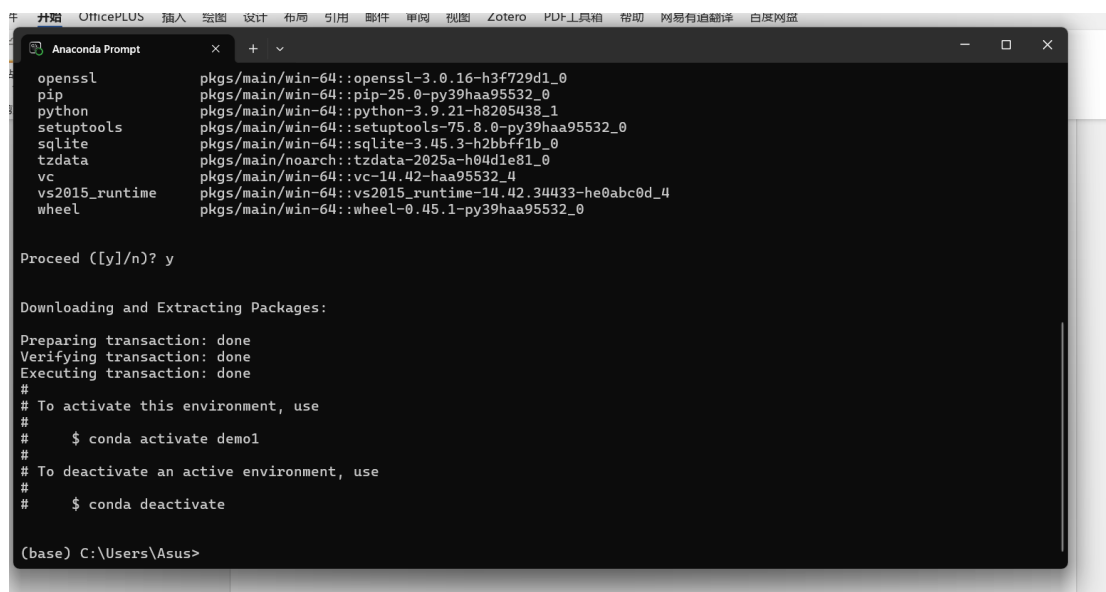


## cv 实验 1

1. anaconda 创建虚拟环境、删除，查看已安装虚拟环境，进入某个虚拟环境，退出某个虚拟环境

(1) 创建和删除虚拟镜像

创建虚拟环境命令：conda create -n demo1 python=3.9



```

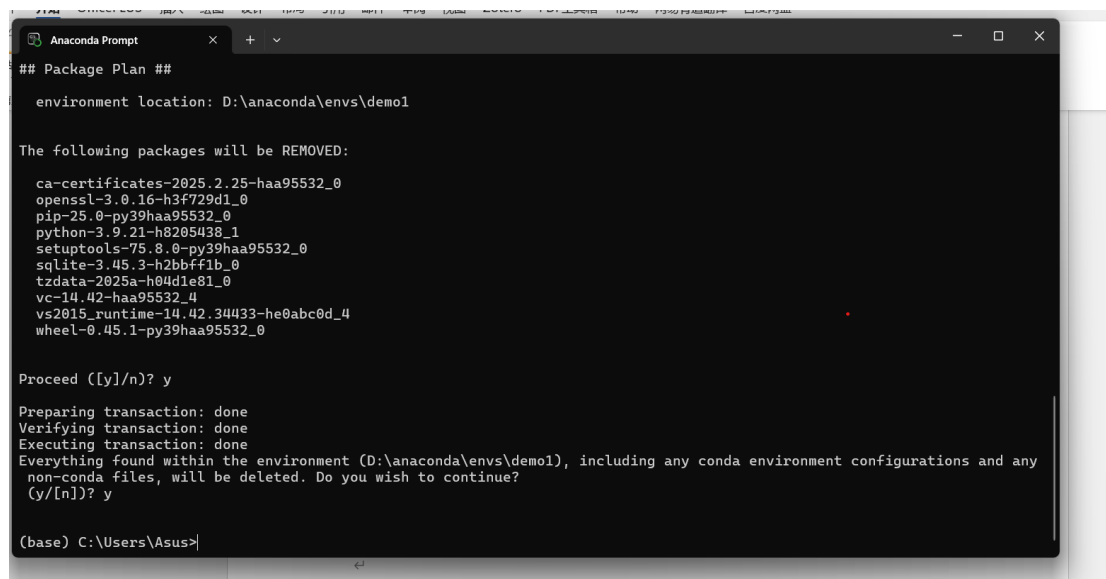
Anaconda Prompt
openssl      pkgs/main/win-64::openssl-3.0.16-h3f729d1_0
pip          pkgs/main/win-64::pip-25.0-py39h9a95532_0
python       pkgs/main/win-64::python-3.9.21-h8205438_1
setuptools   pkgs/main/win-64::setuptools-75.8.0-py39h9a95532_0
sqlite       pkgs/main/win-64::sqlite-3.45.3-h2bbff1b_0
tzdata       pkgs/main/noarch::tzdata-2025a-h04d1e81_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-py39h9a95532_0

Proceed ([y]/n)? y

Downloading and Extracting Packages:
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate demo1
#
# To deactivate an active environment, use
#
#     $ conda deactivate
#

(base) C:\Users\Asus>
```

