# Deployment

Although Flask supports a default server, considering a better performance and security, the Gunicorn is used to serve the Flask instead as one of the schemes of the production website. On top of that, Nginx is used to reverse proxy the Gunicorn. For running the Gunicorn server in the background and starting it on reboot automatically, Supervisor is used.

The following operations are assuming that Ubuntu is used as the operating system, and the directory of this application is “/var/www/vamk.help”.

## Python Virtual Environment

Creating the Python Virtual Environment for this application:

* /var/www/vark.help# virtualenv env
* /var/www/vark.help# . env/bin/activate

Installing the Python packages by “requirements.txt”:

* (env) /var/www/vark.help# pip install vamk/requirements.txt

## PYTHONPATH Environment Variable

Adding the Python package “vamk” to the PYTHONPATH Environment Variable by appending the following line to the end of “.bashrc” file in the home directory.

* export PYTHONPATH=$PYTHONPATH:/var/www/vamk.help/

## MySQL Database

In this project, an instance in the RDS of Amazon Web Service is used as the supplier for the MySQL database.

After creating a database instance, the endpoint can be obtained from the RDS dashboard. The endpoint is used to connect to the instance.

With the connection of the database instance, the database ‘vamk\_help\_db’ should be created manually.

## Nginx

The configuration of Nginx is as following. In this configuration, all HTTP requests are redirected to HTTPS.

server {

listen 443 ssl;

server\_name vamk.help;

ssl\_certificate /etc/nginx/ssl/1\_vamk.help\_bundle.crt;

ssl\_certificate\_key /etc/nginx/ssl/vamk.key;

ssl\_protocols TLSv1 TLSv1.1 TLSv1.2;

ssl\_ciphers ALL:!DH:!EXPORT:!RC4:+HIGH:+MEDIUM:!LOW:!aNULL:!eNULL;

# Handle all locations

location / {

root /var/www/vamk.help;

proxy\_pass http://127.0.0.1:8000;

# Set some HTTP headers so that our app knows where the request really came from

proxy\_set\_header Host $host;

proxy\_set\_header X-Real-IP $remote\_addr;

proxy\_set\_header X-Forwarded-For $proxy\_add\_x\_forwarded\_for;

}

}

server {

listen 80 default\_server;

listen [::]:80 default\_server;

server\_name vamk.help;

return 301 https://$server\_name$request\_uri;

}

Snippet 1. Configuration of Nginx.

## Supervisor

Creating a Supervisor configuration file:

* (env) /var/www/vark.help# echo\_supervisord\_conf > supervisor.conf

Appending the following snippet to the end of the file:

[program: vamk.help]

command = /var/www/vamk.help/env/bin/gunicorn run:app -w 4

directory = /var/www/vamk.help/vamk

user = root

stdout\_logfile = /var/www/vamk.help/gunicorn/gunicorn\_stdout.log

stderr\_logfile = /var/www/vamk.help/logs/gunicorn/gunicorn\_stderr.log

redirect\_stderr = True

environment = PRODUCTION=1

Snippet 2. Configuration of Supervisor.

The following are the basic usage of Supervisor.

To start Supervisor by the Supervisor configuration file:

* supervisord -c supervisor.conf

To reload Supervisor:

* supervisorctl -c supervisor.conf reload

To check the status of Supervisor:

* supervisorctl -c supervisor.conf status

To reload Supervisor:

* supervisorctl -c supervisor.conf reload

To start all apps or a specific app in a Supervisor configuration file:

* supervisorctl -c supervisor.conf start [all]|[appname]

To stop all apps or a specific app in a Supervisor configuration file:

* supervisorctl -c supervisor.conf stop [all]|[appname]

## Crontab

Editing the crontab file:

* (env) /var/www/vamk.help# crontab –e

Appending the following snippet to the end of the file.

00 00 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/generator.py"

00 00 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_vamk.py"

00 09 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_vamk.py"

00 12 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_vamk.py"

00 14 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_vamk.py"

00 16 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_vamk.py"

00 18 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_vamk.py"

00 20 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_vamk.py"

00 22 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_vamk.py"

00 00 \* \* \* bash -l -c "python /var/www/vamk.help/vamk/tasks/auto\_tritonia.py"

Snippet 3. Tasks in the crontab.

“generator.py” is set to be run on 00.00 every day.

“auto\_vamk.py” is set to be run on 00.00, 09.00, 12.00, 14.00, 16.00, 18.00, 20.00, 22.00 every day.

“au\_tritonia.py” is set to be run on 00.00 every day.

“.bashrc” is loaded for adding the project Python packages to PYTHONPATH Environment Variable before running the scripts.