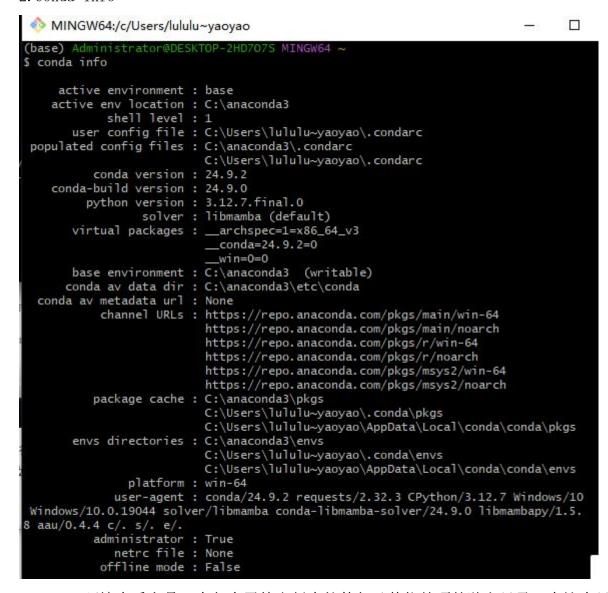第三周-金融编程与计算

1. conda init


```
(base)
Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ conda --version
conda 24.9.2
(base)
```

```
2    # >>> conda initialize >>>
3    # !! Contents within this block are managed by 'conda init' !!
4    if [ -f '/c/anaconda3/Scripts/conda.exe' ]; then
5        eval "$('/c/anaconda3/Scripts/conda.exe' 'shell.bash' 'hook
6    fi
7    # <<< conda initialize <<<
8
9    PS1="\n$PS1"
```

MINGW64:/c/Users/lululu~yaoyao

```
(base) Administrator@DESKTOP-2HD7O7S MINGW64 ~
$
```

2. conda info

MINGW64:/c/Users/lululu~yaoyao

```
(base) Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ conda info

     active environment : base
    active env location : C:\anaconda3
            shell level : 1
       user config file : C:\Users\lululu~yaoyao\.condarc
 populated config files : C:\anaconda3\.condarc
                          C:\Users\lululu~yaoyao\.condarc
          conda version : 24.9.2
    conda-build version : 24.9.0
         python version : 3.12.7.final.0
                 solver : libmamba (default)
       virtual packages : __archspec=1=x86_64_v3
                          __conda=24.9.2=0
                          __win=0=0
       base environment : C:\anaconda3  (writable)
      conda av data dir : C:\anaconda3\etc\conda
  conda av metadata url : None
           channel URLs : https://repo.anaconda.com/pkgs/main/win-64
                          https://repo.anaconda.com/pkgs/main/noarch
                          https://repo.anaconda.com/pkgs/r/win-64
                          https://repo.anaconda.com/pkgs/r/noarch
                          https://repo.anaconda.com/pkgs/msys2/win-64
                          https://repo.anaconda.com/pkgs/msys2/noarch
          package cache : C:\anaconda3\pkgs
                          C:\Users\lululu~yaoyao\.conda\pkgs
                          C:\Users\lululu~yaoyao\AppData\Local\conda\conda\pkgs
       envs directories : C:\anaconda3\envs
                          C:\Users\lululu~yaoyao\.conda\envs
                          C:\Users\lululu~yaoyao\AppData\Local\conda\conda\envs
               platform : win-64
             user-agent : conda/24.9.2 requests/2.32.3 CPython/3.12.7 Windows/10
 Windows/10.0.19044 solver/libmamba conda-libmamba-solver/24.9.0 libmambapy/1.5.
 8 aau/0.4.4 c/. s/. e/.
          administrator : True
             netrc file : None
           offline mode : False
```