删除虚拟环境命令：conda remove -n demo1 -all



```

Anaconda Prompt
## Package Plan ##

environment location: D:\anaconda\envs\demo1

The following packages will be REMOVED:

ca-certificates-2025.2.25-haa95532_0
openssl-3.0.16-h3f729d1_0
pip-25.0-py39h9a95532_0
python-3.9.21-h8205438_1
setuptools-75.8.0-py39h9a95532_0
sqlite-3.45.3-h2bbff1b_0
tzdata-2025a-h04d1e81_0
vc-14.42-haa95532_4
vs2015_runtime-14.42.34433-he0abc0d_4
wheel-0.45.1-py39h9a95532_0

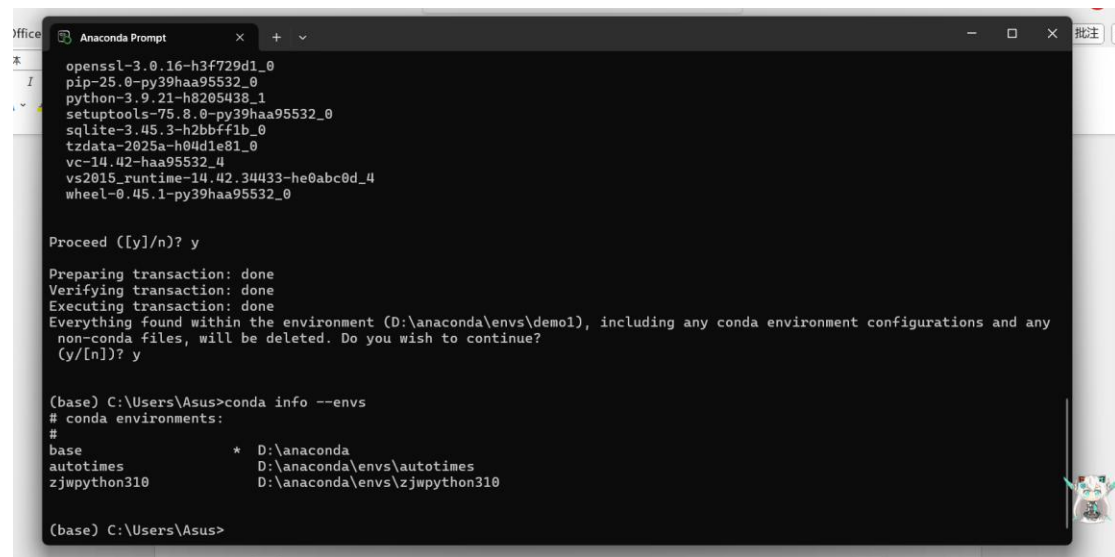
Proceed ([y]/n)? y

Preparing transaction: done
Verifying transaction: done
Executing transaction: done
Everything found within the environment (D:\anaconda\envs\demo1), including any conda environment configurations and any non-conda files, will be deleted. Do you wish to continue?
(y/[n])? y

(base) C:\Users\Asus>
```

