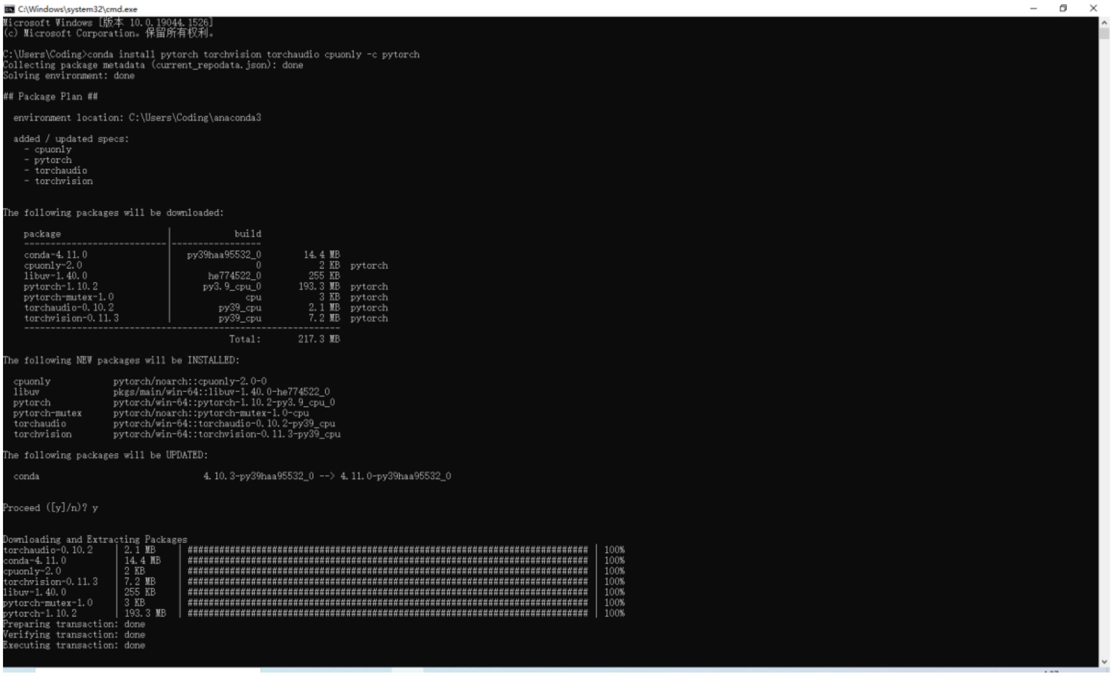
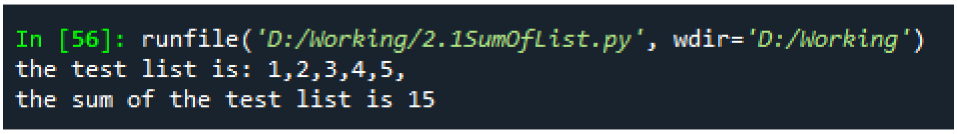
Programming problems:

