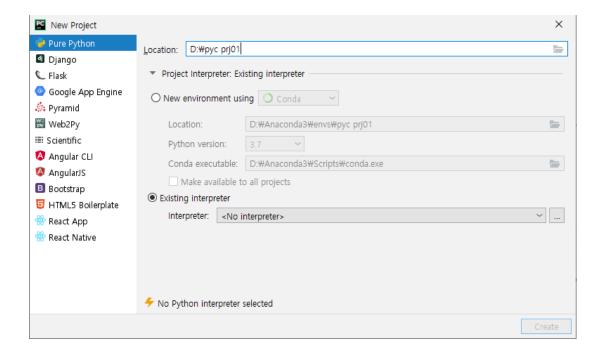
파이참 프로젝트에 이미 생성된 가상환경 설정

3개의 파이참 프로젝트 생성과 Existing Interpreter 지정

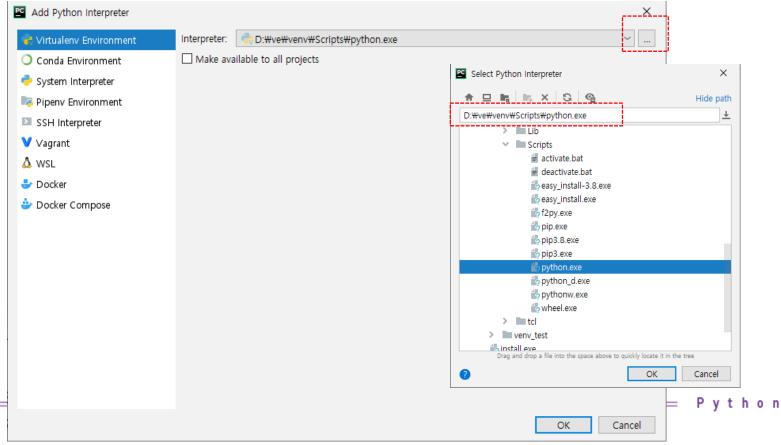
- D:₩pyc prj01
 - 가상환경 venv 지정
 - Virtualenv로 만든 가상환경
- D:₩pyc prj02
 - 가상환경 venv_test 지정
 - Venv로 만든 가상환경
- D:₩pyc prj03
 - 가상환경 penv 지정
 - pipenv로 만든 가상환경



- Existing interpreter
 - ... 선택
 - 자신이 만든 가상환경 폴더의 scripts 하부 python.exe를 지정

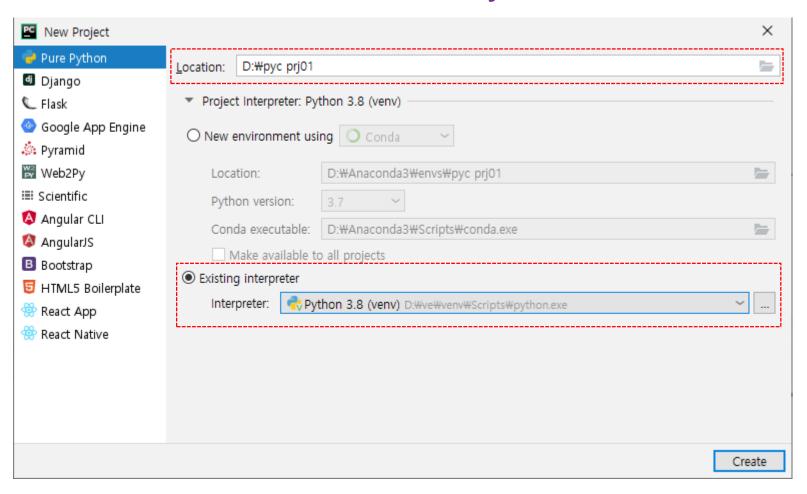
파이참 프로젝트 pyc prj01 만들기(1)

- D:₩pyc prj01
 - 가상환경 venv의 인터프리터 지정
 - Virtualenv로 만든 venv 지정
 - ...을 눌러 자신이 virtualenv로 직접 만든 가상환경의 scripts 폴더의 python.exe를 지정



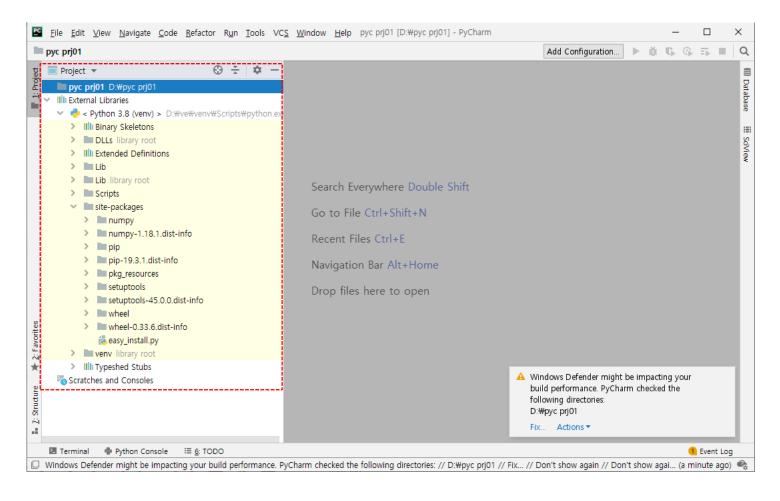
파이참 프로젝트 pyc prj01 만들기(2)