(2) 查看已安装环境

命令: conda info - envs



```
opengl-3.0.16-h3f729d1_0
pip-25.0-py39haa95532_0
python-3.9.21-h8205438_1
setuptools-75.8.0-py39haa95532_0
sqlite-3.45.3-h2bbff1b_0
tzdata-2025a-h04d1e81_0
vc-14.42-haa95532_4
vs2015_runtime-14.42.34433-he0abc0d_4
wheel-0.45.1-py39haa95532_0

Proceed ([y]/n)? y

Preparing transaction: done
Verifying transaction: done
Executing transaction: done
Everything found within the environment (D:\anaconda\envs\demo1), including any conda environment configurations and any non-conda files, will be deleted. Do you wish to continue?
(y/[n])? y

(base) C:\Users\Asus>conda info --envs
# conda environments:
#
base                * D:\anaconda
autotimes            D:\anaconda\envs\autotimes
zjwpython310         D:\anaconda\envs\zjwpython310

(base) C:\Users\Asus>
```

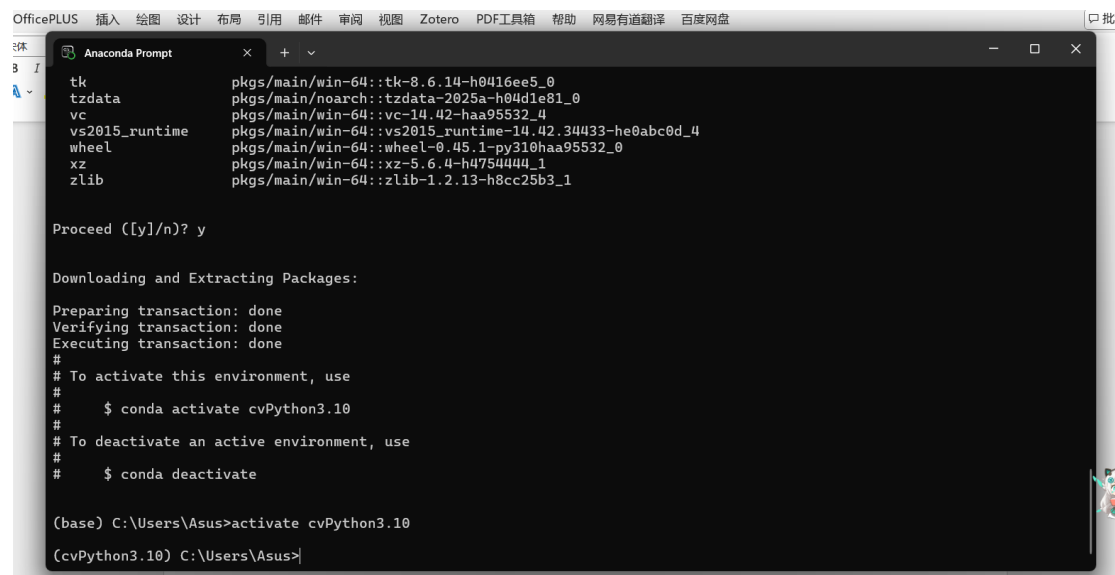
### (3) 进入和退出虚拟环境

创建名为 cvPython3.10 的虚拟环境

命令: conda create -n cvPython3.10 python=3.10

进入虚拟环境

命令: activate cvPython3.10



```
tk                pkgs/main/win-64::tk-8.6.14-h0416ee5_0
tzdata            pkgs/main/noarch::tzdata-2025a-h04d1e81_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-py310haa95532_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

Downloading and Extracting Packages:
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#   $ conda activate cvPython3.10
#
# To deactivate an active environment, use
#
#   $ conda deactivate

(base) C:\Users\Asus>activate cvPython3.10
(cvPython3.10) C:\Users\Asus>
```

