딥러닝 기본 환경 만들기_mac버전_3_8_8(tf2.9 with 가상환경)

학습 내용
내 컴퓨터의 파이썬 버전을 확인한다.
내 컴퓨터에 anaconda를 이용하여 가상환경을 만든다.
내 컴퓨터에 딥러닝 라이브러리인 tensorflow와 keras를 설치한다.

환경
anconda 4.12.0
python 3.8.5

가상환경 - (2022년5월 설치 기준)
python 3.8.13
tensorflow 2.9
keras 2.9

01 내 컴퓨터의 파이썬 및 Anaconda 버전을 확인

```
MacBook-Air:toto$ conda --version
conda 4.12.0
MacBook-Air:toto$ python --version
Python 3.8.5
```

02 내 컴퓨터에 가상 환경을 만들기

가상 환경 리스트 확인

MacBook-Air:toto$ conda env list

```
==============================
MacBook-Air:toto$ conda env list
# conda environments:
#
base                  *  /Users/toto/Documents/anaconda3
==============================
```

현재는 기본으로 다른 가상환경은 설치가 되어 있지 않습니다.

가상 환경 만들기 및 가상 환경 활성화 시키기

가상 환경 만들기

- 파이썬 버전은 3.8로 지정하여 설치

(base) C:\WINDOWS\system32>**conda create -n tf2x python=3.8**

```
==============================
MacBook-Air:DeepLearning_Basic_Class toto$ conda create -n tf2x python=3.8
Collecting package metadata (current_repodata.json): done
Solving environment: done
## Package Plan ##
 environment location: /Users/toto/Documents/anaconda3/envs/tf2x
 added / updated specs:
   - python=3.8
The following packages will be downloaded:
    package                    |            build
    ---------------------------|-----------------
    ca-certificates-2022.4.26  |       hecd8cb5_0         124 KB
    certifi-2022.5.18.1        |   py38hecd8cb5_0         148 KB
    libcxx-12.0.0              |       h2f01273_0         805 KB
    ncurses-6.3                |       hca72f7f_2         856 KB
    openssl-1.1.1o             |       hca72f7f_0         2.2 MB
    pip-21.2.4                 |   py38hecd8cb5_0         1.8 MB
    python-3.8.13              |       hdfd78df_0        10.8 MB
    readline-8.1.2             |       hca72f7f_1         321 KB
    setuptools-61.2.0          |   py38hecd8cb5_0        1012 KB
    sqlite-3.38.3              |       h707629a_0         1.2 MB
    tk-8.6.11                  |       h3fd3227_1         3.0 MB
    wheel-0.37.1               |     pyhd3eb1b0_0          33 KB
    xz-5.2.5                   |       hca72f7f_1         244 KB
    zlib-1.2.12                |       h4dc903c_2          94 KB
    ------------------------------------------------------------
                                           Total:        22.6 MB
The following NEW packages will be INSTALLED:
 ca-certificates    pkgs/main/osx-64::ca-certificates-2022.4.26-hecd8cb5_0
 certifi            pkgs/main/osx-64::certifi-2022.5.18.1-py38hecd8cb5_0
 libcxx             pkgs/main/osx-64::libcxx-12.0.0-h2f01273_0
 libffi             pkgs/main/osx-64::libffi-3.3-hb1e8313_2
 ncurses            pkgs/main/osx-64::ncurses-6.3-hca72f7f_2
 openssl            pkgs/main/osx-64::openssl-1.1.1o-hca72f7f_0
 pip                pkgs/main/osx-64::pip-21.2.4-py38hecd8cb5_0
 python             pkgs/main/osx-64::python-3.8.13-hdfd78df_0
 readline           pkgs/main/osx-64::readline-8.1.2-hca72f7f_1
 setuptools         pkgs/main/osx-64::setuptools-61.2.0-py38hecd8cb5_0
 sqlite             pkgs/main/osx-64::sqlite-3.38.3-h707629a_0
 tk                 pkgs/main/osx-64::tk-8.6.11-h3fd3227_1
 wheel              pkgs/main/noarch::wheel-0.37.1-pyhd3eb1b0_0
 xz                 pkgs/main/osx-64::xz-5.2.5-hca72f7f_1
 zlib               pkgs/main/osx-64::zlib-1.2.12-h4dc903c_2


Proceed ([y]/n)? y  <- y를 선택 후 진행.
==============================
```

