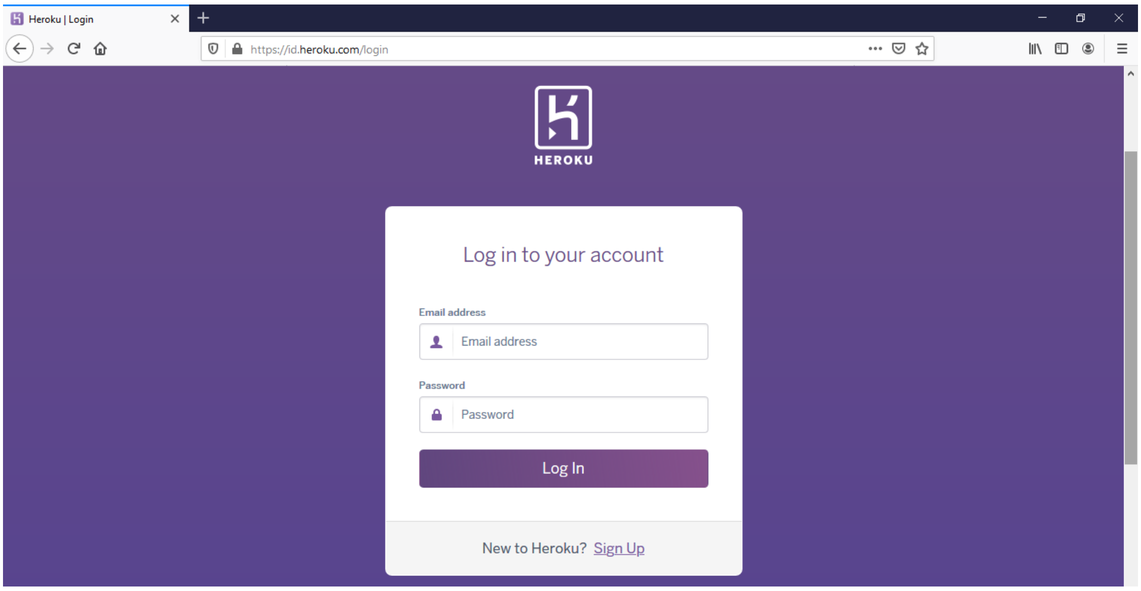
Make some changes to the code you just cloned and deploy them to Heroku using Git.

```
$ git add .
$ git commit -am "make it better"
$ git push heroku master
```

4. We need to login in Heroku



```
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask> heroku login
heroku: Press any key to open up the browser to login or q to exit:
Opening browser to https://cli-auth.heroku.com/auth/cli/browser/367347f5-be6c-47fe-8df2-f25809ca443e?requ
estor=SFMyNTY.g2gDbQAAAA4xOTAuMjM3LjExNC4yMm4GADsyC2J4AWIAAVGA.4CoWWZVhZKwM8dkgW6yTppQ9uTiDcB0_W9O7fr704n
k
```