退出虚拟环境

命令: deactivate

```
Anaconda Prompt - deactivate x + -
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

Downloading and Extracting Packages:
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#   $ conda activate cvPython3.10
#
# To deactivate an active environment, use
#
#   $ conda deactivate

(base) C:\Users\Asus>activate cvPython3.10
(cvPython3.10) C:\Users\Asus>deactivate
DeprecationWarning: 'deactivate' is deprecated. Use 'conda deactivate'.
(cvPython3.10) C:\Users\Asus>conda.bat deactivate
(base) C:\Users\Asus>
```

退出虚拟环境

## 2. 安装和卸载第三方库，查看已安装库，利用清华镜像安装第三方库

### (1) 安装和卸载第三方库

安装第三方库命令(pandas): `conda install pandas`

```
OfficePLUS 插入 绘图 设计 布局 引用 邮件 审阅 视图 Zotero PDF工具箱 帮助 网易有道翻译 百度网盘
Anaconda Prompt - deactivate x + -
python           3.10.16                h4607a30_1
setuptools       75.8.0                  py310haa95532_0
sqlite           3.45.3                  h2bbff1b_0
tk               8.6.14                  h0d16ee5_0
tzdata           2025a                   h04d1e81_0
vc               14.42                   haa95532_4
vs2015_runtime   14.42.34433             he0abc0d_4
wheel            0.45.1                  py310haa95532_0
xz               5.6.4                   h4754444_1
zlib             1.2.13                  h8cc25b3_1

(cvPython3.10) C:\Users\Asus>conda install pandas
Channels:
- defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

environment location: D:\anaconda\envs\cvPython3.10

added / updated specs:
- pandas
done

(cvPython3.10) C:\Users\Asus>
```

卸载第三方库命令(pandas): `conda remove pandas`

```

- pandas

The following packages will be REMOVED:

blas-1.0-mkl
bottleneck-1.4.2-py310hc99e966_0
intel-openmp-2023.1.0-h59b6b97_46320
mkl-2023.1.0-h6b88ed4_46358
mkl-service-2.4.0-py310h827c3e9_2
mkl_fft-1.3.11-py310h827c3e9_0
mkl_random-1.2.8-py310hc64d2fc_0
numexpr-2.10.1-py310h4cd664f_0
numpy-2.0.1-py310h055cbcc_1
numpy-base-2.0.1-py310h65a83cf_1
pandas-2.2.3-py310h5da7b33_0
python-dateutil-2.9.0post0-py310haa95532_2
python-tzdata-2023.3-pyhd3eb1b0_0
pytz-2024.1-py310haa95532_0
six-1.16.0-pyhd3eb1b0_1
tbb-2021.8.0-h59b6b97_0

Proceed ([y]/n)? y

Preparing transaction: done
Verifying transaction: done
Executing transaction: done

(cvPython3.10) C:\Users\Asus>
```

