CATPAW: Computer-Aided Thoughts, Primarily About Writing

Flask application that conducts analysis of writing samples, providing statistical data alongside descriptions of its relevance running at https://catpaw.us.reclaim.cloud/

Installation

Clone repository

```
git clone https://github.com/Digital-Grinnell/catpaw.git
```

Manage wsgi.py

- delete file wsgi.py
- before pushing changes - put wsgi.py back (This is so that you are able to run the flask application on your local machine. wsgi.py is required for deployment, but not for debugging and testing on local environment. Do not forget to put it back before pushing changes to the main branch, as that will break the deployment and catpaw will not run correctly on Reclaim Cloud)

Install requirements

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

Run flask app

```
set FLASK_APP=app.py
flask run
```

This will point you to an address on your local machine that will allow you to see your changes in the app

Contributing

Update your local branch with remote repository

```
git pull
```

Check what files you've changed

```
git status
```

Add all changed files to the staging area

```
git add .
```

Commit your changes to your local repository with a descriptive message

```
git commit -m "message"
```

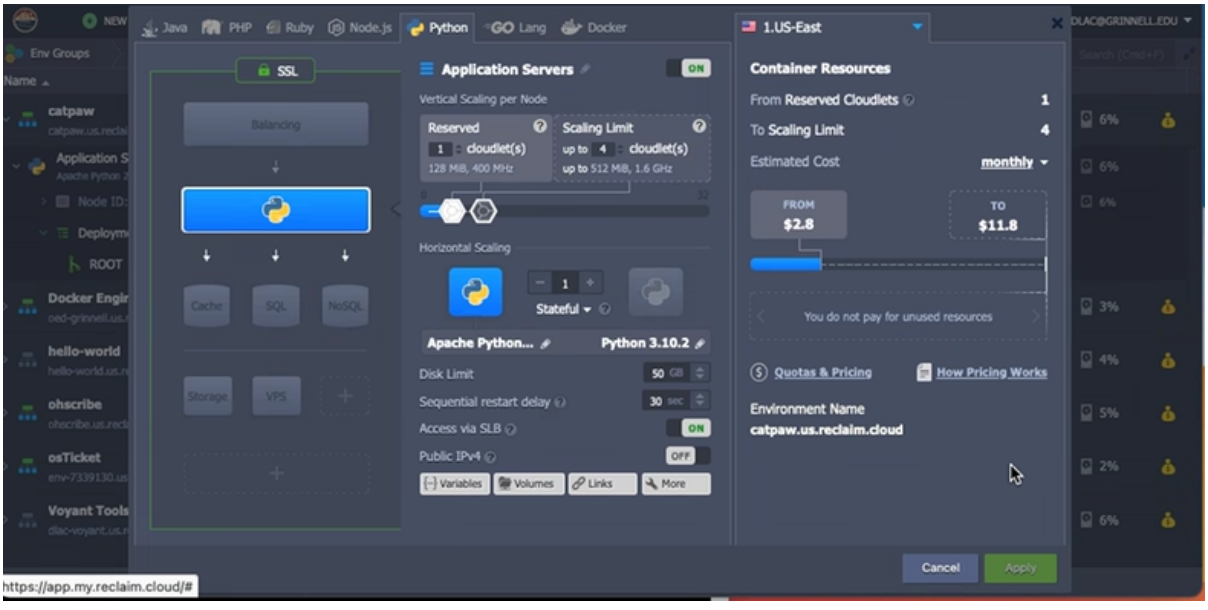
Transmit changes to remote repository

```
git push --set-upstream origin branch-name
git push
```

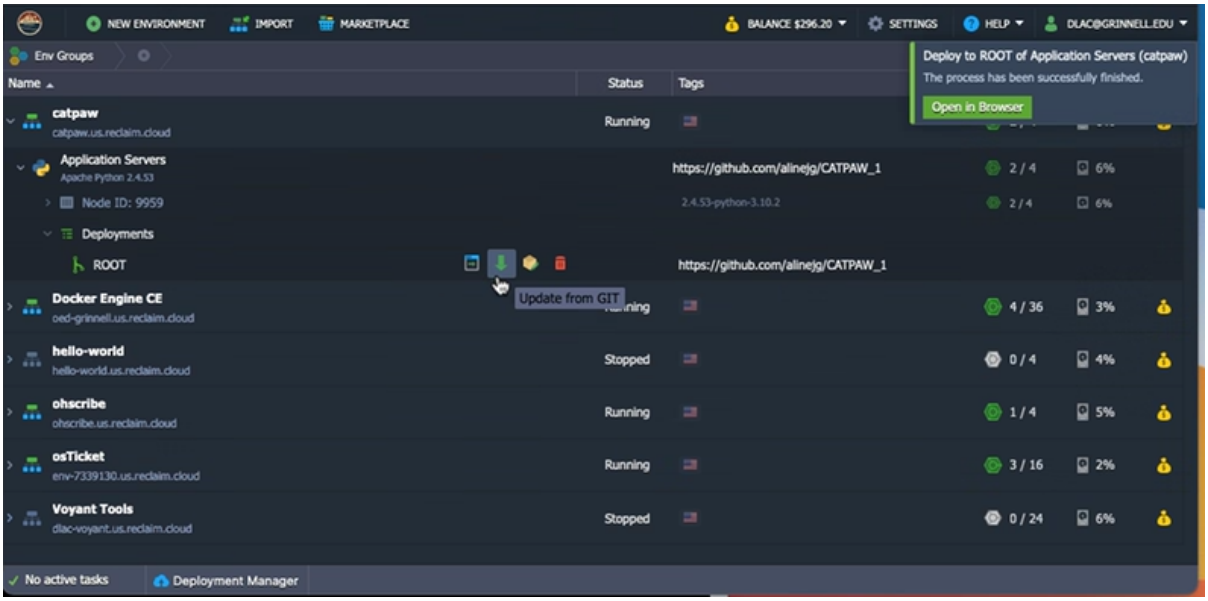
Deployment

Regularly deployed every hour to Reclaim Cloud at https://catpaw.us.reclaim.cloud/

Environment configuration as follows -



Change update from git settings by hovering over ROOT and selecting the option as follows -



Authors and acknowledgement

Project made by @siopold, @McFateM, @alinejg

VSCode Branch -- per Mark McFate

On July 24, 2022, I created a new branch of this code called `vscode`, like so:

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹main●›
└─$ git checkout -b vscode
Switched to a new branch 'vscode'
```

Initial contents of this branch included:

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ ls -alh
total 1608
drwxr-xr-x  23 mcfatem  1278142703   736B Jul 23 07:45 .
drwxr-xr-x  48 mcfatem  1278142703   1.5K Jul 24 10:20 ..
-rw-r--r--@  1 mcfatem  1278142703   8.0K May 23 14:49 .DS_Store
drwxr-xr-x  15 mcfatem  1278142703   480B Jul 24 10:46 .git
-rw-r--r--   1 mcfatem  1278142703    10B Jul 21 09:20 .gitignore
drwxr-xr-x   4 mcfatem  1278142703   128B Jul 23 07:45 .idea
drwxr-xr-x   7 mcfatem  1278142703   224B May 12 09:31 .venv
-rw-r--r--   1 mcfatem  1278142703   195B May 26 11:21 .wsgi.py
drwxr-xr-x   3 mcfatem  1278142703    96B May 12 09:31 Lib
-rw-r--r--   1 mcfatem  1278142703   1.9K Jul 23 07:45 README.md
drwxr-xr-x  15 mcfatem  1278142703   480B May 26 11:21 Scripts
drwxr-xr-x   3 mcfatem  1278142703    96B May 12 09:31 Texts
drwxr-xr-x   8 mcfatem  1278142703   256B Jul 22 11:37 __pycache__
-rw-r--r--   1 mcfatem  1278142703   3.5K Jul 23 07:45 app.py
```

```
drwxr-xr-x  28 mcfatem  1278142703   896B May 12 09:31 cloud-init-17.1
-rw-r--r--   1 mcfatem  1278142703   762K May 12 09:31 cloud-init-
17.1.tar.gz
drwxr-xr-x  12 mcfatem  1278142703   384B May 26 11:21 images
drwxr-xr-x   3 mcfatem  1278142703    96B May 12 09:31 nltk_data
-rw-r--r--   1 mcfatem  1278142703   117B May 12 09:31 pyvenv.cfg
-rw-r--r--   1 mcfatem  1278142703   596B Jul 23 07:45 requirements.txt
drwxr-xr-x   3 mcfatem  1278142703    96B Jul 21 08:44 static
drwxr-xr-x  14 mcfatem  1278142703   448B Jul 21 08:44 templates
-rw-r--r--   1 mcfatem  1278142703   187B Jul 23 07:45 wsgi.py
```

I started by stripping it down to just this:

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ ls -alh
total 40
drwxr-xr-x  14 mcfatem  1278142703   448B Jul 24 10:48 .
drwxr-xr-x  48 mcfatem  1278142703   1.5K Jul 24 10:20 ..
drwxr-xr-x  15 mcfatem  1278142703   480B Jul 24 10:46 .git
-rw-r--r--   1 mcfatem  1278142703    10B Jul 21 09:20 .gitignore
drwxr-xr-x   3 mcfatem  1278142703    96B May 12 09:31 Lib
-rw-r--r--   1 mcfatem  1278142703   1.9K Jul 23 07:45 README.md
drwxr-xr-x   3 mcfatem  1278142703    96B May 12 09:31 Texts
-rw-r--r--   1 mcfatem  1278142703   3.5K Jul 23 07:45 app.py
drwxr-xr-x  12 mcfatem  1278142703   384B May 26 11:21 images
drwxr-xr-x   3 mcfatem  1278142703    96B May 12 09:31 nltk_data
-rw-r--r--   1 mcfatem  1278142703   596B Jul 23 07:45 requirements.txt
drwxr-xr-x   3 mcfatem  1278142703    96B Jul 21 08:44 static
drwxr-xr-x  14 mcfatem  1278142703   448B Jul 21 08:44 templates
-rw-r--r--   1 mcfatem  1278142703   187B Jul 23 07:45 wsgi.py
```

Then I engaged the *VSCode* tutorial for *Flask* that's found at this link.

Specifically, I executed steps 2 through 9 from Create a project environment for the Flask tutorial. Basically...

```
python3 -m venv .venv                <-- Do NOT repeat this, it will not
be necessary!
source .venv/bin/activate
```

```
code .
```

After launcing a terminal within the *VSCode* window...

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ python -m pip install --upgrade pip
Requirement already satisfied: pip in ./.venv/lib/python3.9/site-packages
(22.1.1)
Collecting pip
  Using cached pip-22.2-py3-none-any.whl (2.0 MB)
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 22.1.1
    Uninstalling pip-22.1.1:
      Successfully uninstalled pip-22.1.1
Successfully installed pip-22.2
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ python -m pip install flask
Collecting flask
  Using cached Flask-2.1.3-py3-none-any.whl (95 kB)
Collecting click>=8.0
  Using cached click-8.1.3-py3-none-any.whl (96 kB)
Collecting importlib-metadata>=3.6.0
  Using cached importlib_metadata-4.12.0-py3-none-any.whl (21 kB)
Collecting Werkzeug>=2.0
  Using cached Werkzeug-2.2.0-py3-none-any.whl (232 kB)
Collecting itsdangerous>=2.0
  Using cached itsdangerous-2.1.2-py3-none-any.whl (15 kB)
Collecting Jinja2>=3.0
  Using cached Jinja2-3.1.2-py3-none-any.whl (133 kB)
Collecting zipp>=0.5
  Using cached zipp-3.8.1-py3-none-any.whl (5.6 kB)
Collecting MarkupSafe>=2.0
  Using cached MarkupSafe-2.1.1-cp39-cp39-macosx_10_9_universal2.whl (17
kB)
Installing collected packages: zipp, MarkupSafe, itsdangerous, click,
Werkzeug, Jinja2, importlib-metadata, flask
Successfully installed Jinja2-3.1.2 MarkupSafe-2.1.1 Werkzeug-2.2.0 click-
8.1.3 flask-2.1.3 importlib-metadata-4.12.0 itsdangerous-2.1.2 zipp-3.8.1
```

Then on to Create and run a minimal Flask app steps 5 through 8 where I started by getting this error...

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ python -m flask run
 * Environment: production
   WARNING: This is a development server. Do not use it in a production
deployment.
   Use a production WSGI server instead.
 * Debug mode: off
Usage: python -m flask run [OPTIONS]
Try 'python -m flask run --help' for help.

Error: While importing 'wsgi', an ImportError was raised:

Traceback (most recent call last):
```

```
  File "/Users/mcfatem/GitHub/catpaw/.venv/lib/python3.9/site-
packages/flask/cli.py", line 214, in locate_app
    __import__(module_name)
  File "/Users/mcfatem/GitHub/catpaw/wsgi.py", line 8, in <module>
    from catpaw import app as application
ModuleNotFoundError: No module named 'catpaw'
```

So, `wsgi.py` is a production-only piece, not to be present when running locally. Also, there are clearly some very old references still lurking in the code!

Temporarily Remove `wsgi.py`

So, I "removed" the `wsgi.py` code by renaming that file to `.wsgi.py` so that it becomes "hidden". Let's see what that does...

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ python -m flask run
 * Environment: production
   WARNING: This is a development server. Do not use it in a production
deployment.
   Use a production WSGI server instead.
 * Debug mode: off
Usage: python -m flask run [OPTIONS]
Try 'python -m flask run --help' for help.

Error: While importing 'app', an ImportError was raised:

Traceback (most recent call last):
  File "/Users/mcfatem/GitHub/catpaw/.venv/lib/python3.9/site-
packages/flask/cli.py", line 214, in locate_app
    __import__(module_name)
  File "/Users/mcfatem/GitHub/catpaw/app.py", line 3, in <module>
    import nltk, docx, os, PyPDF2
ModuleNotFoundError: No module named 'nltk'
```

Better, but now the dependencies are missing. I'll bet I need to update my new VENV with everything listing in `requirements.txt`. I think I will try some of the suggestions presented in this post.