설치가 정상적으로 실행되면 2022년 5월 기준 python은 3.8.13이 설치가 됩니다.

```
==============================
MacBook-Air:toto$ conda env list
# conda environments:
#
base                  *  /Users/toto/Documents/anaconda3
tf2x                     /Users/toto/Documents/anaconda3/envs/tf2x
==============================
```

tf2x 이름의 가상환경이 설치된 것을 확인할 수 있습니다.

가상 환경 활성화 시키기

```
done
#
# To activate this environment, use
#
#     $ conda activate tf2x   # 가상 환경 활성화
#
# To deactivate an active environment, use
#
#     $ conda deactivate       # 가상 환경 비 활성화
```

가상 환경 활성화 시키기

MacBook-Air:toto$ conda activate tf2x
[메시지 발생] 가상환경 활성화가 아래와 같은 메시지가 표시되면서 실행이 안될 경우, 다음과 같은 조치를 통해 가능합니다.

MacBook-Air:toto$ conda activate tf2x

```
MacBook-Air:DeepLearning_Basic_Class toto$ conda activate tf2x
CommandNotFoundError: Your shell has not been properly configured to use 'conda activate'.
To initialize your shell, run
    $ conda init <SHELL_NAME>
Currently supported shells are:
  - bash
  - fish
  - tcsh
  - xonsh
  - zsh
  - powershell
See 'conda init --help' for more information and options.
IMPORTANT: You may need to close and restart your shell after running 'conda init'.
```

[해결]
홈 디렉터리로 이동하여 아나콘다 conda.sh를 실행합니다. 여기서 anaconda설치 디렉터리는 컴퓨터마다 설치위치가 다를 수 있으므로 확인을 부탁드립니다.
여기서는 ananconda3를 Document에 설치하였으므로 아래와 같음을 확인할 수 있습니다.
~/Documents/anaconda3
$ cd ~
스크립트 실행
$ source ~/Documents/anaconda3/etc/profile.d/conda.sh

```
MacBook-Air:~ toto$ cd ~
MacBook-Air:~ toto$ source ~/Documents/anaconda3/etc/profile.d/conda.sh
MacBook-Air:~ toto$ conda env list
# conda environments:
#
base                  *  /Users/toto/Documents/anaconda3
tf2x                     /Users/toto/Documents/anaconda3/envs/tf2x

MacBook-Air:~ toto$ conda activate tf2x
```

mac의 홈디렉터리로 이동합니다.
`cd ~`
conda.sh 쉘 스크립트를 실행합니다.
`source ~/Documents/anaconda3/etc/profile.d/conda.sh`
가상 환경의 리스트를 확인 후, 가상환경을 실행시킵니다.
`conda env list`
`conda activate tf2x`