## (2) 查看已安装库

命令: conda list

```

tbb-2021.8.0-h59b6b97_0

Proceed ([y]/n)? y

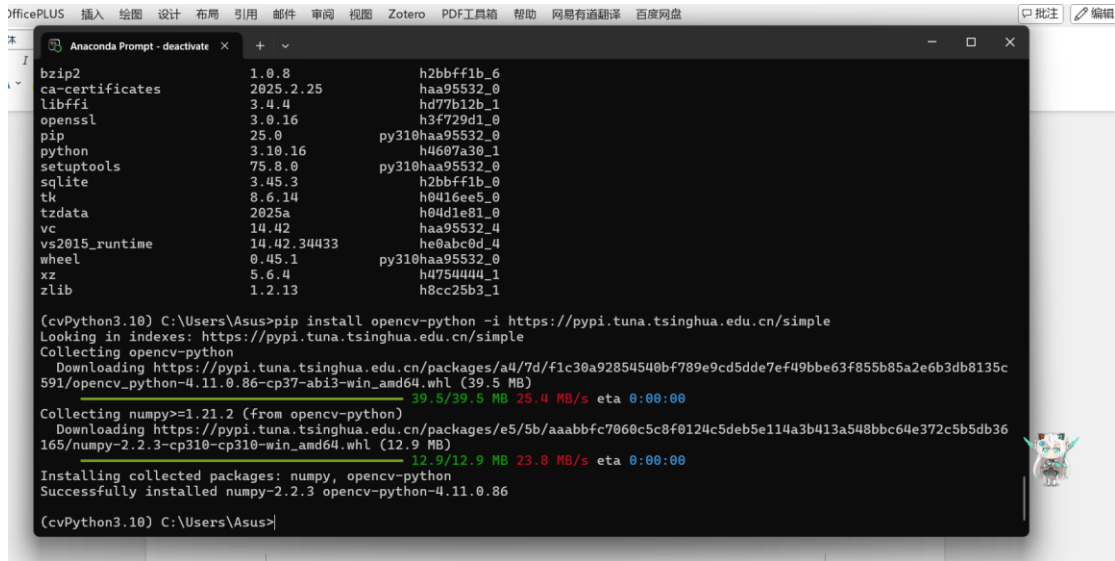
Preparing transaction: done
Verifying transaction: done
Executing transaction: done

(cvPython3.10) C:\Users\Asus>conda list
# packages in environment at D:\anaconda\envs\cvPython3.10:
#
# Name                   Version           Build           Channel
#-----
bzip2                    1.0.8             h2bbff1b_6      haa95532_0
ca-certificates          2025.2.25         haa95532_0      haa95532_0
libffi                   3.4.4             hd77b12b_1      haa95532_0
openssl                  3.0.16            h3f729d1_0      haa95532_0
pip                      25.0              py310haa95532_0 haa95532_0
python                   3.10.16           h4607a30_1      haa95532_0
setuptools               75.8.0            py310haa95532_0 haa95532_0
sqlite                   3.45.3            h2bbff1b_0      haa95532_0
tk                        8.6.14            h0416ee5_0      haa95532_0
tzdata                   2025a             h04d1e81_0      haa95532_0
vc                        14.42             haa95532_4      haa95532_0
vs2015_runtime           14.42.34433       he0abc0d_4      haa95532_0
wheel                    0.45.1            py310haa95532_0 haa95532_0
xz                        5.6.4             h4754444_1      haa95532_0
zlib                     1.2.13            h8cc25b3_1      haa95532_0

(cvPython3.10) C:\Users\Asus>
```

## (3) 利用清华镜像安装第三方库

命令: pip install opencv-python -i  
<https://pypi.tuna.tsinghua.edu.cn/simple>



### 3. opencv 读取图片、显示图片、保存图片的代码和注释

#### (1) 代码和注释

```
import cv2
import numpy
# 1. 读取图片

image = cv2.imread("D:/Samples/demo1.BMP", cv2.IMREAD_COLOR)

# 检查图片是否成功读取
if image is None:
    print("图片读取失败，请检查路径是否正确！")
    exit()

# 2. 显示图片
# 使用 cv2.imshow() 显示图片

cv2.imshow("Displayed Image", image)

# 等待按键
cv2.waitKey(0)

# 关闭所有 OpenCV 窗口
cv2.destroyAllWindows()
```

### # 3. 保存图片

```
cv2.imwrite("saved_image.jpg", image)
print("图片已保存为 saved_image.jpg")
```

### (2) 结果