Update VENV from `requirements.txt`

The command and result...

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ pip install -r requirements.txt --upgrade
Collecting appdirs==1.4.4
  Using cached appdirs-1.4.4-py2.py3-none-any.whl (9.6 kB)
Collecting attrs==21.4.0
  Using cached attrs-21.4.0-py2.py3-none-any.whl (60 kB)
Collecting certifi==2021.10.8
```

```
  Using cached certifi-2021.10.8-py2.py3-none-any.whl (149 kB)
Collecting charset-normalizer==2.0.10
  Using cached charset_normalizer-2.0.10-py3-none-any.whl (39 kB)
Collecting click==8.0.1
  Using cached click-8.0.1-py3-none-any.whl (97 kB)
Collecting configobj==5.0.6
  Using cached configobj-5.0.6.tar.gz (33 kB)
  Preparing metadata (setup.py) ... done
Collecting distlib==0.3.2
  Using cached distlib-0.3.2-py2.py3-none-any.whl (338 kB)
Collecting filelock==3.0.12
  Using cached filelock-3.0.12-py3-none-any.whl (7.6 kB)
Collecting idna==3.3
  Using cached idna-3.3-py3-none-any.whl (61 kB)
Collecting importlib-resources==5.4.0
  Using cached importlib_resources-5.4.0-py3-none-any.whl (28 kB)
Collecting Jinja2==3.0.3
  Using cached Jinja2-3.0.3-py3-none-any.whl (133 kB)
Collecting joblib==1.0.1
  Using cached joblib-1.0.1-py3-none-any.whl (303 kB)
Collecting jsonpatch==1.32
  Using cached jsonpatch-1.32-py2.py3-none-any.whl (12 kB)
Collecting jsonpointer==2.2
  Using cached jsonpointer-2.2-py2.py3-none-any.whl (7.5 kB)
Collecting jsonschema==4.3.3
  Using cached jsonschema-4.3.3-py3-none-any.whl (71 kB)
Collecting MarkupSafe==2.0.1
  Using cached MarkupSafe-2.0.1-cp39-cp39-macosx_10_9_universal2.whl (18
kB)
Collecting nltk==3.6.3
  Using cached nltk-3.6.3-py3-none-any.whl (1.5 MB)
Collecting oauthlib==3.1.1
  Using cached oauthlib-3.1.1-py2.py3-none-any.whl (146 kB)
Collecting prettytable==3.0.0
  Using cached prettytable-3.0.0-py3-none-any.whl (24 kB)
Collecting PyPDF2==2.7.0
  Downloading PyPDF2-2.7.0-py3-none-any.whl (202 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 202.4/202.4 kB 3.0 MB/s eta
0:00:00
Collecting pyrsistent==0.18.0
  Downloading pyrsistent-0.18.0.tar.gz (104 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 104.2/104.2 kB 3.7 MB/s eta
0:00:00
  Installing build dependencies ... done
  Getting requirements to build wheel ... done
  Preparing metadata (pyproject.toml) ... done
Collecting python-docx==0.8.11
  Downloading python-docx-0.8.11.tar.gz (5.6 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 5.6/5.6 MB 24.8 MB/s eta
0:00:00
  Preparing metadata (setup.py) ... done
Collecting PyYAML==6.0
  Downloading PyYAML-6.0-cp39-cp39-macosx_11_0_arm64.whl (173 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 174.0/174.0 kB 6.1 MB/s eta
```

```
0:00:00
Collecting regex==2021.9.24
  Downloading regex-2021.9.24.tar.gz (703 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 703.4/703.4 kB 15.4 MB/s eta
0:00:00
  Preparing metadata (setup.py) ... done
Collecting requests==2.27.1
  Using cached requests-2.27.1-py2.py3-none-any.whl (63 kB)
Collecting six==1.16.0
  Using cached six-1.16.0-py2.py3-none-any.whl (11 kB)
Collecting tqdm==4.62.3
  Using cached tqdm-4.62.3-py2.py3-none-any.whl (76 kB)
Collecting urllib3==1.26.8
  Using cached urllib3-1.26.8-py2.py3-none-any.whl (138 kB)
Collecting virtualenv==20.4.7
  Using cached virtualenv-20.4.7-py2.py3-none-any.whl (7.2 MB)
Collecting wcwidth==0.2.5
  Using cached wcwidth-0.2.5-py2.py3-none-any.whl (30 kB)
Collecting zipp==3.7.0
  Using cached zipp-3.7.0-py3-none-any.whl (5.3 kB)
Collecting Flask==2.0.3
  Using cached Flask-2.0.3-py3-none-any.whl (95 kB)
Collecting Flask-Bootstrap==3.3.7.1
  Using cached Flask-Bootstrap-3.3.7.1.tar.gz (456 kB)
  Preparing metadata (setup.py) ... done
Collecting Flask-DebugToolbar==0.10.1
  Using cached Flask_DebugToolbar-0.10.1-py2.py3-none-any.whl (326 kB)
Collecting Flask-WTF==0.14.2
  Using cached Flask_WTF-0.14.2-py2.py3-none-any.whl (14 kB)
Collecting typing-extensions
  Downloading typing_extensions-4.3.0-py3-none-any.whl (25 kB)
Collecting lxml>=2.3.2
  Downloading lxml-4.9.1.tar.gz (3.4 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 3.4/3.4 MB 20.5 MB/s eta
0:00:00
  Preparing metadata (setup.py) ... done
Requirement already satisfied: itsdangerous>=2.0 in
./.venv/lib/python3.9/site-packages (from Flask==2.0.3->-r
requirements.txt (line 33)) (2.1.2)
Requirement already satisfied: Werkzeug>=2.0 in
./.venv/lib/python3.9/site-packages (from Flask==2.0.3->-r
requirements.txt (line 33)) (2.2.0)
Collecting dominate
  Downloading dominate-2.7.0-py2.py3-none-any.whl (29 kB)
Collecting visitor
  Using cached visitor-0.1.3.tar.gz (3.3 kB)
  Preparing metadata (setup.py) ... done
Collecting Blinker
  Downloading blinker-1.5-py2.py3-none-any.whl (12 kB)
Collecting WTForms
  Using cached WTForms-3.0.1-py3-none-any.whl (136 kB)
Collecting Werkzeug>=2.0
  Downloading Werkzeug-2.1.2-py3-none-any.whl (224 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 224.9/224.9 kB 7.2 MB/s eta
```

