Table of contents

1

Python

-
-
-
-
-

1.1

Python .py

-
-
-
-
-

```
# math_utils.py
def add(a, b):
    return a + b

def multiply(a, b):
    return a * b

PI = 3.14159
```

1.2

1.2.1

```
import math

result = math.sqrt(16)  # 4.0
print(math.pi)          # 3.141592653589793
```

1.2.2

```
from math import sqrt, pi

result = sqrt(16)  # math.sqrt
print(pi)          # math.pi
```

1.2.3

```
import math as m
import numpy as np  #

result = m.sqrt(16)
array = np.array([1, 2, 3])
```

1.3

1.3.1

```
from math import *

result = sqrt(16)  #
#
```

1.3.2

```
from math import sqrt as square_root
from math import pi as PI_VALUE

result = square_root(16)
print(PI_VALUE)
```

1.3.3

```
try:
    import numpy as np
    HAS_NUMPY = True
except ImportError:
    HAS_NUMPY = False
    print("NumPy    ")
```

1.4

1.4.1

```
import os        #
import sys       #
import datetime  #
import random    #
import json      # JSON   /
import re        #
import collections  #
```

1.4.2

```
import os
print(os.getcwd())  #

import datetime
```

```
now = datetime.datetime.now()
print(now.strftime("%Y-%m-%d %H:%M:%S"))

import random
number = random.randint(1, 100)
```

1.5

1.5.1 calculator.py

```
"""        """

def add(a, b):
    """      """
    return a + b

def subtract(a, b):
    """          """
    return a - b

def multiply(a, b):
    """      """
    return a * b

def divide(a, b):
    """         """
    if b != 0:
        return a / b
    else:
        raise ValueError("        ")

#
VERSION = "1.0.0"
```

1.6

1.6.1 `main.py`

```
import calculator

#
result1 = calculator.add(10, 5)
result2 = calculator.subtract(10, 5)

print(f" : {result1}")
print(f" : {result2}")
print(f"    : {calculator.VERSION}")
```

1.6.2

```
from calculator import add, multiply, VERSION

result = add(10, 5)
product = multiply(3, 4)
print(f"   : {VERSION}")
```

1.7

Python

```
import sys
print(sys.path)
```

1.
2. PYTHONPATH
3.
4. site-packages

1.7.1

```
import sys
sys.path.append('/path/to/my/modules')

#
import my_custom_module
```

1.8

```
my_package/
   __init__.py      #
   module1.py
   module2.py
   subpackage/
       __init__.py
       module3.py
```

1.8.1 __init__.py

- Python
-
- from package import *

1.9

1.9.1

```
math_tools/
   __init__.py
   basic.py
   advanced.py
```

1.9.2 math_tools/__init__.py

```
"""      """
from .basic import add, subtract
from .advanced import fibonacci, factorial

__version__ = "1.0.0"
__all__ = ['add', 'subtract', 'fibonacci', 'factorial']
```

1.9.3 math_tools/basic.py

```
def add(a, b):
    return a + b

def subtract(a, b):
    return a - b
```

1.10

```
#
import math_tools
result = math_tools.add(5, 3)

#
from math_tools import basic
result = basic.add(5, 3)

#
from math_tools.basic import add
result = add(5, 3)

#          __init__.py
from math_tools import add
result = add(5, 3)
```

1.11

1.11.1

```
from math_tools.basic import add
from math_tools.advanced import fibonacci
```

1.11.2

```
# math_tools/advanced.py
from .basic import add        #
from ..other_package import something  #

# math_tools/__init__.py
from .basic import add, subtract
from .advanced import fibonacci
```

1.12 __name__

      __name__

```
# calculator.py
print(f"    : {__name__}")

def add(a, b):
    return a + b

#
if __name__ == "__main__":
    print("          ")
    print(f"2 + 3 = {add(2, 3)}")
```

- __name__
- __name__ "__main__"

1.13

1.13.1 pip

```
pip install requests
pip install numpy
pip install pandas
```

1.13.2

```
import requests
import numpy as np
import pandas as pd

# HTTP
response = requests.get('https://api.github.com')

#
array = np.array([1, 2, 3, 4, 5])

#
df = pd.DataFrame({'A': [1, 2, 3], 'B': [4, 5, 6]})
```

1.14

1.14.1

-
-
- Python

1.14.2

```
#
python -m venv myenv

#     Windows
myenv\Scripts\activate

#     macOS/Linux
source myenv/bin/activate

#
pip install requests numpy

#
deactivate
```

1.15

1.15.1

```
# requirements.txt
pip freeze > requirements.txt

#
pip install -r requirements.txt
```

1.15.2 requirements.txt

```
requests==2.28.1
numpy==1.21.0
pandas>=1.3.0
matplotlib~=3.5.0
```

1.16

1.16.1

```
file_utils/
```

```
__init__.py
readers.py
writers.py
```

1.16.2 `file_utils/readers.py`

```
def read_text_file(filename):
    """          """
    with open(filename, 'r', encoding='utf-8') as file:
        return file.read()

def read_lines(filename):
    """           """
    with open(filename, 'r', encoding='utf-8') as file:
        return [line.strip() for line in file]
```

1.16.1 1

```
# string_utils.py

def reverse_string(text):
    #
    pass

def count_words(text):
    #
    pass

def title_case(text):
    #
    pass
```

1.16.2 2

```
helpers/
```

```
__init__.py
math_helpers.py
string_helpers.py
```

1.16.1

```python
def reverse_string(text):
    return text[::-1]

def count_words(text):
    return len(text.split())

def title_case(text):
    return ' '.join(word.capitalize() for word in text.split())
```

1.16.2 `__init__.py`

```python
from .math_helpers import add, multiply
from .string_helpers import reverse_string, count_words

__version__ = "1.0.0"
```

1.17

1. : `database_utils` `db_stuff`
2. :
3. :
4. `__init__.py` :
5. :
6. :
7. :

1.18

1.18.1 1.

```
# module_a.py
from module_b import function_b

# module_b.py
from module_a import function_a  #
```

1.18.2 2. sys.path

```
#
sys.path.insert(0, '/some/absolute/path')

#
sys.path.insert(0, os.path.join(os.path.dirname(__file__), 'modules'))
```

1.18.3 3. `from module import *`

```
#     -
from math import *
from numpy import *  # math
```

1.19

-
-
- Python
- `import`
-
-

1.20

1.
2. `__init__.py`
3.
4.
5. `__name__ == "__main__"`