• 자신이 만든 가상환경이 지정된 New Project 대화상자

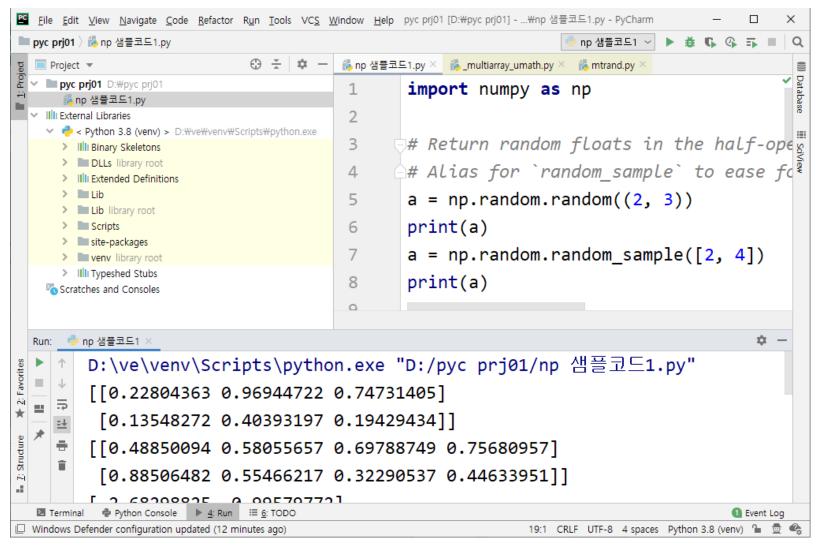


파이참 프로젝트 pyc prj01 만들기(3)

• 가상환경이 설정된 프로젝트



프로젝트 pyc prj01, 소스 np 샘플코드1.py



프로젝트 pyc prj01, 소스 이해와 결과

```
import numpy as np
# Return random floats in the half-open interval
[0.0, 1.0).
# Alias for `random_sample` to ease forward-
porting to the new random API.
a = np.random.random((2, 3))
print(a)
a = np.random.random sample([2, 4])
print(a)
# 정규분포의 난수 생성
b = np.random.randn(2)
print(b)
b = np.random.randn(2, 3)
print(b)
b = np.random.randn(3, 4)
print(b)
# 값이모두 1인텐서
c = np.ones(3)
print(c)
# 값이모두 0인텐서
c = np.zeros((2, 3))
print(c)
c = np.zeros([3, 4])
print(c)
```

```
D:₩ve₩venv₩Scripts₩python.exe "D:/pyc prj01/np 샘플코드1.py"
[[0.22804363 0.96944722 0.74731405]
[0.13548272 0.40393197 0.19429434]]
[[0.48850094 0.58055657 0.69788749 0.75680957]
[0.88506482 0.55466217 0.32290537 0.44633951]]
[-2.68298825 -0.99579772]
[[-0.16099173 1.29978199 1.66469465]
[ 0.68463138 -1.58433849 -0.06550564]]
[[ 0.02758157 -0.77454657  0.49862683  0.70299809]
[ 1.57338867 -0.71034582  0.06683078 -1.51798292]
[-0.20716991 -0.45346911 0.20735756 -0.76737582]]
[1, 1, 1,]
[[0. \ 0. \ 0.]
[0. \ 0. \ 0.]]
[[0. 0. 0. 0.]
[0. \ 0. \ 0. \ 0.]
[0. \ 0. \ 0. \ 0.]
```

Process finished with exit code 0

프로젝트 pyc prj01, 터미널 활용 모듈 pandas 추가

(venv) D:₩pyc prj01>where pip D:₩ve₩venv₩Scripts₩pip.exe D:₩Python38-32₩Scripts₩pip.exe D:₩Anaconda3₩Scripts₩pip.exe C:₩ProgramData₩Anaconda3₩Scripts₩pip.exe

(venv) D:\pyc prj01>pip --version pip 19.3.1 from d:\ve\ve\venv\lib\site-packages\pip (python 3.8)

(venv) D:₩pyc prj01>pip list

Package Version
----numpy 1.18.1
pip 19.3.1
setuptools 45.0.0
wheel 0.33.6

(venv) D:\pyc prj01>pip install --upgrade pip Requirement already up-to-date: pip in d:\pyc\ve\venv\left\left|limits by\site-packages (19.3.1)

... pip install pandas

(venv) D:₩pyc prj01>pip list		
Package	Version	
numpy	1.18.1	
pandas	0.25.3	
pip	19.3.1	
python-dateutil 2.8.1		
pytz	2019.3	
setuptools	45.0.0	
six	1.14.0	
wheel	0.33.6	

(venv) D:₩pyc prj01>pip install pandas Collecting pandas

Using cached

https://files.pythonhosted.org/packages/78/b9/a304328ea14cd172a5c f681b634b99e24a5b4e24de83204b713b088f02d5/pandas-0.25.3cp38-cp38-win32.whl

Collecting python-dateutil>=2.6.1

Using cached

https://files.pythonhosted.org/packages/d4/70/d60450c3dd48ef87586 924207ae8907090de0b306af2bce5d134d78615cb/python_dateutil-2.8.1-py2.py3-none-any.whl

Requirement already satisfied: numpy>=1.13.3 in d:\text{\psi}ve\text{\psi}venv\text{\psi}lib\text{\psi}site-packages (from pandas) (1.18.1)

Collecting pytz>=2017.2

Using cached

https://files.pythonhosted.org/packages/e7/f9/f0b53f88060247251bf4 81fa6ea62cd0d25bf1b11a87888e53ce5b7c8ad2/pytz-2019.3-py2.py3none-any.whl

Collecting six > = 1.5

Downloading

https://files.pythonhosted.org/packages/65/eb/1f97cb97bfc2390a2769 69c6fae16075da282f5058082d4cb10c6c5c1dba/six-1.14.0-py2.py3none-any.whl

Installing collected packages: six, python-dateutil, pytz, pandas Successfully installed pandas-0.25.3 python-dateutil-2.8.1 pytz-2019.3 six-1.14.0