```
0:00:00
Using legacy 'setup.py install' for configobj, since package 'wheel' is
not installed.
Using legacy 'setup.py install' for python-docx, since package 'wheel' is
not installed.
Using legacy 'setup.py install' for regex, since package 'wheel' is not
installed.
Using legacy 'setup.py install' for Flask-Bootstrap, since package 'wheel'
is not installed.
Using legacy 'setup.py install' for lxml, since package 'wheel' is not
installed.
Using legacy 'setup.py install' for visitor, since package 'wheel' is not
installed.
Building wheels for collected packages: pyrsistent
  Building wheel for pyrsistent (pyproject.toml) ... done
  Created wheel for pyrsistent: filename=pyrsistent-0.18.0-cp39-cp39-
macosx_12_0_arm64.whl size=69320
sha256=b8b6366c34716866406070d0d29c592ee3fc4bc5df8edd938a55a89c869d27f5
  Stored in directory:
/Users/mcfatem/Library/Caches/pip/wheels/dd/c8/61/04c6d218b3691f75353d7f74
fed3fbd40e0ee9e2d1e2ce24c6
Successfully built pyrsistent
Installing collected packages: wcwidth, visitor, regex, filelock, distlib,
certifi, appdirs, zipp, Werkzeug, urllib3, typing-extensions, tqdm, six,
PyYAML, pyrsistent, prettytable, oauthlib, MarkupSafe, lxml, jsonpointer,
joblib, idna, dominate, click, charset-normalizer, Blinker, attrs,
WTForms, virtualenv, requests, python-docx, PyPDF2, nltk, jsonschema,
jsonpatch, Jinja2, importlib-resources, configobj, Flask, Flask-WTF,
Flask-DebugToolbar, Flask-Bootstrap
  Running setup.py install for visitor ... done
  Running setup.py install for regex ... done
  Attempting uninstall: zipp
    Found existing installation: zipp 3.8.1
    Uninstalling zipp-3.8.1:
      Successfully uninstalled zipp-3.8.1
  Attempting uninstall: Werkzeug
    Found existing installation: Werkzeug 2.2.0
    Uninstalling Werkzeug-2.2.0:
      Successfully uninstalled Werkzeug-2.2.0
  Attempting uninstall: MarkupSafe
    Found existing installation: MarkupSafe 2.1.1
    Uninstalling MarkupSafe-2.1.1:
      Successfully uninstalled MarkupSafe-2.1.1
  Running setup.py install for lxml ... done
  Attempting uninstall: click
    Found existing installation: click 8.1.3
    Uninstalling click-8.1.3:
      Successfully uninstalled click-8.1.3
  Running setup.py install for python-docx ... done
  Attempting uninstall: Jinja2
    Found existing installation: Jinja2 3.1.2
    Uninstalling Jinja2-3.1.2:
      Successfully uninstalled Jinja2-3.1.2
  Running setup.py install for configobj ... done
```

```
  Attempting uninstall: Flask
    Found existing installation: Flask 2.1.3
    Uninstalling Flask-2.1.3:
      Successfully uninstalled Flask-2.1.3
  Running setup.py install for Flask-Bootstrap ... done
Successfully installed Blinker-1.5 Flask-2.0.3 Flask-Bootstrap-3.3.7.1
Flask-DebugToolbar-0.10.1 Flask-WTF-0.14.2 Jinja2-3.0.3 MarkupSafe-2.0.1
PyPDF2-2.7.0 PyYAML-6.0 WTForms-3.0.1 Werkzeug-2.1.2 appdirs-1.4.4 attrs-
21.4.0 certifi-2021.10.8 charset-normalizer-2.0.10 click-8.0.1 configobj-
5.0.6 distlib-0.3.2 dominate-2.7.0 filelock-3.0.12 idna-3.3 importlib-
resources-5.4.0 joblib-1.0.1 jsonpatch-1.32 jsonpointer-2.2 jsonschema-
4.3.3 lxml-4.9.1 nltk-3.6.3 oauthlib-3.1.1 prettytable-3.0.0 pyrsistent-
0.18.0 python-docx-0.8.11 regex-2021.9.24 requests-2.27.1 six-1.16.0 tqdm-
4.62.3 typing-extensions-4.3.0 urllib3-1.26.8 virtualenv-20.4.7 visitor-
0.1.3 wcwidth-0.2.5 zipp-3.7.0
```

Now when I run it...

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ python -m flask run
 * Environment: production
   WARNING: This is a development server. Do not use it in a production
deployment.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on http://127.0.0.1:5000 (Press CTRL+C to quit)
```

Success!?!
Well, maybe. Let's see what it looks like at http://127.0.0.1:5000.

Yes!
It works, complete with rendered `/verbs` and `/to-be-form` pages!

Restoring `wsgi.py`

Next question: what happens in my local build if I restore the `wsgi.py` file? Let's find out...

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ mv -f .wsgi.py wsgi.py
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ python -m flask run
 * Environment: production
   WARNING: This is a development server. Do not use it in a production
deployment.
   Use a production WSGI server instead.
 * Debug mode: off
Usage: python -m flask run [OPTIONS]
Try 'python -m flask run --help' for help.
```

```
Error: While importing 'wsgi', an ImportError was raised:

Traceback (most recent call last):
  File "/Users/mcfatem/GitHub/catpaw/.venv/lib/python3.9/site-
packages/flask/cli.py", line 260, in locate_app
    __import__(module_name)
  File "/Users/mcfatem/GitHub/catpaw/wsgi.py", line 8, in <module>
    from catpaw import app as application
ModuleNotFoundError: No module named 'catpaw'
```

Nope, not a good move! At least not a good idea for the local environment. So, in my `vscode` branch of the repo I'm going to leave `wsgi.py` "hidden" as `.wsgi.py` and give it another local test.

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ mv -f wsgi.py .wsgi.py
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ python -m flask run
 * Environment: production
   WARNING: This is a development server. Do not use it in a production
deployment.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on http://127.0.0.1:5000 (Press CTRL+C to quit)
```

It works!

Pushing `vscode` to Production

Now that this is working locally I'm going to sync my local `vscode` branch with our *GitHub* remote, restore `.wsgi.py` to `wsgi.py` in that remote, and see if I can setup a new *Reclaim Cloud* deployment that pulls from the new `vscode` branch of the repo.

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ git push -u origin vscode
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'vscode' on GitHub by visiting:
remote:      https://github.com/Digital-Grinnell/catpaw/pull/new/vscode
remote:
To https://github.com/Digital-Grinnell/catpaw.git
 * [new branch]      vscode -> vscode
branch 'vscode' set up to track 'origin/vscode'.
```

That was the easy part. Now for the *Reclaim Cloud* bits.

Engaging *Reclaim Cloud*

I created a new environment in *Reclaim Cloud* and named it `CATPAW-2`. Its canonical name is `env-6113889.us.reclaim.cloud` so you can find its output, when running, at https://env-6113889.us.reclaim.cloud/.

It is configured to pull updates and automatically deploy from the `vscode` branch of this repo, specifically, https://github.com/Digital-Grinnell/catpaw/tree/vscode.

First Deployment

My first deployment of this new code returned a `404 Error` and...

```
Not Found

The requested URL was not found on this server.
```

So, I checked the logs in *Reclaim Cloud*, specifically the `httpd/error_log` in the logs portion of the *Reclaim Cloud* dashboard, and I found this...