3.Conda 环境本质上是一个包含了特定版本软件包及其依赖项的独立目录。在这个目录中，

存放着 Python 解释器（或其他编程语言解释器）以及一系列的软件包，这些软件包相互配合，形成一个可独立运行的软件集合。

4.创建环境

conda create --name biancheng_py312 python=3.12 requests

conda create --name biancheng_py39 python=3.9 pandas statsmodels~

```
(base)
Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ conda create --name biancheng_py312 python=3.12 requests
Channels:
 - defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\anaconda3\envs\biancheng_py312

  added / updated specs:
    - python=3.12
    - requests


The following packages will be downloaded:

    package                    |            build
    ---------------------------|-----------------
    brotli-python-1.0.9        |  py312h5da7b33_9       347 KB  defaults
    bzip2-1.0.8                |       h2bbff1b_6        90 KB  defaults
    ca-certificates-2025.2.25  |       haa95532_0       130 KB  defaults
    certifi-2025.1.31          |  py312haa95532_0       164 KB  defaults
    charset-normalizer-3.3.2   |     pyhd3eb1b0_0        44 KB  defaults
    expat-2.6.4                |       h8ddb27b_0       257 KB  defaults
    idna-3.7                   |  py312haa95532_0       133 KB  defaults
    libffi-3.4.4               |       hd77b12b_1       122 KB  defaults
    openssl-3.0.16             |       h3f729d1_0       7.8 MB  defaults
    pip-25.0                   |  py312haa95532_0       3.0 MB  defaults
    pysocks-1.7.1              |  py312haa95532_0        34 KB  defaults
    python-3.12.9              |       h14ffc60_0      16.5 MB  defaults
    requests-2.32.3            |  py312haa95532_1       124 KB  defaults
    setuptools-75.8.0          |  py312haa95532_0       2.2 MB  defaults
    sqlite-3.45.3              |       h2bbff1b_0       973 KB  defaults
    tk-8.6.14                  |       h0416ee5_0       3.5 MB  defaults
    tzdata-2025a               |       h04d1e81_0       117 KB  defaults
    urllib3-2.3.0              |  py312haa95532_0       238 KB  def
    vc-14.42                   |       haa95532_4        11 KB  def
    vs2015_runtime-14.42.34433 |       he0abc0d_4       1.2 MB  def
    wheel-0.45.1               |  py312haa95532_0       177 KB  defaults
    win_inet_pton-1.1.0        |  py312haa95532_0        10 KB  defaults
    xz-5.6.4                   |       h4754444_1       280 KB  defaults
    zlib-1.2.13                |       h8cc25b3_1       131 KB  defaults
    ---------------------------------------------------------------
                                           Total:      37.5 MB

The following NEW packages will be INSTALLED:
```

```
The following NEW packages will be INSTALLED:

  brotli-python      pkgs/main/win-64::brotli-python-1.0.9-py312h5da7b33_9
  bzip2              pkgs/main/win-64::bzip2-1.0.8-h2bbff1b_6
  ca-certificates    pkgs/main/win-64::ca-certificates-2025.2.25-haa95532_0
  certifi            pkgs/main/win-64::certifi-2025.1.31-py312haa95532_0
  charset-normalizer pkgs/main/noarch::charset-normalizer-3.3.2-pyhd3eb1b0_0
  expat              pkgs/main/win-64::expat-2.6.4-h8ddb27b_0
  idna               pkgs/main/win-64::idna-3.7-py312haa95532_0
  libffi             pkgs/main/win-64::libffi-3.4.4-hd77b12b_1
  openssl            pkgs/main/win-64::openssl-3.0.16-h3f729d1_0
  pip                pkgs/main/win-64::pip-25.0-py312haa95532_0
  pysocks            pkgs/main/win-64::pysocks-1.7.1-py312haa95532_0
  python             pkgs/main/win-64::python-3.12.9-h14ffc60_0
  requests           pkgs/main/win-64::requests-2.32.3-py312haa95532_1
  setuptools         pkgs/main/win-64::setuptools-75.8.0-py312haa95532_0
  sqlite             pkgs/main/win-64::sqlite-3.45.3-h2bbff1b_0
  tk                 pkgs/main/win-64::tk-8.6.14-h0416ee5_0
  tzdata             pkgs/main/noarch::tzdata-2025a-h04d1e81_0
  urllib3            pkgs/main/win-64::urllib3-2.3.0-py312haa95532_0
  vc                 pkgs/main/win-64::vc-14.42-haa95532_4
  vs2015_runtime     pkgs/main/win-64::vs2015_runtime-14.42.34433-he0abc0d_4
  wheel              pkgs/main/win-64::wheel-0.45.1-py312haa95532_0
  win_inet_pton      pkgs/main/win-64::win_inet_pton-1.1.0-py312haa95532_0
  xz                 pkgs/main/win-64::xz-5.6.4-h4754444_1
  zlib               pkgs/main/win-64::zlib-1.2.13-h8cc25b3_1


Proceed ([y]/n)? y


done
#
# To activate this environment, use
#
#     $ conda activate biancheng_py312
#
# To deactivate an active environment, use
#
```