Python

프로젝트 pyc prj01, 소스 pd 샘플코드1.py

```
File Edit View Navigate Code Refactor Run Tools VCS Window Help pyc prj01 [D:₩pyc prj01] - ...₩pd 샘플코드1.py - PyCharm
                                                                                                                                            X
■ pvc pri01 〉 6 pd 샘플코드1.pv
                                                                                                             pd 샘플코드1 ~
   ■ Project ▼
                     pyc prj01 D:\pyc prj01
                                          import numpy as np
       ₺ np 샘플코드1.py
                                          import pandas as pd
       機pd 샘플코드1.pv
                                   3
  Illi External Libraries
    ✓ ₱ < Python 3.8 (venv) > D:\u00e4ve\u00e4venv\u00ffs
                                           s = pd.Series([1, 3, 5, np.nan, 6, 8])
      > IIII Binary Skeletons
                                   5
                                          print(s)
       DLLs library root
                                   6
      > IIII Extended Definitions
      > | Iii Lib
                                          dates = pd.date range('20130101', periods=6)
                                   7
      > Lib library root
                                           print(dates)
                                   8
      Scripts
       site-packages
      > wenv library root
                                  10
                                           df = pd.DataFrame(np.random.randn(6, 4), index=dates, columns=list('ABCD'))
       Illi Typeshed Stubs
                                           print(df)
                                  11
    Scratches and Consoles
                                  12
                                          df2 = pd.DataFrame({'A': 1.,
                                  13
                                                                   'B': pd.Timestamp('20130102'),
                                  14
                                                                   'C': pd.Series(1, index=list(range(4)), dtype='float32'),
                                  15
                                                                   'D': np.array([3] * 4, dtype='int32'),
                                  16
άį
                                                                   'E': pd.Categorical(["test", "train", "test", "train"]),
                                  17
                                  18
                                                                   'F': 'foo'})
                                  19
                                           print(df2)
                                           print(df2.dtypes)
                                  20

■ Terminal  

♣ Python Console

                                                                                                                                    3 Event Loa
🔲 Low Memory: The IDE is running low on memory and this might affect performance. Please consider increasing available heap. // ... (today 오후 5:00) 12:1 CRLF UTF-8 4 spaces Python 3.8 (venv) 🧣 👼 🗞
```

프로젝트 pyc prj01, 소스 pd 샘플코드1.py 이해

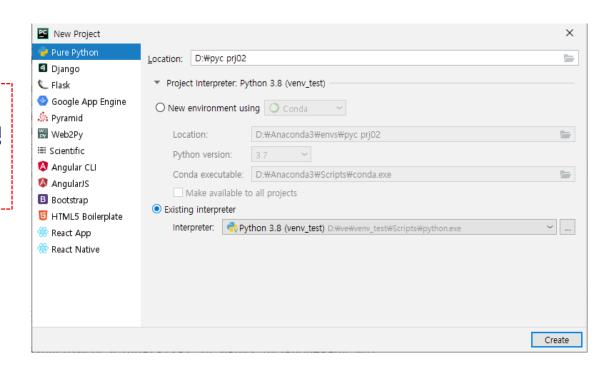
```
import numpy as np
import pandas as pd
s = pd.Series([1, 3, 5, np.nan, 6, 8])
print(s)
dates = pd.date range('20130101', periods=6)
print(dates)
df = pd.DataFrame(np.random.randn(6, 4), index=dates,
                                         columns=list('ABCD'))
print(df)
df2 = pd.DataFrame(
         {'A': 1.,
          'B': pd.Timestamp('20130102'),
          'C': pd.Series(1, index=list(range(4)), dtype='float32'),
          'D': np.array([3] * 4, dtype='int32'),
          'E': pd.Categorical(["test", "train", "test", "train"]),
          'F': 'foo'})
print(df2)
print(df2.dtypes)
```

```
D:₩ve₩venv₩Scripts₩pvthon.exe "D:/pvc pri01/pd 샘플코드1.pv"
   1.0
   3.0
   5.0
   NaN
   6.0
   8.0
dtype: float64
DatetimeIndex(['2013-01-01', '2013-01-02', '2013-01-03', '2013-01-04',
          '2013-01-05', '2013-01-06'],
          dtype='datetime64[ns]', freq='D')
2013-01-01 0.617621 0.711937 0.555614 1.261003
2013-01-02 -1.378531 -0.325374 0.788234 1.223037
2013-01-03 -1.228281 -0.682720 -0.564663 0.107814
2013-01-04 0.552391 -0.354623 -0.488619 -0.072650
2013-01-05 -1.099271 0.108479 -2.062795 2.163172
2013-01-06 -0.034693  0.705632  0.194938  0.800431
            B C D
                        E F
0 1.0 2013-01-02 1.0 3 test foo
1 1.0 2013-01-02 1.0 3 train foo
2 1.0 2013-01-02 1.0 3 test foo
3 1.0 2013-01-02 1.0 3 train foo
        float64
   datetime64[ns]
        float32
D
          int32
        category
         object
dtype: object
```

Process finished with exit code 0

3개의 파이참 프로젝트 생성과 Existing Interpreter 지정

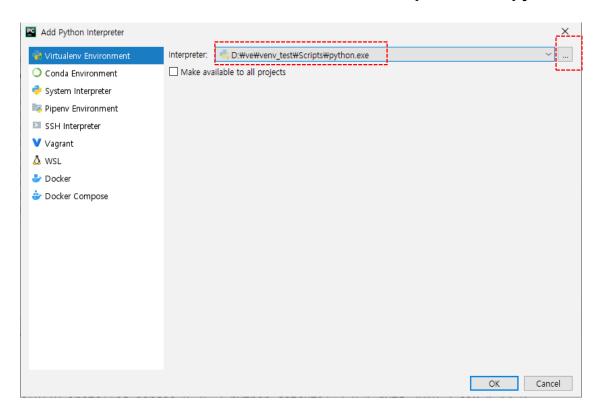
- D:₩pyc prj01
 - 가상환경 venv 지정
 - Virtualenv로 만든 가상환경
- D:₩pyc prj02
 - 가상환경 venv_test 지정
 - Venv로 만든 가상환경
- D:₩pyc prj03
 - 가상환경 penv 지정
 - pipenv로 만든 가상환경