1. The process of installing pytorch with anaconda env



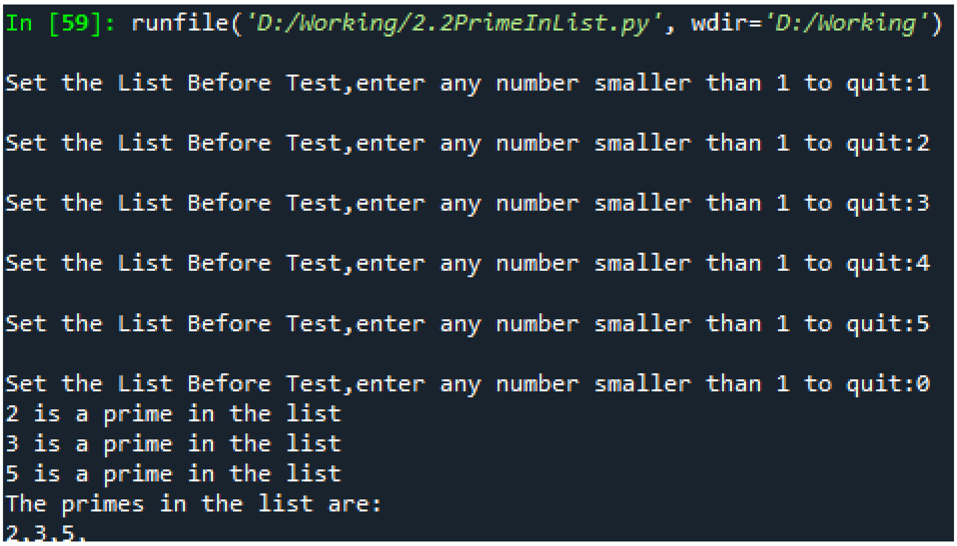
```
Microsoft Windows [版本 10.0.19044.1526]
(c) Microsoft Corporation。保留所有权利。

C:\Users\Coding>conda install pytorch torchvision torchaudio cpuonly -c pytorch
Collecting package metadata (current_repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\Users\Coding\anaconda3

  added / updated specs:
    - cpuonly
    - pytorch
    - torchaudio
    - torchvision


The following packages will be downloaded:

    package                    |            build
    ---------------------------|-----------------
    conda-4.11.0               |   py39haa95532_0        14.4 MB
    cpuonly-2.0                |                0           2 KB  pytorch
    libuv-1.40.0               |       he774522_0         255 KB
    pytorch-1.10.2             |      py3.9_cpu_0       193.3 MB  pytorch
    pytorch-mutex-1.0          |              cpu           3 KB  pytorch
    torchaudio-0.10.2          |         py39_cpu         2.1 MB  pytorch
    torchvision-0.11.3         |         py39_cpu         7.2 MB  pytorch
    ------------------------------------------------------------
                                           Total:       217.3 MB

The following NEW packages will be INSTALLED:

  cpuonly            pytorch/noarch::cpuonly-2.0-0
  libuv              pkgs/main/win-64::libuv-1.40.0-he774522_0
  pytorch            pytorch/win-64::pytorch-1.10.2-py3.9_cpu_0
  pytorch-mutex      pytorch/noarch::pytorch-mutex-1.0-cpu
  torchaudio         pytorch/win-64::torchaudio-0.10.2-py39_cpu
  torchvision        pytorch/win-64::torchvision-0.11.3-py39_cpu

The following packages will be UPDATED:

  conda                              4.10.3-py39haa95532_0 --> 4.11.0-py39haa95532_0


Proceed ([y]/n)? y


Downloading and Extracting Packages
torchaudio-0.10.2    | 2.1 MB    | ########################################################################### | 100%
conda-4.11.0         | 14.4 MB   | ########################################################################### | 100%
cpuonly-2.0          | 2 KB      | ########################################################################### | 100%
torchvision-0.11.3   | 7.2 MB    | ########################################################################### | 100%
libuv-1.40.0         | 255 KB    | ########################################################################### | 100%
pytorch-mutex-1.0    | 3 KB      | ########################################################################### | 100%
pytorch-1.10.2       | 193.3 MB  | ########################################################################### | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
```

2.1 The output of the problem, the corresponding file is “2.1SumOfList.py”



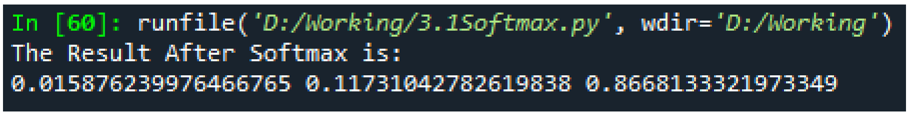
```
In [56]: runfile('D:/Working/2.1SumOfList.py', wdir='D:/Working')
the test list is: 1,2,3,4,5,
the sum of the test list is 15
```

2.2 The output of the problem the corresponding file is “2.2PrimeInList.py”



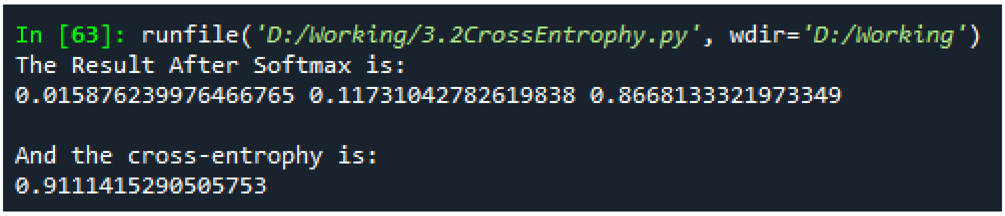
```
In [59]: runfile('D:/Working/2.2PrimeInList.py', wdir='D:/Working')

Set the List Before Test,enter any number smaller than 1 to quit:1

Set the List Before Test,enter any number smaller than 1 to quit:2

Set the List Before Test,enter any number smaller than 1 to quit:3

Set the List Before Test,enter any number smaller than 1 to quit:4

Set the List Before Test,enter any number smaller than 1 to quit:5

Set the List Before Test,enter any number smaller than 1 to quit:0
2 is a prime in the list
3 is a prime in the list
5 is a prime in the list
The primes in the list are:
2,3,5,
```

