**ORC Program User Guide**

The following user guide will discuss how the program can be modified or improved. It also provides a brief overview of how the program structure was developed so that the user can create a new program if they wish.

**Command Line Software Installation**

Install Python 3 <https://www.python.org/download/releases/3.0/>

Install PIP (Package Management System) <https://pypi.org/project/pip/>

*After PIP has been installed, it can be used to install Python packages directly in the Command Window (Windows) or the Terminal (Mac).*

Using PIP, install GIT (Versioning Tool) <https://git-scm.com>

*GIT is used to control the changes made to files or folders in a structured way. Changes can be recorded on a repository which can be connected to a Github account* (<https://github.com)> *This account will store the source code underlying the computer program.*

Using PIP, install virtualenv. <https://virtualenv.pypa.io/en/stable/>

*virtualenv is used to manage Python packages for different projects. Using virtualenv allows you to avoid installing Python packages globally which could break system tools or other projects.*

Once the virtualenv package is installed, create a folder containing a virtual environment and install the following Python packages using PIP;

* Pandas https://pandas.pydata.org/
* Flask http://flask.pocoo.org/
* Numpy http://www.numpy.org/
* Plotly https://plot.ly/python/
* Dash <https://plot.ly/products/dash/>
* Dash Core Components <https://dash.plot.ly/dash-core-components>
* Dash HTML Components <https://dash.plot.ly/dash-html-components>
* Dash Table Experiments <https://github.com/plotly/dash-table-experiments>
* Urllib https://docs.python.org/3/library/urllib.html
* Base64 <https://docs.python.org/3/library/base64.html>

Flask is the micro framework using to build the Python based program.

Pandas and Numpy is used to complete the data analysis and calculations.

Dash is used to develop the UI (User Interface).

**IDE (Integrated Developer Environment) Selection**

The IDE is the environment in which the computer program code can be developed. A number of IDE’s are available however two of the most popular are Sublime and Jupyter.

Sublime Text Editor https://www.sublimetext.com

Jupyter http://jupyter.org

**Computer Program Cloud Deployment**

Heroku was selected as the cloud platform that was used to deploy the program to the web.

Create a Heroku account (<https://signup.heroku.com/dc)>

Install the Heroku CLI (Command Line Interface) Tool

<https://devcenter.heroku.com/articles/getting-started-with-python#introduction>

*The Heroku CLI connects the program to the cloud platform, allowing the user to host a program on the web.*

Another useful guide for deploying a web program (<https://dash.plot.ly/deployment)>

**Running the Computer Program Locally**

*Once the program has been developed or modified, it can be run locally (on your computer).*

Open the Command Window.

cd Documents (assuming the orcprogram folder is located in the Documents folder)

cd orcprogram (opens the orcprogram folder)

python3 app.py (allows the program to run locally via the webbrowser).

Type <http://127.0.0.1:8050/> and run in the web browser.

The computer program will appear in the web browser.