- Existing interpreter
 - _ ... 선택
 - 자신이 만든 가상환경 폴더의 scripts 하부 python.exe를 지정

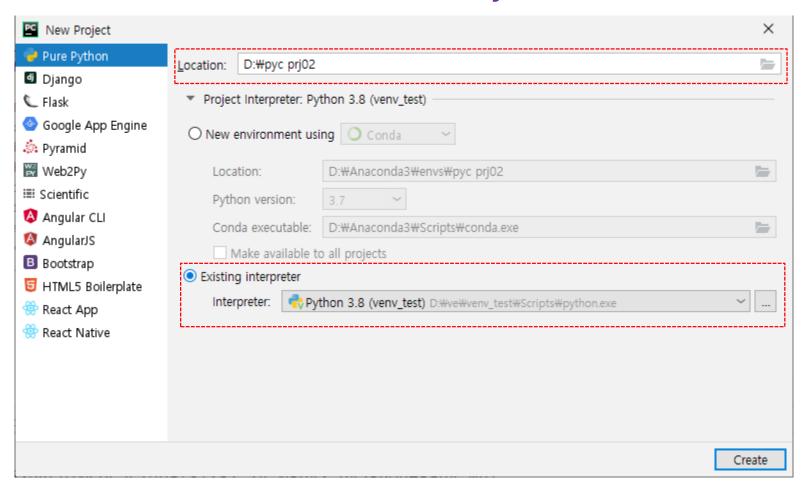
파이참 프로젝트 pyc prj02 만들기(1)

- D:₩pyc prj02
 - 가상환경 venv_test의 인터프리터 지정
 - Venv로 만든 venv_test 지정
 - ...을 눌러 자신이 venv로 직접 만든 가상환경의 scripts 폴더의 python.exe를 지정

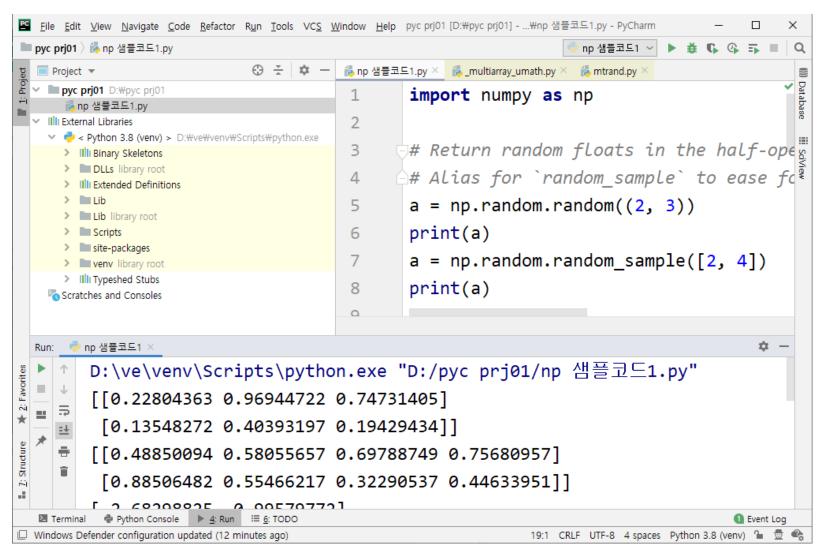


파이참 프로젝트 pyc prj02 만들기(2)

• 자신이 만든 가상환경이 지정된 New Project 대화상자



프로젝트 pyc prj02, 소스 np 샘플코드2.py



프로젝트 pyc prj02, 소스 이해와 결과

```
import numpy as np
# [0, 1) 난수 생성
a = np.random.random((2, 3))
print(type(a))
print(a)
b = a.reshape(3, 2)
print(b)
# 정규분포의 난수 생성
c = np.random.randn(3, 4)
print(c.reshape(2, 6))
# 값이모두 1인텐서
d = np.ones((4, 5))
print(d.reshape(2, 5, 2))
# 값이모두 0인텐서
e = np.zeros((3, 4))
print(e.reshape(2, 3, 2))
```

```
D:₩ve₩venv_test₩Scripts₩python.exe "D:/pyc prj02/np 샘플코드2.py"
<class 'numpy.ndarray'>
[[0.82253794 0.94805217 0.18727646]
[0.93734334 0.64931534 0.34043917]]
[[0.82253794 0.94805217]
[0.18727646 0.93734334]
[0.64931534 0.34043917]]
[-0.12955399 0.60647143 0.33132981 0.63755303 1.12009118 0.09013185]]
[[[1, 1,]
 [1, 1,]
 [1, 1,]
 [1, 1,]
 [1, 1,]]
[[1, 1,]
 [1, 1,]
 [1, 1,]
 [1, 1,]
 [1, 1,]]]
[[0. 0.]]
 [0. 0.1]
 [0. 0.1]
[[0, 0.]]
 [0, 0.1]
 [0. 0.]]
```

Process finished with exit code 0

프로젝트 pyc prj02, 터미널 활용 모듈 pandas 추가

(venv_test) D:\pyc prj02>\text{where pip}
D:\pyve\pycenv_test\scripts\pip.exe
D:\python38-32\scripts\pip.exe
D:\pyconda3\scripts\pip.exe
C:\pyconda3\scripts\pip.exe
C:\pyconda3\scripts\pip.exe
(venv_test) D:\pyc prj02>\text{pip} --\text{version}
pip 19.3.1 from d:\pyc\pycenv_test\pylib\site-packages\pip
(python 3.8)
(venv_test) D:\pyc prj02>\text{pip list}

Package Version
----numpy 1.18.1
pip 19.3.1
setuptools 41.2.0

... pip install pandas

(venv_test) D:\pyc prj02>pip list

Package	Version	
numpy	1.18.1	
pandas	0.25.3	
pip	19.3.1	
python-dateutil 2.8.1		
pytz	2019.3	
setuptools	41.2.0	
six	1.14.0	

