第六周 金融编程与计算作业

1Fork 第 06 周打卡 仓库至你的名下，然后将你名下的这个仓库 Clone 到你的本地计算机

```
(base) 86157@LAPTOP-GMTRB58B MINGW64 ~/repo
$ git clone git@gitcode.com:Typing_lqqqq/week06.git
Cloning into 'week06'...
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 5 (delta 0), reused 5 (delta 0), pack-reused 0 (f
Receiving objects: 100% (5/5), 8.45 KiB | 2.82 MiB/s, done.

(base) 86157@LAPTOP-GMTRB58B MINGW64 ~/repo
$ ll
total 29
drwxr-xr-x 1 86157 197609  0  3月 15 21:53 mywork/
drwxr-xr-x 1 86157 197609  0  3月 20 20:47 prj1/
-rw-r--r-- 1 86157 197609 13  3月  8 22:36 script1.py
drwxr-xr-x 1 86157 197609  0  3月  9 14:47 week01/
drwxr-xr-x 1 86157 197609  0  3月  9 12:12 week01_9806/
drwxr-xr-x 1 86157 197609  0  3月 16 21:40 week02/
drwxr-xr-x 1 86157 197609  0  3月 23 20:39 week03/
drwxr-xr-x 1 86157 197609  0  3月 30 19:51 week04/
drwxr-xr-x 1 86157 197609  0  3月 30 20:17 week04_7861/
drwxr-xr-x 1 86157 197609  0  4月 13 20:20 week05/
drwxr-xr-x 1 86157 197609  0  4月 16 16:04 week06/
```

https://pan.baidu.com/s/1zcxRtmw_ez2qMPjuDsGDtA?pwd=bjk2

2 用 VS Code 打开项目目录，新建一个 environment.yml 文件，指定安装 Python 3.12，然后运行 conda env create 命令创建 Conda 环境

```
environment.yml
1    name: week06
2    channels:
3      - conda-forge
4    dependencies:
5      - python=3.12
6      - wat-inspector
7      - pip
8      - pip:
9        - "-e ."
10
```

3 创建一个 guessing_game.py 文件，复制粘贴以下代码，运用 pdb 调试器理解其运行流程：

（1）创建文件

```python
 4    def guessing_game():
 5        # 生成 1 到 100 之间的随机整数
 6        secret_number = random.randint(1, 100)
 7        n = 0
 8
 9        print("欢迎来到猜数字游戏！我已经想好了一个 1 到 100
10
11        while True:
12            n += 1
13            # 获取玩家输入
14            guess = input(
15                f"(第 {n} 次尝试) 请输入你猜的数字（输入整数，
16            )
17            guess = guess.strip()  # 去除多余空白字符
18
19            if guess == "q":
20                break
21
22            try:
23                guess = int(guess)
24            except ValueError:
```

（2）输出结果：

4 创建一个 flow_controls.py 文件，让豆包（或 DeepSeek 等任何大模型）生成例子，尝试运行，体会理解以下 Python 流程控制语句：（具体见文件 flow_controls.py）

```
# while 条件循环 (conditional loop)
# 基本计数循环
count = 0
while count < 5:
    print(count)
    count = count + 1
#
number = [1, 2, 3, 4, 5]
while count < 5:
    print(count)
    count = count + 1

# 条件判断循环
user_input = ""
while user_input != "quit":
    user_input = input("请输入内容（￼
    if user_input != "quit":
        print(f"你输入的是: {user_inp

# 循环读取用户输入
i = 0
while i < 3:
    j = 0
    while j < 2:
        print(f"i = {i}, j = {j}")
        j = j + 1
    i = i + 1
```

```
0
1
2
3
4
name: Alice
age: 20
grade: A
name
age
grade
Alice
20
A
0
1
2
3
4
请输入内容（输入 'quit' 退出）: quit
i = 0, j = 0
i = 0, j = 1
i = 1, j = 0
i = 1, j = 1
i = 2, j = 0
i = 2, j = 1
(week06)
```

5 创建一个 mylib.py 模块(module)，在里面定义以下函数，再创建一个 myjob.py 脚本(script)，从 mylib.py 导入函数并尝试调用：