3.1 The output of the problem the corresponding file is “3.1Softmax.py”



```
In [60]: runfile('D:/Working/3.1Softmax.py', wdir='D:/Working')
The Result After Softmax is:
0.015876239976466765 0.11731042782619838 0.8668133321973349
```

3.2 The output of the problem the corresponding file is “3.2CrossEntrophy.py”



```
In [63]: runfile('D:/Working/3.2CrossEntrophy.py', wdir='D:/Working')
The Result After Softmax is:
0.015876239976466765 0.11731042782619838 0.8668133321973349

And the cross-entrophy is:
0.9111415290505753
```

4 **Note that to show the result of the random process, I set all the probability of the random process to 1.**

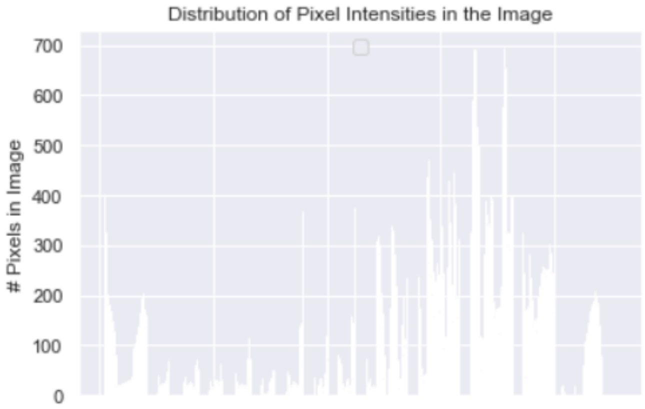
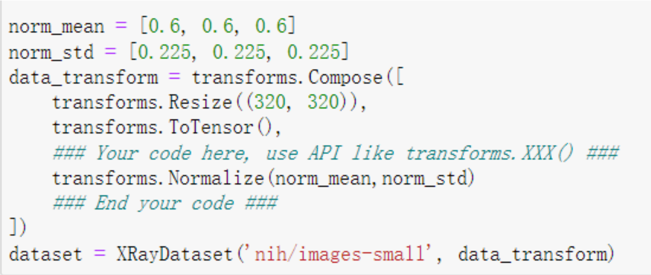
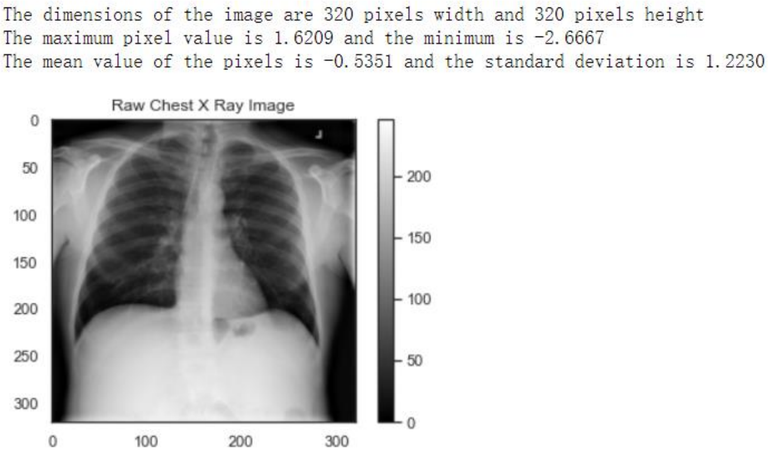


Figure 1 Distribution of Pixel Intensities for image[5]



```
norm_mean = [0.6, 0.6, 0.6]
norm_std = [0.225, 0.225, 0.225]
data_transform = transforms.Compose([
    transforms.Resize((320, 320)),
    transforms.ToTensor(),
    ### Your code here, use API like transforms.XXX() ###
    transforms.Normalize(norm_mean,norm_std)
    ### End your code ###
])
dataset = XRayDataset('nih/images-small', data_transform)
```