```
[Mon Jul 25 15:20:48.138840 2022] [lbmethod_heartbeat:notice] [pid 3464]
AH02282: No slotmem from mod_heartmonitor
[Mon Jul 25 15:20:48.143169 2022] [mpm_prefork:notice] [pid 3464] AH00163:
Apache/2.4.54 (codeit) mod_wsgi/4.9.0 Python/3.10 configured -- resuming
normal operations
[Mon Jul 25 15:20:48.143186 2022] [core:notice] [pid 3464] AH00094:
Command line: '/usr/sbin/httpd'
[Mon Jul 25 15:22:43.522381 2022] [wsgi:error] [pid 3470] [client
192.168.1.17:59238] Target WSGI script not found or unable to stat:
/var/www/webroot/ROOT/wsgi.py, referer: https://app.my.reclaim.cloud/
[Mon Jul 25 15:22:48.219760 2022] [wsgi:error] [pid 3470] [client
192.168.1.17:59436] Target WSGI script not found or unable to stat:
/var/www/webroot/ROOT/wsgi.py, referer: https://app.my.reclaim.cloud/
Loading...
```

True to form, the app is complaining that it could not find a suitable `wsgi` configuration, but that's exactly what I expected. Next step is to rename `.wsgi.py` in the `vscode` branch of the repo, and try to re-deploy. I'll do this in a command line inside my local *VSCode* and push it to *GitHub* like so...

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ git status
On branch vscode
Your branch is up to date with 'origin/vscode'.

nothing to commit, working tree clean
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode›
└─$ mv -f .wsgi.py wsgi.py
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ git add .
```

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode●›
└─$ git commit -m "Re-engaging wsgi.py"
[vscode 88379b8] Re-engaging wsgi.py
 1 file changed, 0 insertions(+), 0 deletions(-)
 rename .wsgi.py => wsgi.py (100%)
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode›
└─$ git push
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 246 bytes | 246.00 KiB/s, done.
Total 2 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Digital-Grinnell/catpaw.git
   66e820e..88379b8  vscode -> vscode
```

Better, but still not right. 😦 This time the `error_log` mentioned above shows...

```
[Mon Jul 25 15:35:10.266903 2022] [wsgi:error] [pid 3469] [remote
192.168.1.18:53640] Traceback (most recent call last):
[Mon Jul 25 15:35:10.266926 2022] [wsgi:error] [pid 3469] [remote
192.168.1.18:53640]   File "/var/www/webroot/ROOT/wsgi.py", line 8, in
<module>
[Mon Jul 25 15:35:10.266930 2022] [wsgi:error] [pid 3469] [remote
192.168.1.18:53640]     from catpaw import app as application
[Mon Jul 25 15:35:10.266942 2022] [wsgi:error] [pid 3469] [remote
192.168.1.18:53640] ModuleNotFoundError: No module named 'catpaw'
```

So, this indicates that our `wsgi.py` isn't quite right for this structure. I'm going to change the last line of `wsgi.py` from `from catpaw import app as application` to this `from ROOT import app as application`, and try again.

Now the contents of `error_log` show...

```
[Mon Jul 25 16:23:55.501504 2022] [wsgi:error] [pid 18505] [remote
192.168.1.18:29427] mod_wsgi (pid=18505): Exception occurred processing
WSGI script '/var/www/webroot/ROOT/wsgi.py'.
[Mon Jul 25 16:23:55.501596 2022] [wsgi:error] [pid 18505] [remote
192.168.1.18:29427] TypeError: 'module' object is not callable
```

When I look at `wsgi.py` I'm told there is no reference to `application`, so I changed that last line to read `from ROOT import app as app` but that leads to the following `error_log` results...

```
[Mon Jul 25 16:42:11.293515 2022] [wsgi:error] [pid 31510] [remote
192.168.1.18:32456] mod_wsgi (pid=31510): Target WSGI script
```

```
'/var/www/webroot/ROOT/wsgi.py' does not contain WSGI application
'application'.
```

Clearly the reference to `application` must exist. So, I restored it and took a look at some WSGI Flask examples, including https://www.bogotobogo.com/python/Flask/Python_Flask_HelloWorld_App_with_Apache_WSGI_Ubuntu14.php and I see that most do not contain a "named" `app.py` file, but put their code inside an `__init__.py` file instead. I'm going to rename `app.py` to `__init__.py` and see what happens...

Bingo! We are in business! Check out https://env-6113889.us.reclaim.cloud/.

Does It Still Work Locally?

Nope, at least not right out of the box.

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode›
└─$ python -m flask run
 * Environment: production
   WARNING: This is a development server. Do not use it in a production
deployment.
   Use a production WSGI server instead.
 * Debug mode: off
Usage: python -m flask run [OPTIONS]
Try 'python -m flask run --help' for help.

Error: While importing 'catpaw.wsgi', an ImportError was raised:

Traceback (most recent call last):
  File "/Users/mcfatem/GitHub/catpaw/.venv/lib/python3.9/site-
packages/flask/cli.py", line 260, in locate_app
    __import__(module_name)
  File "/Users/mcfatem/GitHub/catpaw/wsgi.py", line 8, in <module>
    from ROOT import app as application
ModuleNotFoundError: No module named 'ROOT'
```

Let's eliminate that pesky `wsgi.py` file and try again.

```
(.venv) ┌─mcfatem@MAC02FK0XXQ05Q ~/GitHub/catpaw ‹vscode›
└─$ mv -f wsgi.py .wsgi.py; python -m flask run
 * Environment: production
   WARNING: This is a development server. Do not use it in a production
deployment.
   Use a production WSGI server instead.
 * Debug mode: off
Usage: python -m flask run [OPTIONS]
Try 'python -m flask run --help' for help.

Error: Could not locate a Flask application. You did not provide the
```

```
"FLASK_APP" environment variable, and a "wsgi.py" or "app.py" module was
not found in the current directory.
```

Introducing `prep-for-local.sh`

After a bit of research I'm begininning to see the light, but have yet to find a bullet-proof means of handling this, so I'm going out on a limb here. I've created a new `bash` script that I've named `prep-for-local.sh`. It's contents are simple and it contains comments so let me show it to you here.

```
#!/bin/bash

# Change the wsgi.py and __init__.py file names for local use
mv -f wsgi.py .wsgi.py
mv -f __init__.py app.py
# Run Flask with a local development webserver for debugging
python -m flask run
```

The idea here is that in order to run the code locally you can just use `source prep-for-local.sh`. **It works!**

Introducing `prep-for-prod.sh`

I've now created a counterpart to `prep-for-local.sh` named `prep-for-prod.sh`. It's important that you `source prep-for-prod.sh` before you `git add .; git commit -m "message"; git push` because it reverses the changes that `prep-for-local.sh` made. Specifically it contains...

```
#!/bin/bash

# Change back to .wsgi.py and __init__.py file names for production
mv -f .wsgi.py wsgi.py
mv -f app.py __init__.py
# Now you can safely follow with the usual `git add .; git commit -m
"message"; git push` commands.
```

VSCode Fresh Start

On 20-Oct-2022 I took some time to revisit this project and wanted to get yet another "fresh" start, this time using the wisdom I captured in my blog post, Proper Python. So, following that script I...