（1）查看类型


```
(Pdb) wat /mylib

value: <module 'mylib' from 'C:\\Users\\86157\\repo\\week06\\mylib.p
y'>
type: module

Public attributes:
  def func1()
```

（2）运行各结果截取如下


```
myjob.py
1    import mylib  # noqa:F401
2
3    mylib.func1()
4
```

```
(week06)
86157@LAPTOP-GMTRB58B
$ python myjob.py

(week06)
86157@LAPTOP-GMTRB58B
$ python myjob.py

(week06)
86157@LAPTOP-GMTRB58B
$ python myjob.py
0.0710678118654755
(week06)
```

```python
# 定义函数 func1，没有形参，没有
def func1():
    x = 50
    y = x**0.5 - 7
    print(y)


# 定义函数 func1，没有形参，有返
def func2():
    x = 70
    y = x**0.5 - 7
    print(y)
    return y
```

86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ python myjob.py
0.0710678118654755
func1() takes 0 positional arguments but 1 was given
1.3666002653407556
1.3666002653407556
(week06)

86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ python myjob.py
0.0710678118654755
func1() takes 0 positional arguments but 1 was given
1.3666002653407556
1.3666002653407556
-0.2917960675006306
(week06)

86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ python myjob.py
0.0710678118654755
func1() takes 0 positional arguments but 1 was given
1.3666002653407556
1.3666002653407556
-0.2917960675006306
-0.1443453995989561
func3() missing 1 required positional argument: 'x'
func3() got an unexpected keyword argument 'y'
-0.07179676972449123
0.0
(week06)

86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ python myjob.py
0.0710678118654755
func1() takes 0 positional arguments but 1 was given
1.3666002653407556
1.3666002653407556
-0.2917960675006306
-0.1443453995989561
func3() missing 1 required positional argument: 'x'
func3() got an unexpected keyword argument 'y'
-0.07179676972449123
0.0
0.0710678118654755
(week06)
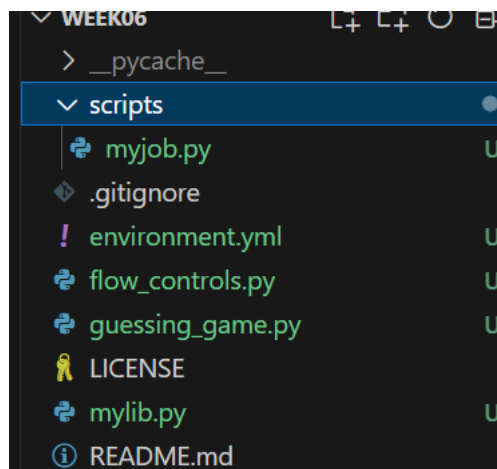86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)

```
print(mylib.calculate(10, 5, "add"))
print(mylib.calculate(operation="add", b=5, a=10))
```

```
func3() got an unexpected keyword argumen
-0.07179676972449123
0.0
0.0710678118654755
15
15
(week06)
```

```
print(mylib.calculate(10, 5, "add"))  # 要考虑顺序
print(mylib.calculate(operation="add", b=5, a=10))
print(mylib.calculate(b=5, a=10))  #
print(mylib.calculate(10, 5, operation="subtract"))
```
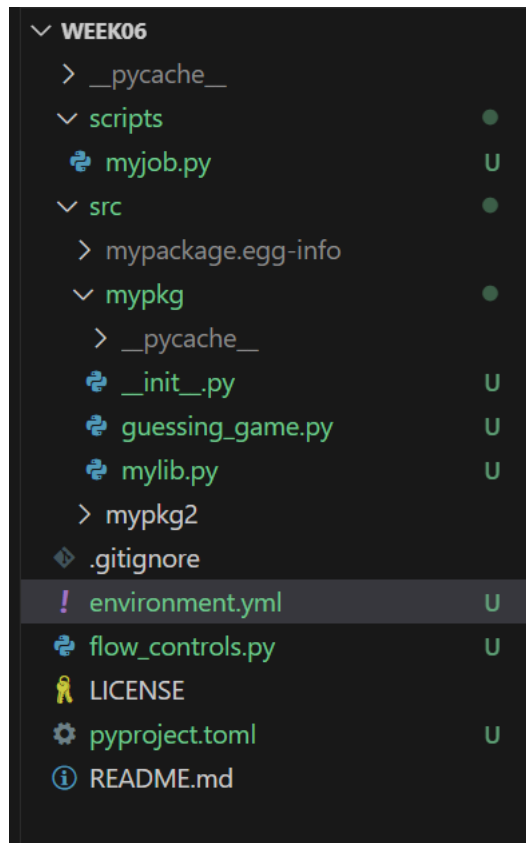
```
0.0
0.0710678118654755
15
15
15
5
(week06)
```

```
func6() got some positional-only arguments
5
34
name: Alice
age: 20
grade: A
(week06)
```

