Flask Tutorial Steps

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2021-10-22

Prerequisite and Introduction

This tutorial provides a document for creating a generic flask machine learning application. I will use a sample dataset like breast cancer or house pricing for this walk through. Following steps will get you started to create an app environment from scratch on a windows platform. If you have a Mac, the commends will be little different and will require some modifications. Windows have `cmd` prompt while apple uses `terminal`. I will also try to include a Pycharm based procedure.

- Create a blank folder in your computer. Mine is located in E drive and named `ApplicationTutorial`.
- I am using a virtual environment and will generate it by opening `cmd` prompt in the same folder.
- `python -m venv .env` on the command prompt will create a virtual environment named `.venv` in the folder.
- If you do not get any errors, then on Windows you will see a folder named `.venv`. In my case the folder path is `E:\ANLY 605\ApplicationTutorial\.venv\`.
- Let's Activate the python environment by using `.venv\scripts\activate`.
- **Do not close the command prompt or terminal after this.**

Now we want to install following packages, please stick to the versions given below, so you won't get errors. Copy the following text in to a file named `requirements.txt`. This file can be used to install all the required packages for this application. Keep it in the same place as your app. Use `pip install -r requirements.txt` to install the packages.

```
click==7.1.2 Flask==1.1.2 itsdangerous==1.1.0 Jinja2==2.11.3 joblib==1.0.1 kaleido==0.2.1
MarkupSafe==1.1.1 numpy==1.20.2 pandas==1.2.3 plotly==4.14.3 python-dateutil==2.8.1
pytz==2021.1 retrying==1.3.3 scikit-learn==0.24.1 scipy==1.6.2 six==1.15.0 threadpoolctl==2.1.0
Werkzeug==1.0.1
```

Start the application

Now go the flask website and go to quick start minimal application. We are copying the example as it is to create a very simple flask application.

- In your `ApplicationTutorial` Folder create a folder named `app` (yes name should be all small letters) and in that folder create a python file names `app.py`.
- Copy the example from flask website in that file.
- Now go back to the command prompt and type `cd \app` hit enter and then type `flask run`.
- This will generate an instance of the development server where your app will be installed and displayed on the local machine. Usually the address is `http://127.0.0.1:5000/`. Copy that and paste it in the browser. **Do not use Ctrl+C, it will close the server. Right click and copy or just type the address.**
- This will show `Hello World` on a local webpage.

Preparing the Model

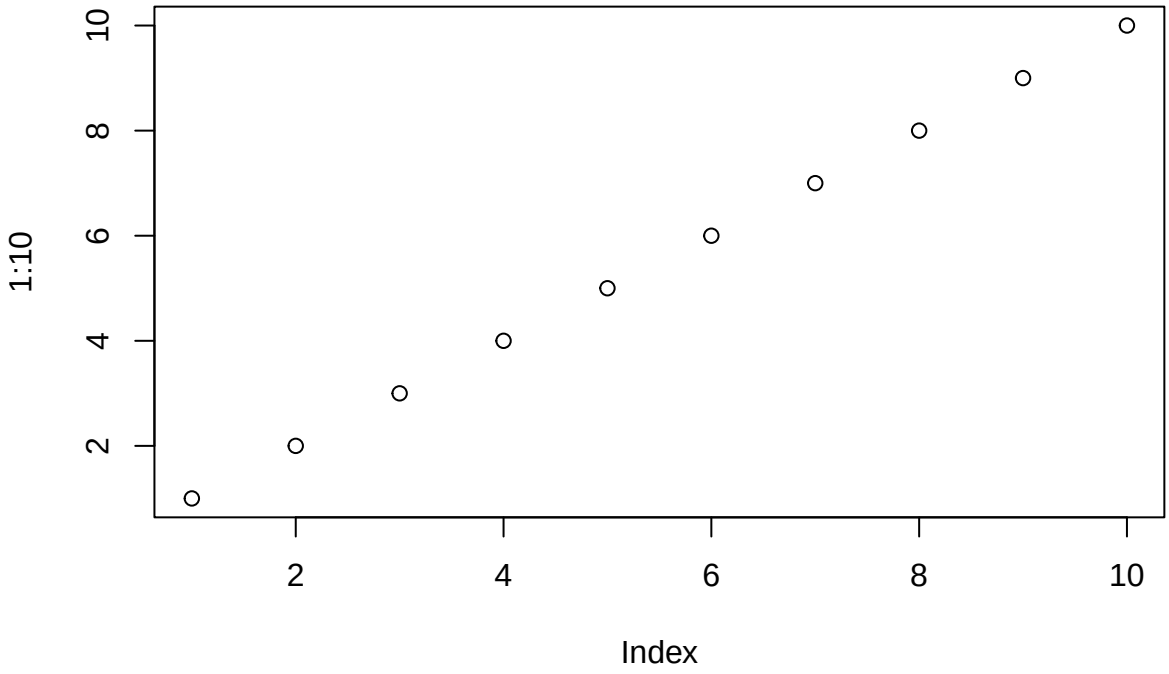
The `html_vignette` template includes a basic CSS theme. To override this theme you can specify your own CSS in the document metadata as follows:

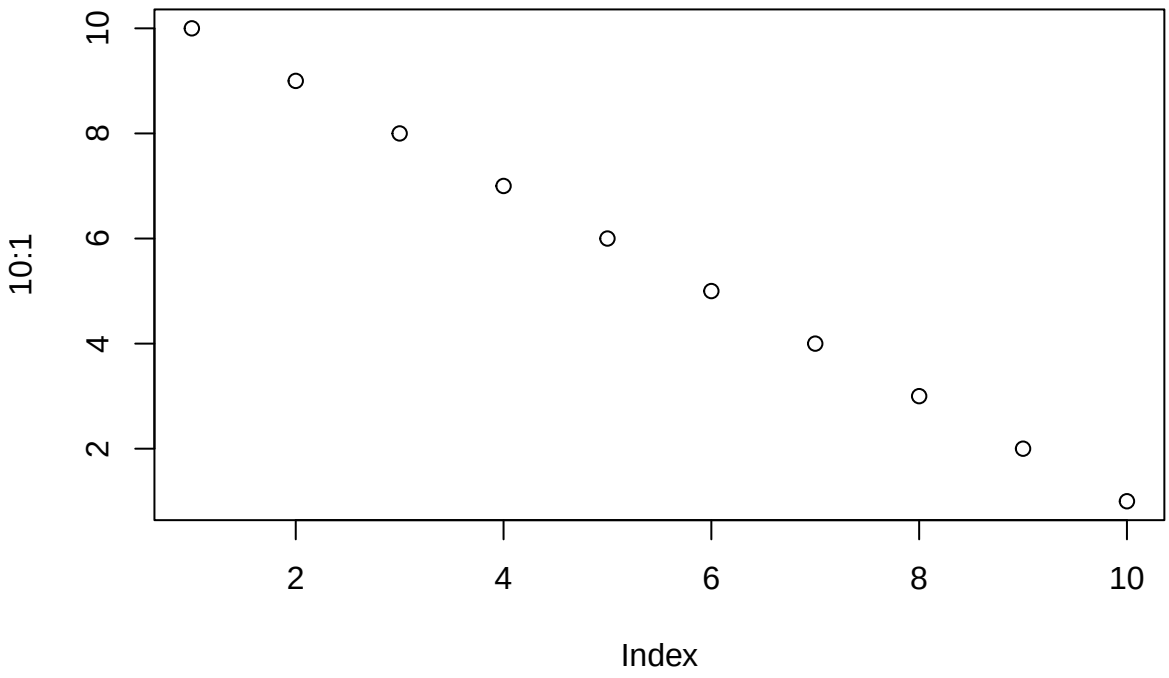
```
output:
  rmarkdown::html_vignette:
    css: mystyles.css
```

Figures

The figure sizes have been customised so that you can easily put two images side-by-side.

```
plot(1:10)
plot(10:1)
```





You can enable figure captions by `fig_caption: yes` in YAML:

```
output:
  rmarkdown::html_vignette:
    fig_caption: yes
```

Then you can use the chunk option `fig.cap = "Your figure caption."` in **knitr**.

More Examples

You can write math expressions, e.g. $Y = X\beta + \epsilon$, footnotes[1], and tables, e.g. using `knitr::kable()`.

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4

Also a quote using `>`:

[1] A footnote here.

"He who gives up [code] safety for [code] speed deserves neither." (via)