退出 python shell 环境：exit() quit()

退出当前 python 环境，以便切换：conda deactivate

```
>>> exit()
(biancheng_py312)
Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ conda deactivate
(base)
```

5. conda list

```
(biancheng_py39)
Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ conda list
# packages in environment at C:\anaconda3\envs\biancheng_py39:
#
# Name                    Version                   Build  Channel
blas                      1.0                         mkl    defaults
bottleneck                1.4.2            py39hc99e966_0    defaults
ca-certificates           2025.2.25            haa95532_0    defaults
icc_rt                    2022.1.0             h6049295_2    defaults
intel-openmp              2023.1.0         h59b6b97_46320    defaults
mkl                       2023.1.0         h6b88ed4_46358    defaults
mkl-service               2.4.0            py39h827c3e9_2    defaults
mkl_fft                   1.3.11           py39h827c3e9_0    defaults
mkl_random                1.2.8            py39hc64d2fc_0    defaults
numexpr                   2.10.1           py39h4cd664f_0    defaults
numpy                     2.0.2            py39h055cbcc_0    defaults
numpy-base                2.0.2            py39h65a83cf_0    defaults
openssl                   3.0.16               h3f729d1_0    defaults
packaging                 24.2             py39haa95532_0    defaults
pandas                    2.2.3            py39h5da7b33_0    defaults
patsy                     1.0.1            py39haa95532_0    defaults
pip                       25.0             py39haa95532_0    defaults
pybind11-abi              5                    hd3eb1b0_0    defaults
python                    3.9.21               h8205438_1    defaults
python-dateutil           2.9.0post0       py39haa95532_2    defaults
python-tzdata             2023.3             pyhd3eb1b0_0    defaults
pytz                      2024.1           py39haa95532_0    defaults
scipy                     1.13.1           py39h8640f81_1    defaults
setuptools                72.1.0           py39haa95532_0    defaults
six                       1.16.0             pyhd3eb1b0_1    defaults
sqlite                    3.45.3               h2bbff1b_0    defaults
statsmodels               0.14.4           py39h827c3e9_0    defaults
tbb                       2021.8.0             h59b6b97_0    defaults
tzdata                    2025a                h04d1e81_0    defaults
vc                        14.42                haa95532_4    defaults
vs2015_runtime            14.42.34433          he0abc0d_4    defaults
wheel                     0.45.1           py39haa95532_0    defaults
```

```
(base) Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ conda list
# packages in environment at C:\anaconda3:
#
# Name                    Version                   Build  Channel
_anaconda_depends         2024.10                 py312_mkl_0    defaults
aiobotocore               2.12.3           py312haa95532_0    defaults
aiohappyeyeballs          2.4.0            py312haa95532_0    defaults
aiohttp                   3.10.5           py312h827c3e9_0    defaults
aioitertools              0.7.1              pyhd3eb1b0_0    defaults
aiosignal                 1.2.0              pyhd3eb1b0_0    defaults
alabaster                 0.7.16           py312haa95532_0    defaults
altair                    5.0.1            py312haa95532_0    defaults
anaconda-anon-usage       0.4.4            py312hfc23b7f_100    defaults
anaconda-catalogs         0.2.0            py312haa95532_1    defaults
anaconda-client           1.12.3           py312haa95532_0    defaults
anaconda-cloud-auth       0.5.1            py312haa95532_0    defaults
anaconda-navigator        2.6.3            py312haa95532_0    defaults
anaconda-project          0.11.1           py312haa95532_0    defaults
anaconda_powershell_prompt 1.1.0               haa95532_0    defaults
anaconda_prompt           1.1.0                haa95532_0    defaults
annotated-types           0.6.0            py312haa95532_0    defaults
anyio                     4.2.0            py312haa95532_0    defaults
aom                       3.6.0                hd77b12b_0    defaults
appdirs                   1.4.4              pyhd3eb1b0_0    defaults
archspec                  0.2.3              pyhd3eb1b0_0    defaults
argon2-cffi               21.3.0             pyhd3eb1b0_0    defaults
argon2-cffi-bindings      21.2.0           py312h2bbff1b_0    defaults
arrow                     1.2.3            py312haa95532_1    defaults
```