1. Cloned the project to my personal Mac Mini as prescribed above.
2. Followed the guidance at https://dev.to/aditya005/right-way-to-uninstall-clean-python-on-a-mac-4jfo to cleanup my Mac's Python environment.
3. Did a `brew update && brew upgrade` command to bring things up-to-date.
4. Working in the new `catpaw` directory I followed Proper Python to create a new `.venv` and activate it.

5. ~~Renamed `requirements.txt` to `python-requirements.txt` and installed it using `pip3 install -r python-requirements.txt`~~. Output follows...

Deploying a Python app in the cloud will sometimes require that you have a properly named `requirements.txt` file, so I opted NOT to rename that file after all.

```
┌─mark@Marks-Mac-Mini ~/GitHub/catpaw ‹vscode*›
└─$ source .venv/bin/activate
(.venv) ┌─mark@Marks-Mac-Mini ~/GitHub/catpaw ‹vscode*›
└─$ pip3 install -r requirements.txt
Collecting appdirs==1.4.4
  Downloading appdirs-1.4.4-py2.py3-none-any.whl (9.6 kB)
Collecting attrs==21.4.0
  Downloading attrs-21.4.0-py2.py3-none-any.whl (60 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 60.6/60.6 kB 738.3 kB/s eta
0:00:00
Collecting certifi==2021.10.8
  Downloading certifi-2021.10.8-py2.py3-none-any.whl (149 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 149.2/149.2 kB 3.5 MB/s eta
0:00:00
Collecting charset-normalizer==2.0.10
  Downloading charset_normalizer-2.0.10-py3-none-any.whl (39 kB)
Collecting click==8.0.1
  Downloading click-8.0.1-py3-none-any.whl (97 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 97.4/97.4 kB 3.7 MB/s eta
0:00:00
Collecting configobj==5.0.6
  Downloading configobj-5.0.6.tar.gz (33 kB)
  Preparing metadata (setup.py) ... done
Collecting distlib==0.3.2
  Downloading distlib-0.3.2-py2.py3-none-any.whl (338 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 338.7/338.7 kB 7.1 MB/s eta
0:00:00
Collecting filelock==3.0.12
  Downloading filelock-3.0.12-py3-none-any.whl (7.6 kB)
Collecting idna==3.3
  Downloading idna-3.3-py3-none-any.whl (61 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 61.2/61.2 kB 2.2 MB/s eta
0:00:00
Collecting importlib-resources==5.4.0
  Downloading importlib_resources-5.4.0-py3-none-any.whl (28 kB)
Collecting Jinja2==3.0.3
  Downloading Jinja2-3.0.3-py3-none-any.whl (133 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 133.6/133.6 kB 5.1 MB/s eta
0:00:00
Collecting joblib==1.0.1
  Downloading joblib-1.0.1-py3-none-any.whl (303 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 303.1/303.1 kB 9.6 MB/s eta
0:00:00
Collecting jsonpatch==1.32
  Downloading jsonpatch-1.32-py2.py3-none-any.whl (12 kB)
Collecting jsonpointer==2.2
```

```
  Downloading jsonpointer-2.2-py2.py3-none-any.whl (7.5 kB)
Collecting jsonschema==4.3.3
  Downloading jsonschema-4.3.3-py3-none-any.whl (71 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 71.9/71.9 kB 2.6 MB/s eta
0:00:00
Collecting MarkupSafe==2.0.1
  Downloading MarkupSafe-2.0.1-cp310-cp310-macosx_10_9_x86_64.whl (14 kB)
Collecting nltk==3.6.3
  Downloading nltk-3.6.3-py3-none-any.whl (1.5 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 1.5/1.5 MB 19.7 MB/s eta
0:00:00
Collecting oauthlib==3.1.1
  Downloading oauthlib-3.1.1-py2.py3-none-any.whl (146 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 146.2/146.2 kB 5.7 MB/s eta
0:00:00
Collecting prettytable==3.0.0
  Downloading prettytable-3.0.0-py3-none-any.whl (24 kB)
Collecting PyPDF2==2.7.0
  Downloading PyPDF2-2.7.0-py3-none-any.whl (202 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 202.4/202.4 kB 7.4 MB/s eta
0:00:00
Collecting pyrsistent==0.18.0
  Downloading pyrsistent-0.18.0.tar.gz (104 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 104.2/104.2 kB 3.9 MB/s eta
0:00:00
  Installing build dependencies ... done
  Getting requirements to build wheel ... done
  Preparing metadata (pyproject.toml) ... done
Collecting python-docx==0.8.11
  Downloading python-docx-0.8.11.tar.gz (5.6 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 5.6/5.6 MB 26.6 MB/s eta
0:00:00
  Preparing metadata (setup.py) ... done
Collecting PyYAML==6.0
  Downloading PyYAML-6.0-cp310-cp310-macosx_10_9_x86_64.whl (197 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 197.6/197.6 kB 7.3 MB/s eta
0:00:00
Collecting regex==2021.9.24
  Downloading regex-2021.9.24-cp310-cp310-macosx_10_9_x86_64.whl (287 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 287.8/287.8 kB 8.9 MB/s eta
0:00:00
Collecting requests==2.27.1
  Downloading requests-2.27.1-py2.py3-none-any.whl (63 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 63.1/63.1 kB 2.3 MB/s eta
0:00:00
Collecting six==1.16.0
  Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
Collecting tqdm==4.62.3
  Downloading tqdm-4.62.3-py2.py3-none-any.whl (76 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 76.2/76.2 kB 2.8 MB/s eta
0:00:00
Collecting urllib3==1.26.8
  Downloading urllib3-1.26.8-py2.py3-none-any.whl (138 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 138.7/138.7 kB 5.2 MB/s eta
```

```
0:00:00
Collecting virtualenv==20.4.7
  Downloading virtualenv-20.4.7-py2.py3-none-any.whl (7.2 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 7.2/7.2 MB 27.5 MB/s eta
0:00:00
Collecting wcwidth==0.2.5
  Downloading wcwidth-0.2.5-py2.py3-none-any.whl (30 kB)
Collecting zipp==3.7.0
  Downloading zipp-3.7.0-py3-none-any.whl (5.3 kB)
Collecting Flask==2.0.3
  Downloading Flask-2.0.3-py3-none-any.whl (95 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 95.6/95.6 kB 3.7 MB/s eta
0:00:00
Collecting Flask-Bootstrap==3.3.7.1
  Downloading Flask-Bootstrap-3.3.7.1.tar.gz (456 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 456.4/456.4 kB 11.1 MB/s eta
0:00:00
  Preparing metadata (setup.py) ... done
Collecting Flask-DebugToolbar==0.10.1
  Downloading Flask_DebugToolbar-0.10.1-py2.py3-none-any.whl (326 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 326.8/326.8 kB 9.9 MB/s eta
0:00:00
Collecting Flask-WTF==0.14.2
  Downloading Flask_WTF-0.14.2-py2.py3-none-any.whl (14 kB)
Collecting lxml>=2.3.2
  Downloading lxml-4.9.1.tar.gz (3.4 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 3.4/3.4 MB 24.3 MB/s eta
0:00:00
  Preparing metadata (setup.py) ... done
Collecting itsdangerous>=2.0
  Downloading itsdangerous-2.1.2-py3-none-any.whl (15 kB)
Collecting Werkzeug>=2.0
  Downloading Werkzeug-2.2.2-py3-none-any.whl (232 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 232.7/232.7 kB 8.0 MB/s eta
0:00:00
Collecting dominate
  Downloading dominate-2.7.0-py2.py3-none-any.whl (29 kB)
Collecting visitor
  Downloading visitor-0.1.3.tar.gz (3.3 kB)
  Preparing metadata (setup.py) ... done
Collecting Blinker
  Downloading blinker-1.5-py2.py3-none-any.whl (12 kB)
Collecting WTForms
  Downloading WTForms-3.0.1-py3-none-any.whl (136 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 136.5/136.5 kB 5.0 MB/s eta
0:00:00
Collecting Werkzeug>=2.0
  Downloading Werkzeug-2.2.1-py3-none-any.whl (232 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 232.4/232.4 kB 7.4 MB/s eta
0:00:00
  Downloading Werkzeug-2.2.0-py3-none-any.whl (232 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 232.2/232.2 kB 7.8 MB/s eta
0:00:00
  Downloading Werkzeug-2.1.2-py3-none-any.whl (224 kB)
```

```
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 224.9/224.9 kB 7.6 MB/s eta
0:00:00
Using legacy 'setup.py install' for configobj, since package 'wheel' is
not installed.
Using legacy 'setup.py install' for python-docx, since package 'wheel' is
not installed.
Using legacy 'setup.py install' for Flask-Bootstrap, since package 'wheel'
is not installed.
Using legacy 'setup.py install' for lxml, since package 'wheel' is not
installed.
Using legacy 'setup.py install' for visitor, since package 'wheel' is not
installed.
Building wheels for collected packages: pyrsistent
  Building wheel for pyrsistent (pyproject.toml) ... done
  Created wheel for pyrsistent: filename=pyrsistent-0.18.0-cp310-cp310-
macosx_12_0_x86_64.whl size=68800
sha256=a910b7727875c260d7ca7821373e2252994344b657adbd5c9367a5dbec128c8f
  Stored in directory:
/Users/mark/Library/Caches/pip/wheels/bf/ee/17/b548a960bb9e20daf7987f316c3
26e8a368603809ace3b2374
Successfully built pyrsistent
Installing collected packages: wcwidth, visitor, regex, filelock, distlib,
certifi, appdirs, zipp, Werkzeug, urllib3, tqdm, six, PyYAML, pyrsistent,
PyPDF2, prettytable, oauthlib, MarkupSafe, lxml, jsonpointer, joblib,
itsdangerous, importlib-resources, idna, dominate, click, charset-
normalizer, Blinker, attrs, WTForms, virtualenv, requests, python-docx,
nltk, jsonschema, jsonpatch, Jinja2, configobj, Flask, Flask-WTF, Flask-
DebugToolbar, Flask-Bootstrap
  Running setup.py install for visitor ... done
  Running setup.py install for lxml ... done
  Running setup.py install for python-docx ... done
  Running setup.py install for configobj ... done
  Running setup.py install for Flask-Bootstrap ... done
Successfully installed Blinker-1.5 Flask-2.0.3 Flask-Bootstrap-3.3.7.1
Flask-DebugToolbar-0.10.1 Flask-WTF-0.14.2 Jinja2-3.0.3 MarkupSafe-2.0.1
PyPDF2-2.7.0 PyYAML-6.0 WTForms-3.0.1 Werkzeug-2.1.2 appdirs-1.4.4 attrs-
21.4.0 certifi-2021.10.8 charset-normalizer-2.0.10 click-8.0.1 configobj-
5.0.6 distlib-0.3.2 dominate-2.7.0 filelock-3.0.12 idna-3.3 importlib-
resources-5.4.0 itsdangerous-2.1.2 joblib-1.0.1 jsonpatch-1.32
jsonpointer-2.2 jsonschema-4.3.3 lxml-4.9.1 nltk-3.6.3 oauthlib-3.1.1
prettytable-3.0.0 pyrsistent-0.18.0 python-docx-0.8.11 regex-2021.9.24
requests-2.27.1 six-1.16.0 tqdm-4.62.3 urllib3-1.26.8 virtualenv-20.4.7
visitor-0.1.3 wcwidth-0.2.5 zipp-3.7.0

[notice] A new release of pip available: 22.2.2 -> 22.3
[notice] To update, run: pip install --upgrade pip
```