(venv_test) D:₩pyc prj02>pip install pandas Using cached

https://files.pythonhosted.org/packages/e7/f9/f0b53f88060247251bf4 81fa6ea62cd0d25bf1b11a87888e53ce5b7c8ad2/pytz-2019.3-py2.py3-none-any.whl

Requirement already satisfied: numpy>=1.13.3 in d:\u00e4ve\u00e4venv_test\u00a4lib\u00fcsite-packages (from pandas) (1.18.1)

Collecting python-dateutil>=2.6.1 Using cached

https://files.pythonhosted.org/packages/d4/70/d60450c3dd48ef87586 924207ae8907090de0b306af2bce5d134d78615cb/python_dateutil-2.8.1-py2.py3-none-any.whl

Collecting six>=1.5 Using cached

https://files.pythonhosted.org/packages/65/eb/1f97cb97bfc2390a276969c6fae16075da282f5058082d4cb10c6c5c1dba/six-1.14.0-py2.py3-none-any.whl

Installing collected packages pytz, six, python-dateutil, pandas Successfully installed pandas-0.25.3 python-dateutil-2.8.1 pytz-2019.3 six-1.14.0

프로젝트 pyc prj02, 소스 pd 샘플코드2.py

```
[ File Edit View Navigate Code Refactor Run Tools VCS Window Help pyc prj02 [D:₩pyc prj02] - ...₩pd 샘플코드2.py - PyCharm
pyc pri02 > % pd 샘플코드2.py
                                                                                                                            pd 샘플코드2 ~
                                                                                                                                             ★ C. G. = ■
                                                ♣ np 샘플코드2.py × ♣ pd 샘플코드2.py ×
   ■ Project ▼
  ✓ pyc prj02 D:\pyc prj02
                                                        import numpy as np
       機np 샘플코드2.pv
                                                        import pandas as pd
       № pd 샘플코드2.pv
                                                3
  Illi External Libraries
     ✓ Python 3.8 (venv_test) > D:\(\psi\)ve\(\psi\)venv_test\(\psi\)Script
                                                        s = pd.Series([1, 2, 3, 4, 5, 6], index=pd.date range('20200102', periods=6))
       > IIII Binary Skeletons
                                                        print(s)
       > DLLs
       > IIII Extended Definitions
                                                6
                                                        s = pd.Series(np.random.randint(0, 7, size=10))
                                                7
       > Python38-32 library root
                                                8
                                                        print(s)
       site-packages
                                                        print(s.value counts())
                                                9
         dateutil
         > numpy
                                               10
         > numpy-1.18.1.dist-info
                                                        s = pd.Series(['A', 'B', 'C', 'Aaba', 'Baca', np.nan, 'CABA', 'dog', 'cat'])
                                               11
          pandas
          > pandas-0.25.3.dist-info
                                                        print(s)
                                               12
          > pip
                                                        s.str.lower()
                                               13
          > pip-19.3.1.dist-info
                                                        print(s)
                                               14
          pkg resources
          python_dateutil-2.8.1.dist-info
                                               15
          > pytz
                                                        df = pd.DataFrame(np.random.randn(10, 4))
                                               16
          > pytz-2019.3.dist-info
                                               17
                                                        print(df)
          setuptools
          setuptools-41.2.0.dist-info
                                               18
         > six-1.14.0.dist-info
                                               19
            asy install.py
            six.py
       > venv test library root
       > IllI Typeshed Stubs
     Scratches and Consoles
   2 Event Log
🔲 Low Memory: The IDE is running low on memory and this might affect performance. Please consider increasing available heap. // Anal... (today 오후 5:00) 9:24 CRLF UTF-8 4 spaces Python 3.8 (veny test) 🧣 👨 🔩
```

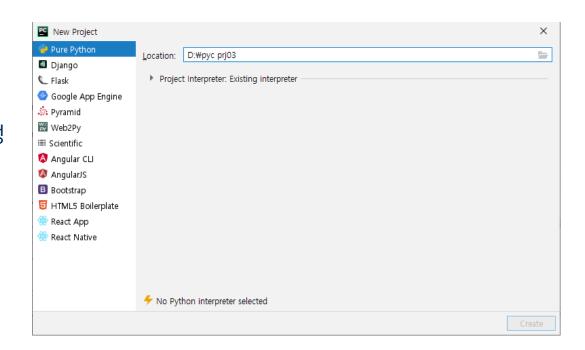
프로젝트 pyc prj02, 소스 pd 샘플코드2.py 이해

```
import numpy as np
import pandas as pd
s = pd.Series([1, 2, 3, 4, 5, 6], index=pd.date range('20200102', periods=6))
print(s)
s = pd.Series(np.random.randint(0, 7, size=10))
print(s)
print(s.value counts())
s = pd.Series(['A', 'B', 'C', 'Aaba', 'Baca', np.nan, 'CABA', 'dog', 'cat'])
print(s)
                                                         D:\ve\venv test\Scripts\python.exe
s.str.lower()
                                                         "D:/pyc prj02/pd 샘플코드2.pv"
print(s)
                                                         2020-01-02 1
                                                         2020-01-03
df = pd.DataFrame(np.random.randn(10, 4))
                                                         2020-01-04
                                                         2020-01-05
print(df)
                                                         2020-01-06
                                                         2020-01-07 6
                                                         Freq: D, dtype: int64
                                                            2
                                                            0
                                                            2
                                                           4
                                                         dtype: int32
                                                           3
                                                           2
                                                            1
                                                         0 1
                                                         dtype: int64
```

```
0
      В
      \mathcal{C}
   Aaba
    Baca
    NaN
   CABA
    dog
    cat
dtype: object
      В
      C
   Aaba
    Baca
    NaN
   CABA
    doa
    cat
dtype: object
0 -0.827856 -0.591318 -0.446506 1.639843
1 -0.455133 0.652168 -0.542553 0.015321
2 -0.790744 0.088498 0.499716 -0.355695
3 0.252766 0.853125 1.609860 -1.235949
4 -0.778862 0.734792 -0.559469 2.637026
5 -0.066913 -2.701452 0.196265 -1.475756
6 -1.171109 -1.312982 -0.123534 -0.467198
7 -0.560191 -0.025275 0.336903 -0.202051
8 -0.472363 2.441893 2.044766 0.685911
9 -0.899807 -1.176664 0.391078 0.148584
Process finished with exit code 0
```