5. conda install

```
(biancheng_py39)
Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ conda install ipython
Channels:
 - defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\anaconda3\envs\biancheng_py39

  added / updated specs:
    - ipython


The following packages will be downloaded:

    package                    |            build
    ---------------------------|-----------------
    asttokens-2.0.5            |     pyhd3eb1b0_0          20 KB  defaults
    backcall-0.2.0             |     pyhd3eb1b0_0          13 KB  defaults
    colorama-0.4.6             |     py39haa95532_0        32 KB  defaults
    decorator-5.1.1            |     pyhd3eb1b0_0          12 KB  defaults
    exceptiongroup-1.2.0       |     py39haa95532_0        30 KB  defaults
    executing-0.8.3            |     pyhd3eb1b0_0          18 KB  defaults
    ipython-8.15.0             |     py39haa95532_0       1.1 MB  defaults
    jedi-0.19.2                |     py39haa95532_0       1.0 MB  defaults
    matplotlib-inline-0.1.6    |     py39haa95532_0        17 KB  defaults
    parso-0.8.4                |     py39haa95532_0       193 KB  defaults
    pickleshare-0.7.5          |     pyhd3eb1b0_1003       13 KB  defaults
    prompt-toolkit-3.0.43      |     py39haa95532_0       572 KB  defaults
    pure_eval-0.2.2            |     pyhd3eb1b0_0          14 KB  defaults
    pygments-2.15.1            |     py39haa95532_1       1.7 MB  defaults
    stack_data-0.2.0           |     pyhd3eb1b0_0          22 KB  defaults
    traitlets-5.14.3           |     py39haa95532_0       180 KB  defaults
    typing_extensions-4.12.2   |     py39haa95532_0        65 KB  defaults
    wcwidth-0.2.5              |     pyhd3eb1b0_0          26 KB  defaults
    ---------------------------------------------------------------
                                          Total:         5.1 MB
done
```

7.配置镜像

```
$ .bash_profile    ! .condarc    ×

! .condarc
1   channels:
2     - https://repo.anaconda.com/pkgs/main
3     - https://repo.anaconda.com/pkgs/r
4     - https://repo.anaconda.com/pkgs/msys2
5   show_channel_urls: true
6
```

```
! .condarc
1   channels:
2     - defaults
3   show_channel_urls: true
4   default_channels:
5     - https://mirrors.tuna.tsinghua.edu.cn/anaconda/pkgs/main
6     - https://mirrors.tuna.tsinghua.edu.cn/anaconda/pkgs/r
7     - https://mirrors.tuna.tsinghua.edu.cn/anaconda/pkgs/msys2
8   custom_channels:
9     conda-forge: https://mirrors.tuna.tsinghua.edu.cn/anaconda/cloud
10    pytorch: https://mirrors.tuna.tsinghua.edu.cn/anaconda/cloud
```

```
! .condarc
1   channels:
2     - conda-forge
3     - defaults
4   show_channel_urls: true
5   default_channels:
6     - https://mirrors.tuna.tsinghua.edu.cn/anaconda/pkgs/main
7     - https://mirrors.tuna.tsinghua.edu.cn/anaconda/pkgs/r
8     - https://mirrors.tuna.tsinghua.edu.cn/anaconda/pkgs/msys2
9   custom_channels:
10    conda-forge: https://mirrors.tuna.tsinghua.edu.cn/anaconda/cloud
11    pytorch: https://mirrors.tuna.tsinghua.edu.cn/anaconda/cloud
12  channel_priority: strict
13
```

下载软件包时，出错了

```
CondaHTTPError: HTTP 403 FORBIDDEN for url <https://mirrors.tuna.tsinghua.edu.cn
/anaconda/cloud/conda-forge/win-64/mkl-2024.2.2-h66d3029_15.conda>
Elapsed: 00:00.047415

An HTTP error occurred when trying to retrieve this URL.
HTTP errors are often intermittent, and a simple retry will get you on your way.
```

反复尝试解决了

```
(myproject)
Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ conda install polars
Channels:
 - conda-forge
 - https://repo.anaconda.com/pkgs/main
 - https://repo.anaconda.com/pkgs/r
 - https://repo.anaconda.com/pkgs/msys2
 - defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\anaconda3\envs\myproject

  added / updated specs:
    - polars


The following packages will be downloaded:

    package                    |            build
    ---------------------------|-----------------
    libexpat-2.6.4             |       he0c23c2_0         136 KB  conda-forge
    liblzma-5.6.4              |       h2466b09_0         102 KB  conda-forge
    libsqlite-3.49.1           |       h67fdade_2         1.0 MB  conda-forge
    libzlib-1.3.1              |       h2466b09_2          54 KB  conda-forge
    openssl-3.4.1              |       ha4e3fda_0         8.1 MB  conda-forge
    packaging-24.2             |     pyhd8ed1ab_2          59 KB  conda-forge
done
```