So I updated `pip` in the virtual environment just to avoid future warnings...

```
(.venv) ┌─mark@Marks-Mac-Mini ~/GitHub/catpaw ‹vscode*›
└─$ pip install --upgrade pip
Requirement already satisfied: pip in ./.venv/lib/python3.10/site-packages
```

```
(22.2.2)
Collecting pip
  Using cached pip-22.3-py3-none-any.whl (2.1 MB)
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 22.2.2
    Uninstalling pip-22.2.2:
      Successfully uninstalled pip-22.2.2
Successfully installed pip-22.3
```

Prep for Running Locally

Next, as above, I did `source ./prep-for-local.sh` to prep for running locally, then...

```
(.venv) ┌─mark@Marks-Mac-Mini ~/GitHub/catpaw ‹vscode*›
└─$ python -m flask run
 * Environment: production
   WARNING: This is a development server. Do not use it in a production
deployment.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on http://127.0.0.1:5000 (Press CTRL+C to quit)
```

Navigation Errors in Production

What follows are findings and recommendations I shared via email on 20-October-2022.

```
OK, I think I see the problem and it is two-fold, and multi-dimensional
problems always seem harder to pin down.

First: there's a menu item `Test Your Text` with a route in `app.py` of
`/toBeForm` that is coded to a function named `examples`, but it renders a
template named `toBeForm.html`.   Very, very, very confusing!  It appears
there is no path to the `examples.html` template?

I highly recommend you use consistent menu/route/function names throughout
so there's no confusion!

Second: the use of uppercase in the file names gets VERY confusing because
we have `tobe`, `toBe`, `toBeForm` and other variations of these.  While
these might work locally on a Mac or Windows machine, they will NOT always
work on the Linux nodes that we deploy the app to because Linux does not
support case-sensitive path names.

I recommend you NEVER use uppercase letters in Python apart from literal
text where it might be required.  Use underscore separators instead so
`toBe` or `tobe` becomes `to_be`, etc.  Underscores work in almost every
context.  I personally prefer to use dashes, but they don't work in parts
of Python, so stick with underscores!
```

```
One other change I would implement…. You have the same <nav> block
repeated in many templates, and if one of them gets out-of-sync with the
others you'll have problems that are difficult to pin down.  It's best to
stick that entire <nav> section in a template of its own and `{% include
"template_name.html" %}` it where needed.

Note that using long names with underscores also makes global changes MUCH
easier.  Using function/route names like "strategies" and "tobe" makes it
very difficult to execute global changes without impacting strings that
should not be altered.  For example, "tobe" appears in numerous foreign
language files here, as part of words like "October".

So, I made LOTS of systematic consistency changes to the `vscode` branch
of the code in order to adopt these recommendations, and when I test it
locally, IT WORKS.  It will NOT work in production because the `wsgi.py`
function has been "hidden".

Please `git pull` the new repo and `git checkout vscode` then see if you
can run the app locally to test.  Let me know the outcome at your earliest
convenience.  Thanks.
```

Recommendations!

