5. Exercise

Fig. 5.1 Photo by Alejandro Piñero Amerio on Unsplash

Note

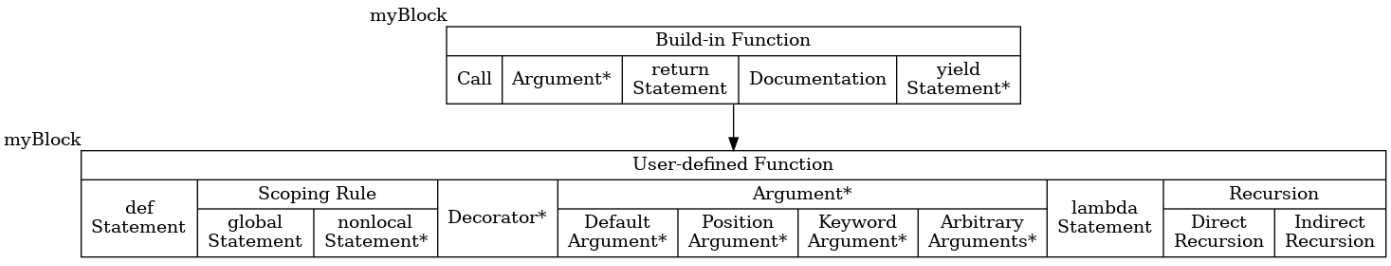
Outline (v20220501)

1. Exercise

Note

Roadmap

1. This topic: Function



2. Course: Python 1
3. Subject: Programming
4. Field
    a. Software Engineering (SE)
    b. Computer Science and Information Engineering (CSIE)
    c. Electrical/Electronics Engineering (EE)

5.1. Ex. 1

1. Question

```
請寫一個能印出"NxN乘法表"之函數，並利用此函數印出1x1、2x2、.....、9x9乘法表。
```

2. Code

```python
def mul_table(number):
    for i in range(1, number+1):
        for j in range(1, number+1):
            print(i*j,end="\t")
        print("\n")
    print("\t")

for i in range(1, 10):
    mul_table(i)
```

5.2. Ex. 2

1. Question

```
若執行下列程式碼，最終result值應為多少？

def divination(num):
    re = 0
    for i in range(len(str(num))):
        re += int(str(num)[i])
    return re
```

```
8
9  result = divination(1017)
```

2. Code

```
1  9
```

5.3. Ex. 3

1. Question

> 請撰寫一個能計算階層的程式，並利用此函數算出不可重複的組合公式的答案。
> 預設n=10, m=3。

2. Code

```
1  def factorial(N):
2      re = 1
3      for i in range(2, N+1):
4          re *= i
5  return re
6
7  n, m = 10, 3
8  C = factorial(n)/(factorial(m)*factorial(n-m))
9  print(C)
```

3. Output

```
1  120.0
```

5.4. Ex. 4

1. Question

```
1  請撰寫一個函式copy，能傳入一字串Str及一整數n，然後輸出n次Str。
```

2. Code

```
1  def copy(Str, n):
2      for i in range(n):
3          print(Str, end='')
```

5.5. Ex. 5

1. Question

```
1  請撰寫一個函式，能傳入一個浮點數參數，並回傳四捨五入至小數點第二位的結果。
```

2. Code

```
def round_off(f):
    num = str(f).split(".")
    if (f % 1 != 0 and len(num[1])>=3):
        f = float(num[0] + "." + num[1][0] + num[1][1])
        if (int(num[1][2])>=5):
            f += 0.01
    return f
```

Note

1. Start: 20170719
2. System Environment

Listing 5.5.1 requirements.txt

```
sphinx==7.1.2                           # Sphinx
graphviz>=0.20.1                        # Graphviz
sphinxbootstrap4theme>=0.6.0            # Theme: Bootstrap
sphinx-material>=0.0.35                 # Theme: Material
sphinxcontrib-plantuml>=0.25            # PlantUML
sphinxcontrib.bibtex>=2.5.0             # Bibliography
sphinx-autorun>=1.1.1                   # ExecCode: pycon
sphinx-execute-code-python3>=0.3        # ExecCode
btd.sphinx.inheritance-diagram>=2.3.1   # Diagram
sphinx-copybutton>=0.5.1                # Copy button
sphinx_code_tabs>=0.5.3                 # Tabs
sphinx-immaterial>=0.11.3               # Tabs

#-----------------------------------------------------
#-- Library Upgrade Error by Library Itself
#   >> It needs to fix by library owner
#   >> After fixed, we need to try it later
#-----------------------------------------------------
pydantic==1.10.10                       # 2.0: sphinx compiler error, 20230701

#-----------------------------------------------------
#-- Minor Extension
#-----------------------------------------------------
sphinxcontrib.httpdomain>=1.8.1         # HTTP API

#sphinxcontrib-blockdiag>=3.0.0         # Diagram: block
#sphinxcontrib-actdiag>=3.0.0           # Diagram: activity
#sphinxcontrib-nwdiag>=2.0.0            # Diagram: network
#sphinxcontrib-seqdiag>=3.0.0           # Diagram: sequence

#-----------------------------------------------------
#-- Still Wait For Upgrading Version
#-----------------------------------------------------

#-----------------------------------------------------
#-- Still Under Testing
#-----------------------------------------------------
#numpy>=1.24.2                          # Figure: numpy

#-----------------------------------------------------
#-- NOT Workable
#-----------------------------------------------------
#sphinxcontrib.jsdemo==0.1.4    # ExecCode: Need replace add_js_file()
#jupyter-sphinx==0.4.0          # ExecCode: Need gcc compiler
#sphinxcontrib.slide==1.0.0     # Slide: Slideshare
#hieroglyph==2.1.0              # Slide: make slides
#matplotlib>=3.7.1              # Plot: Need Python >= v3.8
#manim==0.17.2                  # Diagram: scipy, numpy need gcc
#sphinx_diagrams==0.4.0         # Diagram: Need GKE access
#sphinx-tabs>=3.4.1                     # Tabs: Conflict w/ sphinx-material
```