

Overview:

This application is a service for a web application like reddit. It features users, posts, voting, and messaging microservices. These services operate under the REST API. Service functions include creating accounts, updating emails, incrementing/decrementing account karma, deactivating accounts, creating new posts, retrieving posts, listing recent posts, listing posts within a community, deleting posts, upvoting/downvoting a post, and sending/removing messages. The project was built using python and is intended to run on a linux platform.

Support Contacts:

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Repository: <https://github.com/constraster/CPSC449-Project2>

Prerequisites:

- Git
- Python3
- Python3-venv
- Gunicorn3
- Foreman
- Caddy

Installing Prerequisites

In a linux console use the following commands to install our python dependencies

```
$ sudo apt-get install python3 python3-venv
```

To install git::

```
$ sudo apt-get install git-all
```

To install gunicorn:

```
$ sudo apt-get install gunicorn3 --yes
```

To install Foreman

```
$ sudo gem install foreman
```

To install caddy

```
$ curl https://getcaddy.com | bash -s personal
```

Environment Setup:

Clone app repository and navigate to repo directory root

```
$ git clone https://github.com/constraster/CPSC449-Project2  
$ cd CPSC449-Project2
```

Create and activate python virtual environment and install app requirements

```
$ source env/bin/activate  
$ pip3 install -r requirements.txt
```

Install Locust in order to run the testing scripts

```
$ pip3 install locust
```

Some dependencies won't install correctly, please use the pip command to install the missing modules. There were 5 modules that could possibly cause issues.

```
$ pip3 install pytz  
$ pip3 install flask  
$ pip3 install flask_sqlalchemy  
$ pip3 install flask_marshmallow  
$ pip3 install request
```

Run Application:

Run wsgi processes

```
$ foreman start -c users=3,posts=3,voting=3,message=3 -p 8000
```

*runs 3 processes of each microservices on port 8000

In a new console window, run Caddy reverse-proxy load balancer

```
$ ulimit -n 8192 && caddy
```

Now can access users on <http://localhost:5000/v1/api/user>

Posts on <http://localhost:5000/v1/api/post>

Voting on <http://localhost:5000/v1/api/voting>

Message on <http://localhost:5000/v1/api/message>

Tests:

VALIDATION TESTS:

These tests are used to verify that the service works using curl commands. Verify that the services are available before running tests in a separate terminal instance.

1. Go into: `/TestScripts/validation_testing`
2. Run `test_all.sh` to test all scripts, or run test scripts independently (Some commands are dependent on other scripts to run. Ordering defined in `test_all.sh`)

SYSTEM TESTING:

These tests cover simulated concurrent testing of all services with a heavy user load. We used Locust as our testing framework.

1. Run (if virtual environment not activated): `. env/Scripts/activate`
2. Go into: `/TestScripts/system_testing`
3. Run:

```
python3 -m locust --host=http://localhost:5000/v1/api --locustfile  
locustfile.py --no-web -c 150 -r 30
```

This runs 150 users, with a given hatch rate of 30

API Routes:

URI	HTTP Method	Expected Response
/v1/api/user/register	POST	201: Creates User 409: Email or username Already Exists
/v1/api/user/add_karma	PUT	202: Added Karma 404: User not found
/v1/api/user/sub_karma	PUT	202: Removed Karma 404: User not found
/v1/api/user/update_email	PUT	202: Email Updated 404: User not Found
/v1/api/user/deactivate_acc/<string:username>	DELETE	202: User Deleted 404: User not Found
/v1/api/posts/make_post	POST	201: Post Created 409: Username does not exist
/v1/api/posts/remove_post/<int:pid>	DELETE	202: Post Deleted 404: Post not found
/v1/api/posts/retrieve_post/<int:pid>	GET	200: post data 404: post not found
/v1/api/posts/list_post_sub/<string:subreddit>/	GET	200: List of post data 404: posts not found
/v1/api/posts/list_all_posts/	GET	200: List of all posts
/v1/api/voting/post_votes/<int:pid>	GET	200: Report # of upvotes & downvotes 404: Post Does Not Exist
/v1/api/voting/upvote/<int:pid>	PUT	202: Upvoted Post 404: Could Not Upvote Post
/v1/api/voting/downvote/<int:pid>	PUT	202: Downvoted Post 404: Could Not Downvote Post

/v1/api/voting/list_top_posts/	GET	200: List Top Scoring Post
/v1/api/voting/score_list/<string:pid>	GET	200: List Sorted By Score
/v1/api/message/send_message	POST	201: Message Created 409: Sender or Receiver Does Not Exist
/v1/api/message/remove_message/<int:mid>	DELETE	202: Deleted A Message 404: Message Does Not Exist
/v1/api/message/favorite_message/<int:mid>	PUT	201: Favorited A Message 404: Message Does Not Exist