Log in to your account

Email address

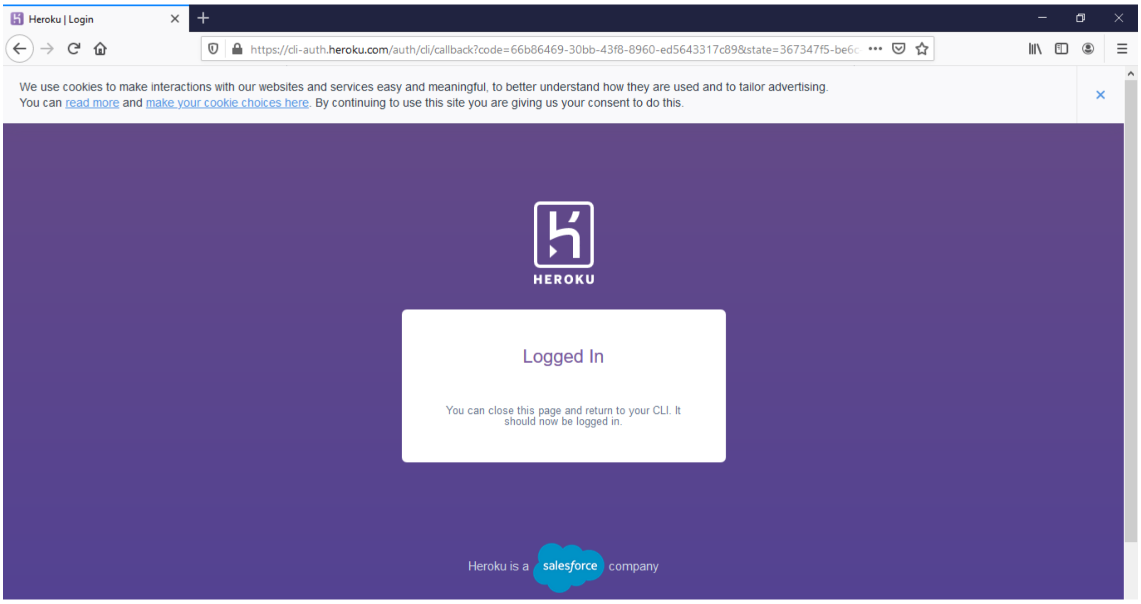
Email address

Password

Password

Log In

New to Heroku? Sign Up

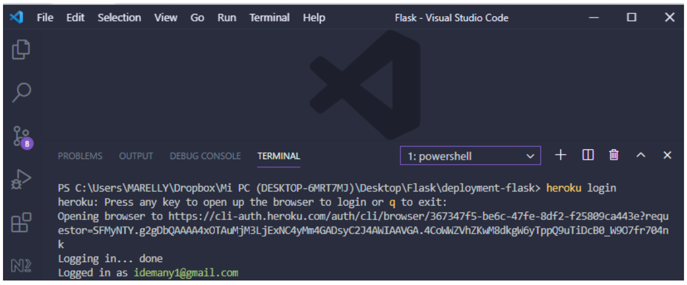

Heroku | Login
https://cli-auth.heroku.com/auth/cli/callback?code=66b86469-30bb-43f8-8960-ed5643317c89&state=367347f5-be6c
HEROKU

We use cookies to make interactions with our websites and services easy and meaningful, to better understand how they are used and to tailor advertising. You can read more and make your cookie choices here. By continuing to use this site you are giving us your consent to do this.

Logged In

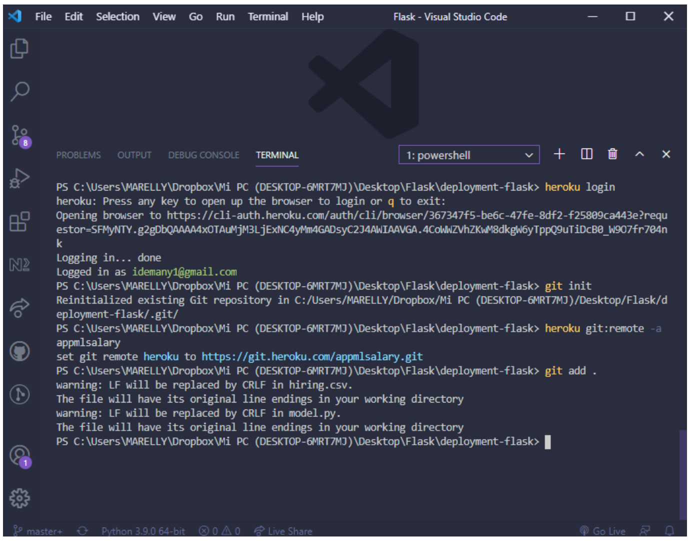
You can close this page and return to your CLI. It should now be logged in.

Heroku is a salesforce company

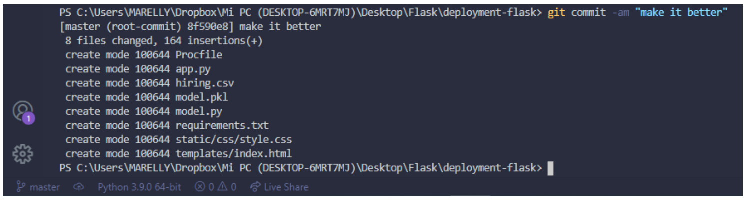

File Edit Selection View Go Run Terminal Help
Flask - Visual Studio Code
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
1: powershell

```
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask> heroku login
heroku: Press any key to open up the browser to login or q to exit:
Opening browser to https://cli-auth.heroku.com/auth/cli/browser/367347f5-be6c-47fe-8df2-f25809ca443e?requ
estor=SFMyNTY.g2gDbQAAAA4xOTAuMjM3LjExNC4yMm4GADsyC2J4AWIAAVGA.4CoWWZVhZKwM8dkgW6yTppQ9uTiDcB0_W9O7fr704n
k
Logging in... done
Logged in as idemany1@gmail.com
```