6 把 mylib 模块转变为**软件包**(package) 安装进当前的 Conda 环境来使用

（1）把 myjob.py 脚本移动至 scripts/myjob.py，再次尝试运行，会发现 import mylib 失败，这是由于 mylib 并没有打包成**软件包**(package) 安装

```
∨ WEEK06
  > __pycache__
  ∨ scripts                              ●
      ╾ myjob.py                         U
    .gitignore
    ! environment.yml                    U
    ╾ flow_controls.py                   U
    ╾ guessing_game.py                   U
    🔑 LICENSE
    ╾ mylib.py                           U
    ⓘ README.md
```

（2）将 mylib.py 模块移动至 src/mypkg/mylib.py，创建 src/mypkg/__init__.py 文件，准备好软件包的源代码

（3）创建 pyproject.toml 配置文件，按照文档填写基本的软件包信息；在 pyproject.toml 配置文件里，按照文档填写软件包的**构建**(build) 配置

```
⚙ pyproject.toml
1    [project]
2    name = "mypackage"
3    version = "2025.4.14"
4    dependencies = [
5      "openpyxl",
6    ]
7    authors = [
8      {name = "lq", email = "15712587173@163.com"},
9    ]
10   description = "测试用的软件包"
11
12   [project.optional-dependencies]
13   dev = [
14     "pytest",
15   ]
16
17   [build-system]
18   requires = ["hatchling"]
19   build-backend = "hatchling.build"
20
21   [tool.hatch.build.targets.wheel]
22   packages = ["src/mypkg"]
```