8. 使用 pip install

```
Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ python -m pip install --upgrade pip
Requirement already satisfied: pip in c:\anaconda3\envs\bc_py312\lib\site-packag
es (25.0)
Collecting pip
  Downloading pip-25.0.1-py3-none-any.whl.metadata (3.7 kB)
Downloading pip-25.0.1-py3-none-any.whl (1.8 MB)
                                        1.8/1.8 MB 8.4 MB/s eta 0:00:00
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 25.0
    Uninstalling pip-25.0:
      Successfully uninstalled pip-25.0
Successfully installed pip-25.0.1
(bc_py312)
Administrator@DESKTOP-2HD7O7S MINGW64 ~
$ pip config set global.index-url https://mirrors.tuna.tsinghua.edu.cn/pypi/web/
simple
Writing to C:\Users\lululu~yaoyao\AppData\Roaming\pip\pip.ini
```

9. 配置 pypi

```
AppData > Roaming > pip > ≡ pip.ini
   1    [global]
   2    index-url = https://mirrors.tuna.tsinghua.edu.cn/pypi/web/simple
   3
   4
```

10. 导出环境 conda env export -f enviroment.yml
重建环境：conda env create

11. 概念理解

Conda 不仅能管理 Python 本身，还能管理 Python 的第三方软件包。与 Python 自带的 pip 工具相比，Conda 在处理软件包依赖关系上更加智能和全面。Conda 通过创建独立的环境，将不同项目的 Python 环境隔离开来。

Conda-Forge 的性质：Conda-Forge 是一个由社区驱动的开源项目，它为 Conda 提供了大量额外的软件包通道。Conda 本身有默认的软件包通道，而 Conda-Forge 丰富了 Conda 的软件包资源，用户可以从中获取更多在默认通道中没有的软件包。

Python 解释器、第三方软件包、PyPI 软件仓库、以及程序 / 软件包的路径问题

Python 解释器：Python 解释器是**运行 Python 代码**的工具，它负责将 Python 代码逐行解释并执行。常见的 Python 解释器有 CPython（官方默认）、Jython（用于 Java 平台）、IronPython（用于.NET 平台）等。不同的 Python 解释器在功能和性能上可能会有所差异，但 CPython 是最常用的。在 Conda 环境中，每个环境都可以有自己独立的 Python 解释器版本，这为用户提供了很大的灵活性。

第三方软件包：第三方软件包是**由 Python 社区或其他开发者开发**的，用于扩展 Python 功能的代码库。例如 numpy、pandas、matplotlib 等。这些软件包可以通过 pip 或 conda 等工具进行安装。第三方软件包通常会依赖其他软件包，在安装时需要注意解决依赖关系，以确保软件包能够正常工作。

PyPI 软件仓库：PyPI（Python Package Index）是 Python **官方的软件包仓库**，它是 Python 社区发布和共享软件包的主要平台。pip 工具默认从 PyPI 上下载软件包。几乎所有常见的 Python 第三方软件包都可以在 PyPI 上找到。此外，还有一些其他的软件包仓库，如 Conda 的默认通道和 Conda-Forge 等，它们也提供了大量的 Python 软件包。

程序 / 软件包的路径问题：当安装 Python 解释器和第三方软件包时，它们会被安装到特定的路径下。在使用 Python 时，系统需要能够找到这些软件包的路径才能正确加载和使用它们。在 Conda 环境中，每个环境都有自己独立的路径，这有助于避免不同环境之间的冲突。例如，在一个名为 myenv 的 Conda 环境中，Python 解释器和软件包会被安装到类似 C:\Users\username\anaconda3\envs\myenv （Windows 系统）

或 /home/username/anaconda3/envs/myenv （Linux/macOS 系统）的路径下。pip 和 conda 等工

具在安装软件包时会自动处理路径配置，确保 Python 能够正确找到和使用这些软件包。

12.项目编写


```python
import pandas as pd

def main():
    print("Hello, conda!")
    print(pd. __version)
    print(pd. __file__)
if __name__ == "__main__":
    main()
```