---

03 내 컴퓨터에 tensorflow와 keras를 설치하기

tensorflow 설치하기
(tf2x) C:\WINDOWS\system32>**pip install tensorflow**

2022년 5월 설치 기준으로 tensorflow는 2.9 버전으로 설치가 진행됩니다.

```
==================================
(tf2x) C:\WINDOWS\system32>pip  install  tensorflow
Collecting tensorflow
  Downloading tensorflow-2.9.0-cp38-cp38-macosx_10_14_x86_64.whl (228.5 MB)
     |████████████████████████████████| 228.5 MB 7.6 MB/s
Collecting libclang>=13.0.0
  Using cached libclang-14.0.1-py2.py3-none-macosx_10_9_x86_64.whl (13.2 MB)
Collecting gast<=0.4.0,>=0.2.1
  Downloading gast-0.4.0-py3-none-any.whl (9.8 kB)
Collecting absl-py>=1.0.0
  Using cached absl_py-1.0.0-py3-none-any.whl (126 kB)
Collecting h5py>=2.9.0
  Downloading h5py-3.6.0-cp38-cp38-macosx_10_9_x86_64.whl (3.1 MB)
     |████████████████████████████████| 3.1 MB 196 kB/s
Collecting keras-preprocessing>=1.1.1
  Using cached Keras_Preprocessing-1.1.2-py2.py3-none-any.whl (42 kB)
Collecting wrapt>=1.11.0
  Downloading wrapt-1.14.1-cp38-cp38-macosx_10_9_x86_64.whl (35 kB)
Collecting keras<2.10.0,>=2.9.0rc0
  Downloading keras-2.9.0-py2.py3-none-any.whl (1.6 MB)
     |████████████████████████████████| 1.6 MB 9.2 MB/s
....
....
....
Collecting charset-normalizer~=2.0.0
  Downloading charset_normalizer-2.0.12-py3-none-any.whl (39 kB)
Requirement already satisfied: certifi>=2017.4.17 in ./Documents/anaconda3/envs/tf2x/lib/python3.8/site-packages (from requests<3,>=2.21.0->tensorboard<2.10,>=2.9->tensorflow) (2022.5.18.1)
Collecting oauthlib>=3.0.0
  Using cached oauthlib-3.2.0-py3-none-any.whl (151 kB)
Collecting pyparsing!=3.0.5,>=2.0.2
  Downloading pyparsing-3.0.9-py3-none-any.whl (98 kB)
     |████████████████████████████████| 98 kB 5.0 MB/s
Installing collected packages: urllib3, pyasn1, idna, charset-normalizer, zipp, six, rsa, requests, pyasn1-modules, oauthlib, cachetools, requests-oauthlib, importlib-metadata, google-auth, werkzeug, tensorboard-plugin-wit, tensorboard-data-server, pyparsing, protobuf, numpy, markdown, grpcio, google-auth-oauthlib, absl-py, wrapt, typing-extensions, termcolor, tensorflow-io-gcs-filesystem, tensorflow-estimator, tensorboard, packaging, opt-einsum, libclang, keras-preprocessing, keras, h5py, google-pasta, gast, flatbuffers, astunparse, tensorflow
Successfully installed absl-py-1.0.0 astunparse-1.6.3 cachetools-5.1.0 charset-normalizer-2.0.12 flatbuffers-1.12 gast-0.4.0 google-auth-2.6.6 google-auth-oauthlib-0.4.6 google-pasta-0.2.0 grpcio-1.46.3 h5py-3.6.0 idna-3.3 importlib-metadata-4.11.4 keras-2.9.0 keras-preprocessing-1.1.2 libclang-14.0.1 markdown-3.3.7 numpy-1.22.4 oauthlib-3.2.0 opt-einsum-3.3.0 packaging-21.3 protobuf-3.20.1 pyasn1-0.4.8 pyasn1-modules-0.2.8 pyparsing-3.0.9 requests-2.27.1 requests-oauthlib-1.3.1 rsa-4.8 six-1.16.0 tensorboard-2.9.0 tensorboard-data-server-0.6.1 tensorboard-plugin-wit-1.8.1 tensorflow-2.9.0 tensorflow-estimator-2.9.0 tensorflow-io-gcs-filesystem-0.26.0 termcolor-1.1.0 typing-extensions-4.2.0 urllib3-1.26.9 werkzeug-2.1.2 wrapt-1.14.1 zipp-3.8.0
(tf2x) MacBook-Air:~ toto$
```