（4）使用 pip install -e . 以本地可编辑模式把当前软件包安装进当前 Conda 环境

```
$ pip install --editable .
Looking in indexes: https://mirrors.tuna.tsinghua.edu.cn/pypi/web/simple
Obtaining file:///C:/Users/86157/repo/week06
ERROR: file:///C:/Users/86157/repo/week06 does not appear to be a Python pr
ject: neither 'setup.py' nor 'pyproject.toml' found.
(week06)
86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ pip install -e .
Looking in indexes: https://mirrors.tuna.tsinghua.edu.cn/pypi/web/simple
Obtaining file:///C:/Users/86157/repo/week06
  Installing build dependencies ... done
  Checking if build backend supports build_editable ... done
  Getting requirements to build editable ... done
  Installing backend dependencies ... done
  Preparing editable metadata (pyproject.toml) ... done
INFO: pip is looking at multiple versions of mypackage to determine which v
```

```
86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ conda list
# packages in environment at D:\86157\anaconda3\envs\week06:
#
# Name                    Version                   Build  Channel
bzip2                     1.0.8                h2466b09_7    conda-forge
ca-certificates           2025.1.31            h56e8100_0    conda-forge
et-xmlfile                2.0.0                    pypi_0    pypi
libexpat                  2.7.0                he0c23c2_0    conda-forge
libffi                    3.4.6                h537db12_1    conda-forge
liblzma                   5.8.1                h2466b09_0    conda-forge
libsqlite                 3.49.1               h67fdade_2    conda-forge
libzlib                   1.3.1                h2466b09_2    conda-forge
mypackage                 2025.4.16                pypi_0    pypi
openpyxl                  3.1.5                    pypi_0    pypi
openssl                   3.5.0                ha4e3fda_0    conda-forge
pip                       25.0.1             pyh8b19718_0    conda-forge
python                    3.12.10         h3f84c4b_0_cpython    conda-forge
setuptools                78.1.0             pyhff2d567_0    conda-forge
tk                        8.6.13               h5226925_1    conda-forge
tzdata                    2025b                h78e105d_0    conda-forge
ucrt                      10.0.22621.0         h57928b3_1    conda-forge
vc                        14.3                 h2b53caa_26    conda-forge
vc14_runtime              14.42.34438          hfd919c2_26    conda-forge
wat-inspector             0.4.3              pyhff2d567_0    conda-forge
wheel                     0.45.1             pyhd8ed1ab_1    conda-forge
(week06)
```

```
(week06)
86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ python
Python 3.12.10 | packaged by conda-forge | (main, Apr 10 2025, 22:08:16) [M
SC v.1943 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import mypackage
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
ModuleNotFoundError: No module named 'mypackage'
>>> import mypkg
>>> mypkg.__file__
'C:\\Users\\86157\\repo\\week06\\src\\mypkg\\__init__.py'
>>> import mypkg.mylib
>>> mypkg.mylib.func1()
0.0710678118654755
>>> mypkg.guessing_game
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
AttributeError: module 'mypkg' has no attribute 'guessing_game'
>>> import mypkg.guessing_game
>>> mypkg.guessing_game
<module 'mypkg.guessing_game' from 'C:\\Users\\86157\\repo\\week06\\src\\my
pkg\\guessing_game.py'>
>>> mypkg.guessing_game.guessing_game
<function guessing_game at 0x000001766CE1D440>
>>> mypkg.guessing_game.guessing_game()
欢迎来到猜数字游戏！我已经想好了一个 1 到 100 之间的数字，你可以开始猜啦。
（第 1 次尝试）请输入你猜的数字（输入整数，或者输入 q 回车退出）：a
```

```
86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ python scripts/myjob.py
0.0710678118654755
func1() takes 0 positional arguments but 1 was given
1.366002653407556
1.366002653407556
-0.2917960675006306
-0.1443453995989561
func3() missing 1 required positional argument: 'x'
func3() got an unexpected keyword argument 'y'
-0.07179676972449123
0.0
0.0710678118654755
15
15
15
5
func6() got some positional-only arguments passed as keyword arguments: 'a
5
34
name: Alice
age: 20
grade: A
使用元组解包调用函数的结果：15
使用列表解包调用函数的结果：19
(week06)
```

（5）修改 environment.yml 文件，使得 conda env create 自动安装本地可编辑软件包
①改变 python 环境

②可编辑的安装方式


```
86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ python
Python 3.12.10 | packaged by conda-forge | (main, Apr 10 2025, 22:08:16) [M
SC v.1943 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> from mypkg import mylib
>>> mylib.func1()
0.0
>>>
```

③删除 week06 环境

```
    week06                         D:\86157\anaconda3\

    (base)
    86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06
RB  $ conda env remove -n week06

en  Remove all packages in environment D:\86157\
```

```
(base)
86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$ conda env list
# conda environments:
#
base                  *  D:\86157\anaconda3
myproject                D:\86157\anaconda3\envs\myproject
prj1                     D:\86157\anaconda3\envs\prj1
prj2                     D:\86157\anaconda3\envs\prj2
week04                   D:\86157\anaconda3\envs\week04
week05                   D:\86157\anaconda3\envs\week05
```

④重新创建了环境

```
Successfully built mypackage
Installing collected packages: et-xmlfile, openpyxl, mypackage
Successfully installed et-xmlfile-2.0.0 mypackage-2025.4.14 openpyxl-3.1.5

done
#
# To activate this environment, use
#
#     $ conda activate week06
#
# To deactivate an active environment, use
#
#     $ conda deactivate

(base)
```

```
$ conda env list
# conda environments:
#
base                  *  D:\86157\anaconda3
myproject                D:\86157\anaconda3\envs\myproject
prj1                     D:\86157\anaconda3\envs\prj1
prj2                     D:\86157\anaconda3\envs\prj2
week04                   D:\86157\anaconda3\envs\week04
week05                   D:\86157\anaconda3\envs\week05
week06                   D:\86157\anaconda3\envs\week06

(base)
86157@LAPTOP-GMTRB58B MINGW64 ~/repo/week06 (main)
$
```