3개의 파이참 프로젝트 생성과 Existing Interpreter 지정

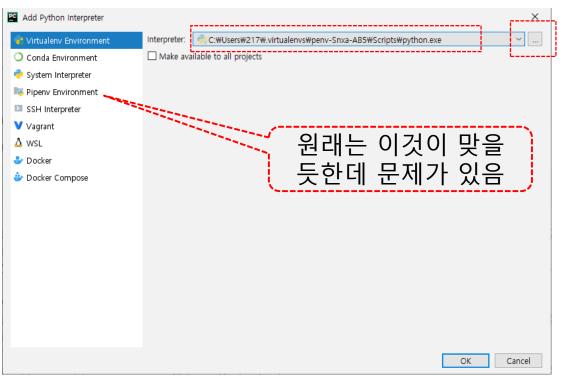
- D:₩pyc prj01
 - 가상환경 venv 지정
 - Virtualenv로 만든 가상환경
- D:₩pyc prj02
 - 가상환경 venv_test 지정
 - Venv로 만든 가상환경
- D:₩pyc prj03
 - 가상환경 penv 지정
 - pipenv로 만든 가상환경



- Existing interpreter
 - _ ... 선택
 - 자신이 만든 가상환경 폴더의 scripts 하부 python.exe를 지정

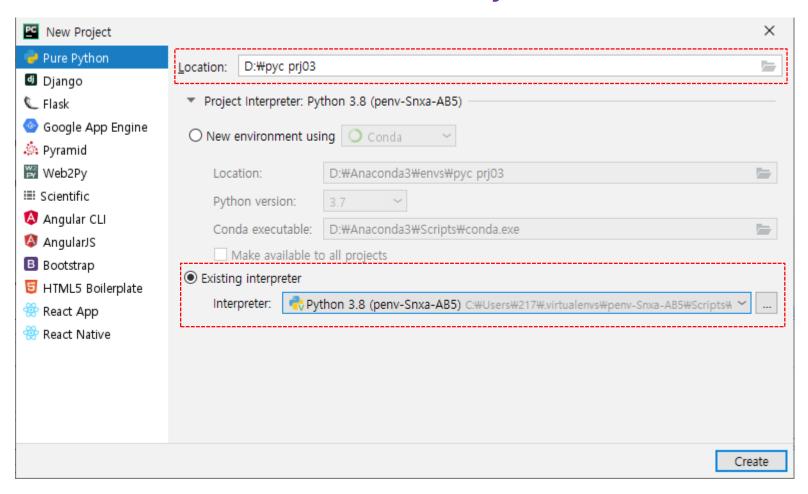
파이참 프로젝트 pyc prj03 만들기(1)

- D:₩pyc prj03
 - 가상환경 penv의 인터프리터 지정
 - ₩users₩217₩.virtualenv₩penv-00000₩Scrips₩python 지정
 - pipenv로 만든 위 인터프리터
 - ...을 눌러 자신이 pipenv로 직접 만든 가상환경의 scripts 폴더의 python.exe를 지정



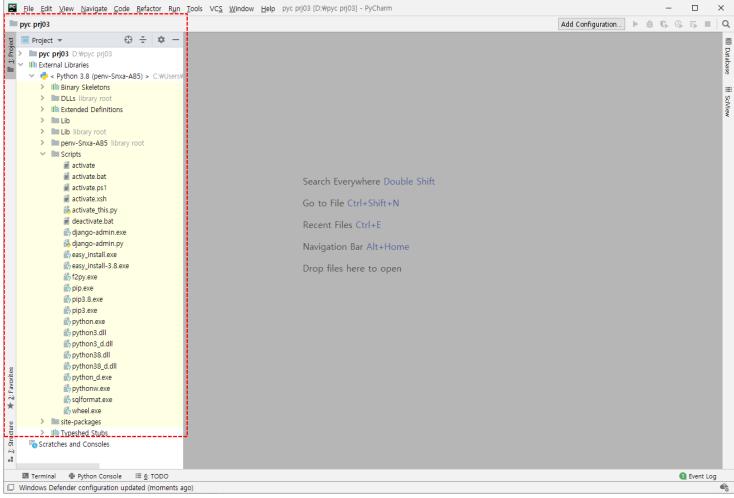
파이참 프로젝트 pyc prj03 만들기(2)

• 자신이 만든 가상환경이 지정된 New Project 대화상자

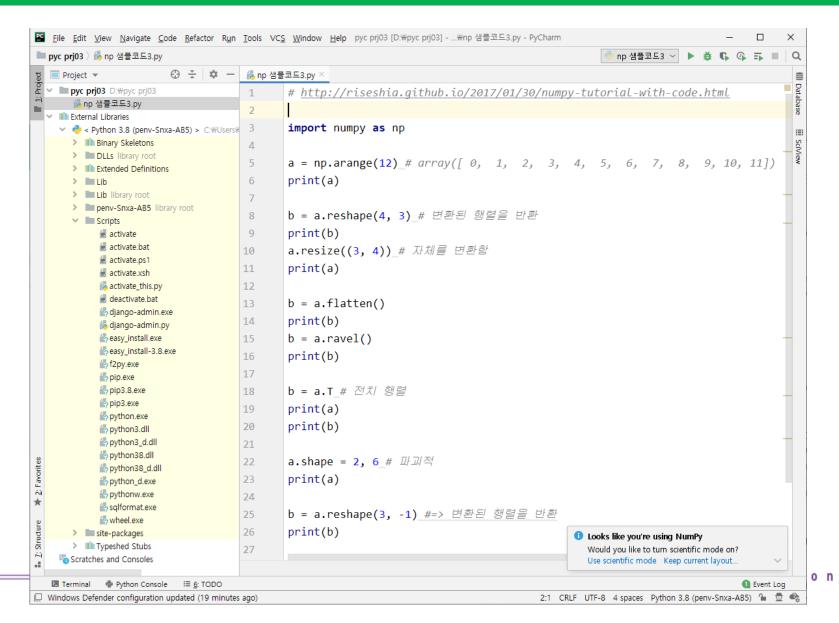


파이참 프로젝트 pyc prj03 만들기(3)