추가 라이브러리 설치
keras, seaborn, pandas, jupyter, matplotlib, scikit-learn

[명령어] pip install keras seaborn pandas jupyter matplotlib scikit-learn

(2022년 5월 기준) 설치되는 라이브러리 버전
pandas 1.4.2
seaborn 0.11.2
matplotlib 3.5.2
scikit-learn 1.1.1
scipy 1.0
numpy 1.15
keras 2.9

```
(tf2x) C:\WINDOWS\system32>pip install keras seaborn pandas jupyter matplotlib scikit-learn
Requirement already satisfied: keras in ./Documents/anaconda3/envs/tf2x/lib/python3.8/site-packages (2.9.0)
Collecting seaborn
  Downloading seaborn-0.11.2-py3-none-any.whl (292 kB)
     |████████████████████████████████| 292 kB 1.3 MB/s
Collecting pandas
  Downloading pandas-1.4.2-cp38-cp38-macosx_10_9_x86_64.whl (11.0 MB)
     |████████████████████████████████| 11.0 MB 3.1 MB/s
Collecting jupyter
  Downloading jupyter-1.0.0-py2.py3-none-any.whl (2.7 kB)
Collecting matplotlib
  Downloading matplotlib-3.5.2-cp38-cp38-macosx_10_9_x86_64.whl (7.3 MB)
     |████████████████████████████████| 7.3 MB 5.8 MB/s
Collecting scikit-learn
  Downloading scikit_learn-1.1.1-cp38-cp38-macosx_10_13_x86_64.whl (8.5 MB)
     |████████████████████████████████| 8.5 MB 9.5 MB/s
Collecting scipy>=1.0
  Downloading scipy-1.8.1-cp38-cp38-macosx_12_0_universal2.macosx_10_9_x86_64.whl (55.3 MB)
     |████████████████████████████████| 55.3 MB 8.9 MB/s
Requirement already satisfied: numpy>=1.15 in ./Documents/anaconda3/envs/tf2x/lib/python3.8/site-packages (from seaborn) (1.22.4)
Collecting ipykernel
  Downloading ipykernel-6.13.0-py3-none-any.whl (131 kB)
     |████████████████████████████████| 131 kB 11.0 MB/s
...
Collecting pillow>=6.2.0
  Downloading Pillow-9.1.1-cp38-cp38-macosx_10_10_x86_64.whl (3.1 MB)
     |████████████████████████████████| 3.1 MB 7.5 MB/s
...
Collecting jupyter-core>=4.9.2
  Downloading jupyter_core-4.10.0-py3-none-any.whl (87 kB)
     |████████████████████████████████| 87 kB 4.9 MB/s
...
  Downloading pure_eval-0.2.2-py3-none-any.whl (11 kB)