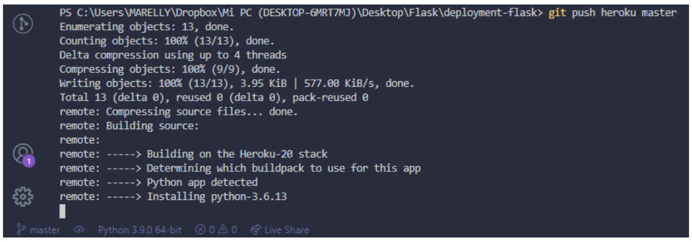
5. Clone the repository



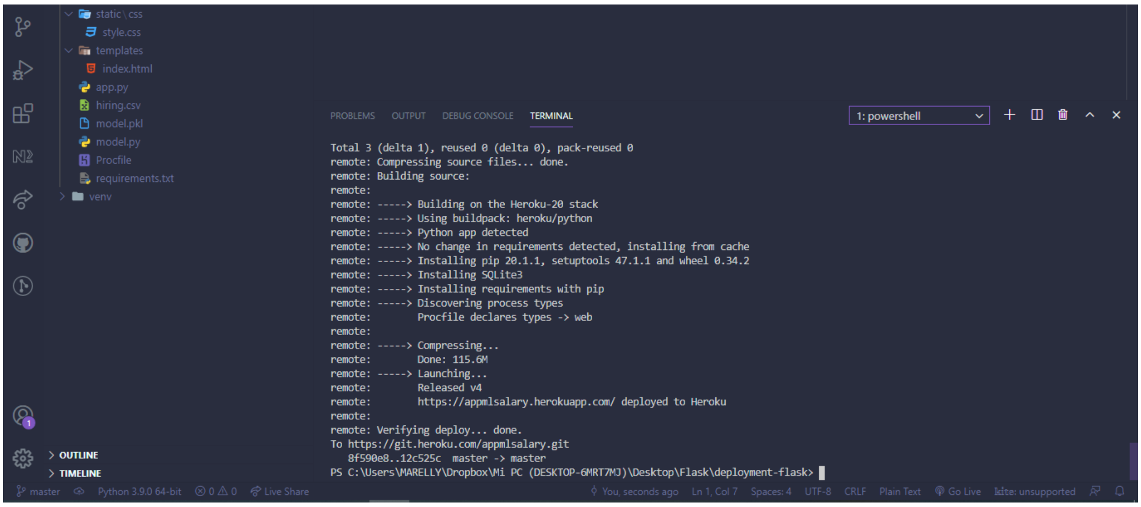
```
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask> heroku login
heroku: Press any key to open up the browser to login or q to exit:
Opening browser to https://cli-auth.heroku.com/auth/cli/browser/367347f5-be6c-47fe-8df2-f25809ca443e?requ
estor=SFMyNTY.g2gDbQAAAA4xOTAuMjM3LjExNC4yMm4GADsyC2J4AWIAAVGA.4CoWWZVhZKwM8dkgW6yTppQ9uTiDcB0_W9O7fr704n
k
Logging in... done
Logged in as idemany1@gmail.com
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask> git init
Reinitialized existing Git repository in C:/Users/MARELLY/Dropbox/Mi PC (DESKTOP-6MRT7MJ)/Desktop/Flask/d
eployment-flask/.git/
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask> heroku git:remote -a
appmlsalary
set git remote heroku to https://git.heroku.com/appmlsalary.git
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask> git add .
warning: LF will be replaced by CRLF in hiring.csv.
The file will have its original line endings in your working directory
warning: LF will be replaced by CRLF in model.py.
The file will have its original line endings in your working directory
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask>
```



```
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask> git commit -am "make it better"
[master (root-commit) 8f590e8] make it better
 8 files changed, 164 insertions(+)
 create mode 100644 Procfile
 create mode 100644 app.py
 create mode 100644 hiring.csv
 create mode 100644 model.pkl
 create mode 100644 model.py
 create mode 100644 requirements.txt
 create mode 100644 static/css/style.css
 create mode 100644 templates/index.html
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask>
```