• 가상환경이 설정된 프로젝트



프로젝트 pyc prj03, 소스 np 샘플코드3.py



프로젝트 pyc prj03, 소스 이해와 결과

http://riseshia.github.io/2017/01/30/numpy-tutorial-with-code.html

```
import numpy as np
a = np.arange(12) # array([0, ... 11])
print(a)
b = a.reshape(4, 3) # 변환된 행렬을 반환
print(b)
a.resize((3, 4)) # 자체를 변환함
print(a)
b = a.flatten()
print(b)
b = a.ravel()
print(b)
b = a.T # 전치 행렬
print(a)
print(b)
a.shape = 2, 6 # \frac{1}{4}
print(a)
b = a.reshape(3, -1) # 변환된 행렬을 반환
print(b)
```

```
C:₩Users₩217₩.virtualenvs₩penv-Snxa-
AB5₩Scripts₩python.exe "D:/pyc prj03/np 샘플코드3.py"
[0 1 2 3 4 5 6 7 8 9 10 11]
[0 1 2]
[3 4 5]
[6 7 8]
[ 9 10 11]]
[0 1 2 3]
[4 5 6 7]
[8 9 10 11]]
[0 1 2 3 4 5 6 7 8 9 10 11]
[0 1 2 3 4 5 6 7 8 9 10 11]
[[ 0 1 2 3]
[4 5 6 7]
[8 9 10 11]]
[0 4 8]
[1 5 9]
[2 6 10]
[3 7 11]]
[[0 \ 1 \ 2 \ 3 \ 4 \ 5]]
[6 7 8 9 10 11]]
[0 1 2 3]
[4 5 6 7]
[8 9 10 11]]
```

Process finished with exit code 0

프로젝트 pyc prj03, 터미널 활용 모듈 bokeh 추가

(penv) D:₩pyc prj03>pip show pandas

Name: pandas Version: 0.25.3

Summary: Powerful data structures for data analysis, time series, and

statistics

Home-page: http://pandas.pydata.org

Author: None Author-email: None License: BSD

Location: c:\u00e4users\u00fa217\u00fa.virtualenvs\u00fapenv-snxa-ab5\u00falib\u00fasite-packages

Requires: python-dateutil, numpy, pytz

Required-by:

(penv) D:\pvc pri03>pip install bokeh

(penv) D:\pyc prj03>pip show bokeh

Name: bokeh Version: 1.4.0

Summary: Interactive plots and applications in the browser from Python

Home-page: http://github.com/bokeh/bokeh

Author: Bokeh Team

Author-email: info@bokeh.org

License: BSD-3-Clause

Location: c:\users\217\.virtualenvs\penv-snxa-ab5\lib\site-packages Requires: Jinja2, python-dateutil, six, PyYAML, numpy, tornado, packaging,

wollig

Required-by:

(penv) D:₩pyc prj03>pip install bokeh

Collecting bokeh

Using cached

https://files.pythonhosted.org/packages/de/70/fdd4b186d8570a737372487cc5547aac885a1270626e3ebf03db1808e4ed/bokeh-

Requirement already satisfied: six>=1.5.2 in c:\u00e4users\u00e4217\u00fcvirtualenys\u00fcpenv-snxa-ab5\u00fclib\u00fcsite-packages (from bokeh) (1.14.0) Collecting PyYAML>=3.10

Downloading

https://files.pythonhosted.org/packages/d1/2c/bc6625326e966aa2de85a085f91121330410588fd0bb1fe7603e822e6905/PyYAML-5.3-cp38-cp38-win32.whl (198kB)

491kB 6.8MB/s

Requirement already satisfied: python-dateutil>=2.1 in c:\u00e4users\u00e4217\u00act.virtualenvs\u00fapenv-snxa-ab5\u00actlib\u00actsite-packages (from bokeh) (2.8.1)

Collecting Jinia2>=2.7

Using cached

https://files.pvthonhosted.org/packages/65/e0/eb35e762802015cab1ccee04e8a277b03f1d8e53da3ec3106882ec42558b/Jinia2-2.10.3-pv2.pv3-none-anv.whl

Requirement already satisfied: numpy>=1.7.1 in c:\u00e4users\u00e4217\u00fcv.irtualenvs\u00e4penv-snxa-ab5\u00fclib\u00e4site-packages (from bokeh) (1.18.1)

Collecting pillow>=4.0

Downloading

https://files.pythonhosted.org/packages/a0/f5/943da9f188d1abdbd83f73dfba7ed8c1935161e8f9b4ef6fc9cea0b3e14b/Pillow-7.0.0-cp38-cp38-win32.whl (1.8MB)

Collecting packaging>=16.8

Using cached

https://files.pythonhosted.org/packages/d8/5b/3098db49a61ccc8583ffead6aedc226f08ff56dc03106b6ec54451e27a30/packaging-20.0-py2.py3-none-any.whl

Collecting tornado>=4.3

Downloading

https://files.pythonhosted.org/packages/30/78/2d2823598496127b21423baffaa186b668f73cd91887fcef78b6eade136b/tornado-

Collecting MarkupSafe>=0.23

Downloading

https://files.pythonhosted.org/packages/b9/2e/64db92e53b86efccfaea71321f597fa2e1b2bd3853d8ce658568f7a13094/MarkupSaf e-1.1.1.tar.gz