Installing collected packages: traitlets, pyrsistent, importlib-resources, attrs, wcwidth, tornado, pyzmq, python-dateutil, pycparser, pure-eval, ptyprocess, parso, nest-asyncio, jupyter-core, jsonschema, fastjsonschema, executing, entrypoints, asttokens, webencodings, stack-data, soupsieve, pygments, prompt-toolkit, pickleshare, pexpect, nbformat, matplotlib-inline, MarkupSafe, jupyter-client, jedi, decorator, cffi, backcall, appnope, tinycss2, psutil, pandocfilters, nbclient, mistune, jupyterlab-pygments, jinja2, ipython, defusedxml, debugpy, bleach, beautifulsoup4, argon2-cffi-bindings, terminado, Send2Trash, prometheus-client, nbconvert, ipython-genutils, ipykernel, argon2-cffi, notebook, widgetsnbextension, qtpy, pytz, pillow, kiwisolver, jupyterlab-widgets, fonttools, cycler, threadpoolctl, scipy, qtconsole, pandas, matplotlib, jupyter-console, joblib, ipywidgets, seaborn, scikit-learn, jupyter
Successfully installed MarkupSafe-2.1.1 Send2Trash-1.8.0 appnope-0.1.3 argon2-cffi-21.3.0 argon2-cffi-bindings-21.2.0 asttokens-2.0.5 attrs-21.4.0 backcall-0.2.0 beautifulsoup4-4.11.1 bleach-5.0.0 cffi-1.15.0 cycler-0.11.0 debugpy-1.6.0 decorator-5.1.1 defusedxml-0.7.1 entrypoints-0.4 executing-0.8.3 fastjsonschema-2.15.3 fonttools-4.33.3 importlib-resources-5.7.1 ipykernel-6.13.0 ipython-8.3.0 ipython-genutils-0.2.0 ipywidgets-7.7.0 jedi-0.18.1 jinja2-3.1.2 joblib-1.1.0 jsonschema-4.5.1 jupyter-1.0.0 jupyter-client-7.3.1 jupyter-console-6.4.3 jupyter-core-4.10.0 jupyterlab-pygments-0.2.2 jupyterlab-widgets-1.1.0 kiwisolver-1.4.2 matplotlib-3.5.2 matplotlib-inline-0.1.3 mistune-0.8.4 nbclient-0.6.3 nbconvert-6.5.0 nbformat-5.4.0 nest-asyncio-1.5.5 notebook-6.4.11 pandas-1.4.2 pandocfilters-1.5.0 parso-0.8.3 pexpect-4.8.0 pickleshare-0.7.5 pillow-9.1.1 prometheus-client-0.14.1 prompt-toolkit-3.0.29 psutil-5.9.1 ptyprocess-0.7.0 pure-eval-0.2.2 pycparser-2.21 pygments-2.12.0 pyrsistent-0.18.1 python-dateutil-2.8.2 pytz-2022.1 pyzmq-23.0.0 qtconsole-5.3.0 qtpy-2.1.0 scikit-learn-1.1.1 scipy-1.8.1 seaborn-0.11.2 soupsieve-2.3.2.post1 stack-data-0.2.0 terminado-0.15.0 threadpoolctl-3.1.0 tinycss2-1.1.1 tornado-6.1 traitlets-5.2.1.post0 wcwidth-0.2.5 webencodings-0.5.1 widgetsnbextension-3.6.0
```