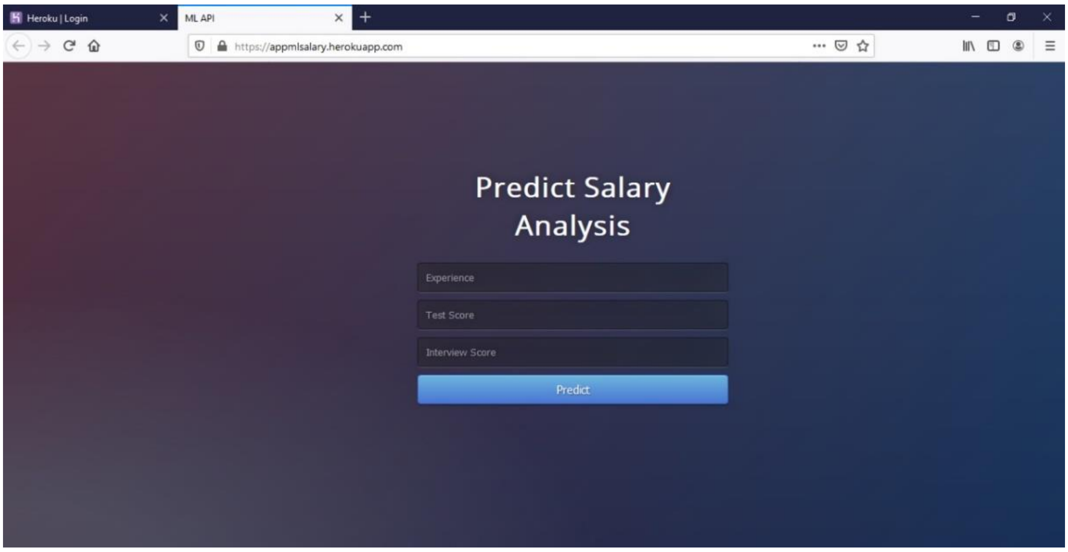


```
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask> git push heroku master
Enumerating objects: 13, done.
Counting objects: 100% (13/13), done.
Delta compression using up to 4 threads
Compressing objects: 100% (9/9), done.
Writing objects: 100% (13/13), 3.95 KiB | 577.00 KiB/s, done.
Total 13 (delta 0), reused 0 (delta 0), pack-reused 0
remote: Compressing source files... done.
remote: Building source:
remote:
remote: -----> Building on the Heroku-20 stack
remote: -----> Determining which buildpack to use for this app
remote: -----> Python app detected
remote: -----> Installing python-3.6.13
```

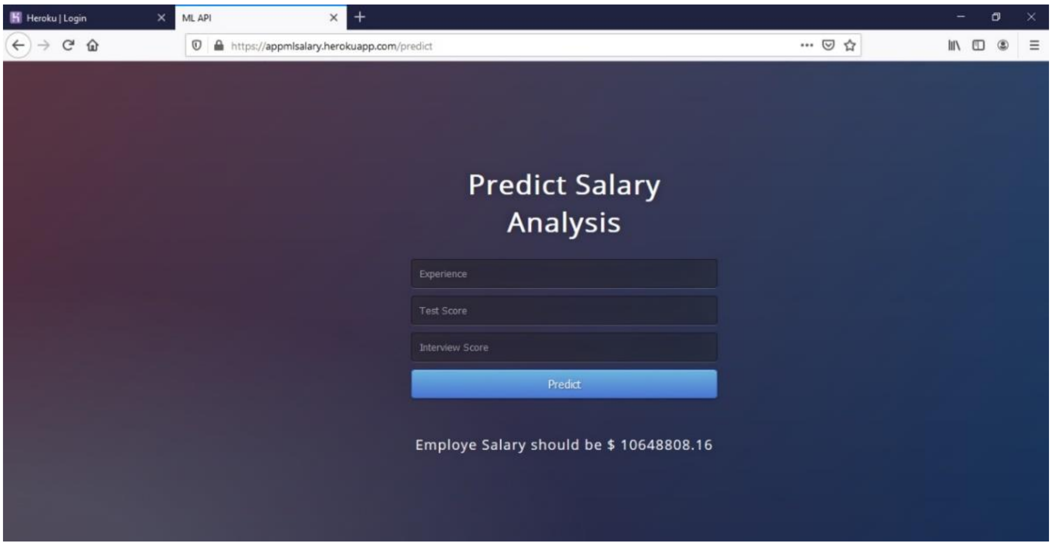


```
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Compressing source files... done.
remote: Building source:
remote:
remote: -----> Building on the Heroku-20 stack
remote: -----> Using buildpack: heroku/python
remote: -----> Python app detected
remote: -----> No change in requirements detected, installing from cache
remote: -----> Installing pip 20.1.1, setuptools 47.1.1 and wheel 0.34.2
remote: -----> Installing SQLite3
remote: -----> Installing requirements with pip
remote: -----> Discovering process types
remote:        Procfile declares types -> web
remote:
remote: -----> Compressing...
remote:        Done: 115.6M
remote: -----> Launching...
remote:        Released v4
remote:        https://appmlsalary.herokuapp.com/ deployed to Heroku
remote:
remote: Verifying deploy... done.
To https://git.heroku.com/appmlsalary.git
   8f590e8..12c525c  master -> master
PS C:\Users\MARELLY\Dropbox\Mi PC (DESKTOP-6MRT7MJ)\Desktop\Flask\deployment-flask>
```

6. We click on deployed to Heroku https://appmlsalary.herokuapp.com



7. Testing Predict Salary Analysis



Employe Salary should be $ 10648808.16

IV. CONCLUSION

In this document i show you step by step two simple ways to do deployment app web using Heroku, using Github repo and heroku CLI.