Requirement already satisfied: pyparsing>=2.0.2 in c:\u00e4users\u00fc217\u00ac.virtualenvs\u00fcpenv-snxa-ab5\u00aclib\ packaging > = 16.8 - bokeh) (2.4.6)

Building wheels for collected packages: bokeh, tornado, MarkupSafe

Building wheel for bokeh (setup.py) ... done

Created wheel for bokeh: filename=bokeh-1.4.0-cp38-none-any.whl size=23689221

sha256=e3777f86c58c996a998d4fdca2de98e1facdc47ee36b5e4f66c67a7f2ddabb46

Stored in directory:

C:\Users\217\AppData\Local\pip\Cache\pip\Cache\pip\fe\f8\47\09700d9a19cbcbf0b7a3130690b75c0d6ff80fbda0b1774c7c Building wheel for tornado (setup.py) ... done

Created wheel for tornado: filename=tornado-6.0.3-cp38-cp38-win32.whl size=415170

sha256=8429821cef96a6e48bd6c9973e2939f20cbee1bf0149466ed0ea76a984b5d32f Stored in directory:

C:\Users\217\AppData\Local\pip\Cache\wheels\84\bf\40\2f6ef700f48401ca40e5e3dd7d0e3c0a90e064897b7fe5fc08 Building wheel for MarkupSafe (setup.py) ... done

Created wheel for MarkupSafe: filename=MarkupSafe-1.1.1-cp38-cp38-win32.whl size=18939

sha256=a7fe4fde6d57712384d0566d79e396099cb675c9e7b3eb0f0f116fd79fdc4426

Stored in directory:

C:\Users\217\AppData\Local\pip\Cache\wheels\f2\aa\04\00df07a1b8a5f5f1aed7580fffb69ce8972edc16a505916a77 Successfully built bokeh tornado MarkupSafe

Installing collected packages: PyYAML, MarkupSafe, Jinja2, pillow, packaging, tornado, bokeh

Successfully installed Jinja2-2.10.3 MarkupSafe-1.1.1 PyYAML-5.3 bokeh-1.4.0 packaging-20.0 pillow-7.0.0 tornado-6.0.3

프로젝트 pyc prj03, 소스 bk 샘플코드1.py

```
Efile Edit View Navigate Code Refactor Run Tools VCS Window Help pyc prj03 [D:#pyc prj03] - ...#bk 샘플코드1.py - PyCharm
■ pyc pri03 〉 등 bk 샘플코드1.py
                                                                                                                 bk 샘플코드1 ~
  ■ Project ▼
                           ☼ ☆ - 協np 샘플코드3.py × 協bk 샘플코드1.py ×
  from bokeh.plotting import figure, output file, show
       據bk 샘플코드1.py
       # loa lines.html
                                         4
                                                # prepare some data
       №np 샘플코드3.py
       Pipfile
                                                x = [0.1, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0]

    Illi External Libraries

                                                y0 = [i**2 \text{ for } i \text{ in } x]
    Python 3.8 (penv-Snxa-AB5) > C:\Users\u21
                                                v1 = [10**i \text{ for } i \text{ in } x]
      > III Binary Skeletons
      > DLLs library root
                                                v^2 = [10^{**}(i^{**}2) \text{ for } i \text{ in } x]
      > Illi Extended Definitions
                                         9
                                        10
                                                # output to static HTML file
      > Lib library root
      > penv-Snxa-AB5 library root
                                                 output file("log lines.html")
                                        11
      Scripts
                                                 # create a new plot
                                        12
      site-packages
                                                 p = figure(
       Illi Typeshed Stubs
                                        13
    Scratches and Consoles
                                        14
                                                    tools="pan,box zoom,reset,save",
                                                    y axis type="log", y range=[0.001, 10**11], title="log axis example",
                                        15
                                                    x axis label='sections', y axis label='particles'
                                        16
                                        17
                                        18
                                                 # add some renderers
                                        19
                                                 p.line(x, x, legend="y=x")
                                        20
                                                 p.circle(x, x, legend="y=x", fill color="white", size=8)
                                                 p.line(x, y0, legend="y=x^2", line width=3)
                                        23
                                                 p.line(x, y1, legend="y=10^x", line color="red")
                                        24
                                                 p.circle(x, y1, legend="y=10^x", fill color="red", line color="red", size=6)
                                        25
                                                 p.line(x, y2, legend="y=10^x^2", line color="orange", line dash="4 4")
                                        27
                                                 # show the results
                                                 show(p)
   2 Event Log
🔲 Low Memory: The IDE is running low on memory and this might affect performance. Please consider increasing available heap. ... (35 minutes ago) 12:1 CRLF UTF-8 3 spaces* Python 3.8 (penv-Snxa-AB5) 🥻 👼 🥞
```

프로젝트 pyc prj03, 소스 bk 샘플코드1.py 이해와 결과

```
https://docs.bokeh.org/en/latest/docs/user quide/quickstart.html#userquide-
quickstart
                                                                                log axis example
from bokeh.plotting import figure, output file, show
                                                                                                                       -O- y=x
# prepare some data
x = [0.1, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0]
v0 = [i**2 for i in x]
y1 = [10**i \text{ for } i \text{ in } x]
y2 = [10**(i**2) \text{ for } i \text{ in } x]
                                                                            10^7
# output to static HTML file
output file("log lines.html")
                                                                            10^5
                                                                          particles
# create a new plot
p = figure(
   tools="pan,box zoom,reset,save",
   y axis type="log", y range=[0.001, 10**11],
   title="log axis example",
   x axis label='sections', y_axis_label='particles'
# add some renderers
p.line(x, x, legend="y=x")
p.circle(x, x, legend="y=x", fill color="white", size=8)
p.line(x, y0, legend="y=x^2", line width=3)
                                                                                                      sections
p.line(x, y1, legend="y=10^x", line color="red")
p.circle(x, y1, legend="y=10^x", fill color="red", line color="red", size=6)
p.line(x, y2, legend="y=10^x^2", line color="orange", line dash="4 4")
# show the results
show(p)
```