만약, 라이브러리를 불러오거나(**04 주피터 노트북 실행 후, 기본 환경 확인) 참조.** 번의 코드와 같이 불러올때, 에러가 발생하거나 정상적으로 수행이 안될 경우, 추가적으로 아래의 내용을 설치를 진행해 주어야 합니다. (Window의 경우 에러 발생, 2022년 5월 Mac설치시 발생 안됨.)
추가 설치(Window)
pip install --upgrade pywin32==225
python C:\Users\[사용자이름]\anaconda3\Scripts\pywin32_postinstall.py -install
(예) python C:\Users\toto\anaconda3\Scripts\pywin32_postinstall.py -install

04 주피터 노트북 실행 후, 기본 환경 확인

(tf2x) C:\WINDOWS\system32>jupyter notebook

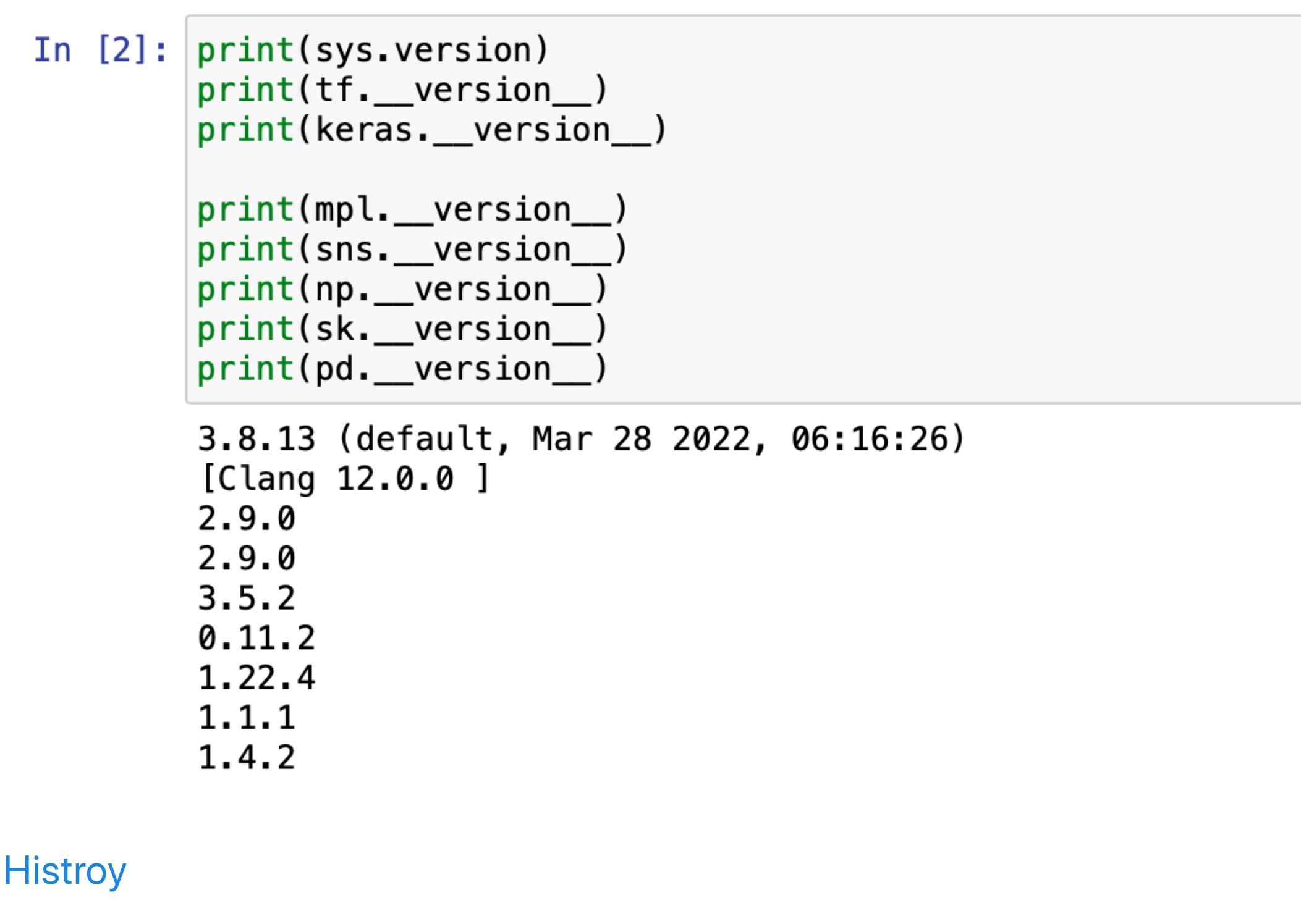
```
import sys
import tensorflow as tf
import keras

import matplotlib as mpl
import seaborn as sns
import numpy as np
import sklearn as sk
import pandas as pd
```

05 파이썬 버전 및 라이브러리 버전 확인

```
print(sys.version)
print(tf.__version__)
print(keras.__version__)

print(mpl.__version__)
print(sns.__version__)
print(np.__version__)
print(sk.__version__)
print(pd.__version__)
```



```
In [1]: import sys
        import tensorflow as tf
        import keras

        import matplotlib as mpl
        import seaborn as sns
        import numpy as np
        import sklearn as sk
        import pandas as pd

In [2]: print(sys.version)
        print(tf.__version__)
        print(keras.__version__)

        print(mpl.__version__)
        print(sns.__version__)
        print(np.__version__)
        print(sk.__version__)
        print(pd.__version__)

        3.8.13 (default, Mar 28 2022, 06:16:26)
        [Clang 12.0.0 ]
        2.9.0
        2.9.0
        3.5.2
        0.11.2
        1.22.4
        1.1.1
        1.4.2
```

Histroy

날짜	버전	내용
2022/05	ver 1.0	mac용 가상환경 추가