From the email above...

- I highly recommend you use consistent menu/route/function names throughout so there's no confusion!
- I recommend you NEVER use uppercase letters in Python apart from literal text where it might be required. Use underscore separators instead so `toBe` or `tobe` becomes `to_be`, etc. Underscores work in almost every context. I personally prefer to use dashes, but they don't work in parts of Python, so stick with underscores!

Outcome of Changes

After making the recommended changes in the `vscode` branch of the project, I was able to run it locally with no errors (after running `source ./prep-for-local.sh`). However, after running `source ./prep-for-prod.sh` and pusing the changes back to *GitHub*, the application (running the `CATPAW-2` deployment in *Reclaim Cloud* at https://env-6113889.us.reclaim.cloud/) yielded this error when attempting to display `/results`:

```
Internal Server Error

The server encountered an internal error and was unable to complete your
request. Either the server is overloaded or there is an error in the
application.
```

The `error.log` contents from that run showed this:

```
[Fri Oct 21 14:19:39.031091 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672] [2022-10-21 14:19:39,029] ERROR in app: Exception on
/results [POST]
[Fri Oct 21 14:19:39.031135 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672] Traceback (most recent call last):
[Fri Oct 21 14:19:39.031142 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/flask/app.py", line 2073, in wsgi_app
[Fri Oct 21 14:19:39.031148 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     response = self.full_dispatch_request()
[Fri Oct 21 14:19:39.031154 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/flask/app.py", line 1518, in full_dispatch_request
[Fri Oct 21 14:19:39.031160 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     rv = self.handle_user_exception(e)
[Fri Oct 21 14:19:39.031165 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/flask/app.py", line 1516, in full_dispatch_request
[Fri Oct 21 14:19:39.031170 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     rv = self.dispatch_request()
[Fri Oct 21 14:19:39.031175 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/flask/app.py", line 1502, in dispatch_request
[Fri Oct 21 14:19:39.031181 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     return
self.ensure_sync(self.view_functions[rule.endpoint])(**req.view_args)
[Fri Oct 21 14:19:39.031186 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/var/www/webroot/ROOT/__init__.py", line 47,
in results
[Fri Oct 21 14:19:39.031191 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     tokens = word_tokenize(processedText)
[Fri Oct 21 14:19:39.031196 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/nltk/tokenize/__init__.py", line 129, in word_tokenize
[Fri Oct 21 14:19:39.031202 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     sentences = [text] if preserve_line else
sent_tokenize(text, language)
[Fri Oct 21 14:19:39.031219 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/nltk/tokenize/__init__.py", line 106, in sent_tokenize
[Fri Oct 21 14:19:39.031224 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     tokenizer =
load(f"tokenizers/punkt/{language}.pickle")
[Fri Oct 21 14:19:39.031228 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/nltk/data.py", line 750, in load
[Fri Oct 21 14:19:39.031233 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     opened_resource = _open(resource_url)
[Fri Oct 21 14:19:39.031237 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/nltk/data.py", line 876, in _open
[Fri Oct 21 14:19:39.031241 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     return find(path_, path + [""]).open()
```

```
[Fri Oct 21 14:19:39.031245 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   File "/opt/jelastic-python310/lib/python3.10/site-
packages/nltk/data.py", line 583, in find
[Fri Oct 21 14:19:39.031249 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     raise LookupError(resource_not_found)
[Fri Oct 21 14:19:39.031253 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672] LookupError:
[Fri Oct 21 14:19:39.031258 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]
**********************************************************************
[Fri Oct 21 14:19:39.031262 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   Resource \x1b[93mpunkt\x1b[0m not found.
[Fri Oct 21 14:19:39.031266 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   Please use the NLTK Downloader to obtain the
resource:
[Fri Oct 21 14:19:39.031270 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]
[Fri Oct 21 14:19:39.031274 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   \x1b[31m>>> import nltk
[Fri Oct 21 14:19:39.031278 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   >>> nltk.download('punkt')
[Fri Oct 21 14:19:39.031282 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   \x1b[0m
[Fri Oct 21 14:19:39.031286 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   For more information see:
https://www.nltk.org/data.html
[Fri Oct 21 14:19:39.031291 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]
[Fri Oct 21 14:19:39.031295 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   Attempted to load
\x1b[93mtokenizers/punkt/PY3/english.pickle\x1b[0m
[Fri Oct 21 14:19:39.031299 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]
[Fri Oct 21 14:19:39.031303 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]   Searched in:
[Fri Oct 21 14:19:39.031307 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - '/var/www/webroot/nltk_data'
[Fri Oct 21 14:19:39.031311 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - '/opt/jelastic-python310/nltk_data'
[Fri Oct 21 14:19:39.031315 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - '/opt/jelastic-python310/share/nltk_data'
[Fri Oct 21 14:19:39.031320 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - '/opt/jelastic-python310/lib/nltk_data'
[Fri Oct 21 14:19:39.031324 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - '/usr/share/nltk_data'
[Fri Oct 21 14:19:39.031328 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - '/usr/local/share/nltk_data'
[Fri Oct 21 14:19:39.031332 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - '/usr/lib/nltk_data'
[Fri Oct 21 14:19:39.031336 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - '/usr/local/lib/nltk_data'
[Fri Oct 21 14:19:39.031340 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]     - './nltk_data'
[Fri Oct 21 14:19:39.031344 2022] [wsgi:error] [pid 13726] [remote
```

```
192.168.1.18:55672]     - ''
[Fri Oct 21 14:19:39.031349 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]
**********************************************************************
[Fri Oct 21 14:19:39.031359 2022] [wsgi:error] [pid 13726] [remote
192.168.1.18:55672]
```

No Easy Fix?

The error messages above were very helpful, but I found this post documenting a similar problem, and it sounds like using *Azure* in this fashion may come with LOTS of headaches.

A Relatively Easy Fix!

Fortunately, the outcome for *CATPAW* was not so gloomy after all. In order to work properly in *Azure* one line in `app.py`, or `__init__.py` in the case of production, had to be changed. The old line, which is still required for running "locally" was:

```
nltk.data.path.append('./nltk_data')
```

That line is correct locally, but a very different absolute path is needed in production. Based on the way `nltk` works, there should be no harm in appending both since the paths are literally "appended" to a default list of `nltk_data` paths. The new code is:

```
nltk.data.path.append('./nltk_data')                    # local: a
relative path is OK
nltk.data.path.append('/var/www/webroot/ROOT/nltk_data')   # production:
cannot be relative!
```