Figure 2 Code for Normalization



```
The dimensions of the image are 320 pixels width and 320 pixels height
The maximum pixel value is 1.6209 and the minimum is -2.6667
The mean value of the pixels is -0.5351 and the standard deviation is 1.2230
```

Figure 3 Image after Normalization

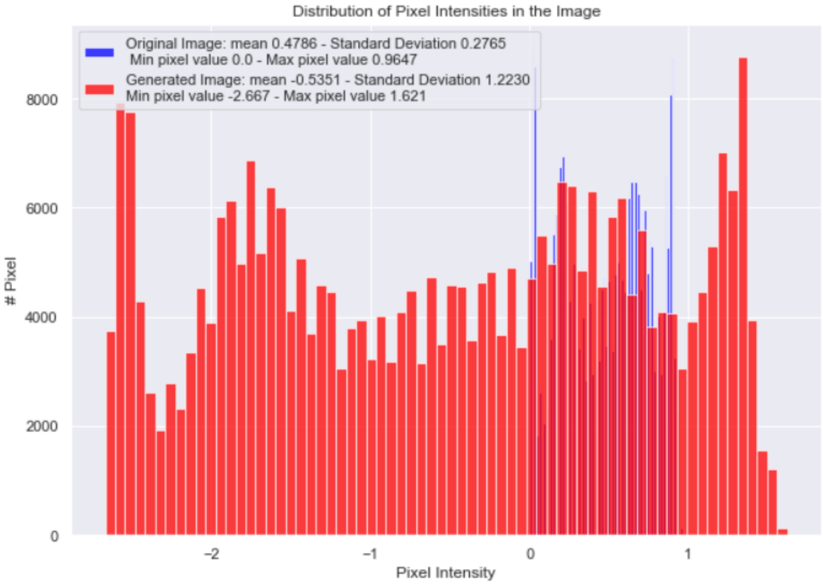


Figure 4 Distribution after Normalization

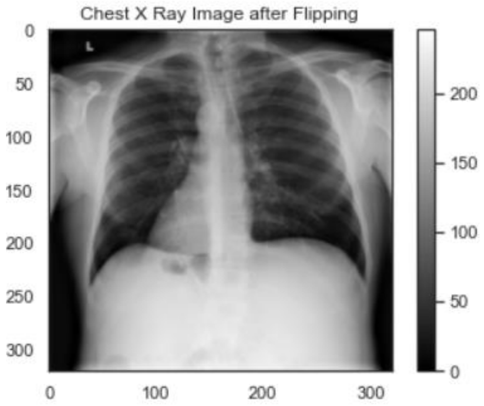


Figure 5 Image after Flipping

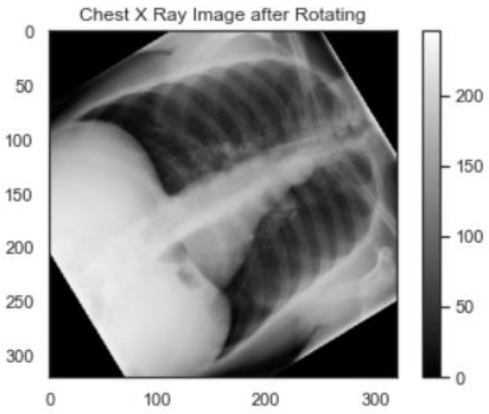


Figure 6 Image after Rotating

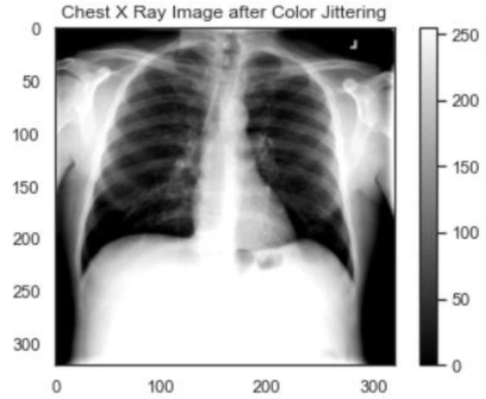


Figure 6 Image after Color Jittering

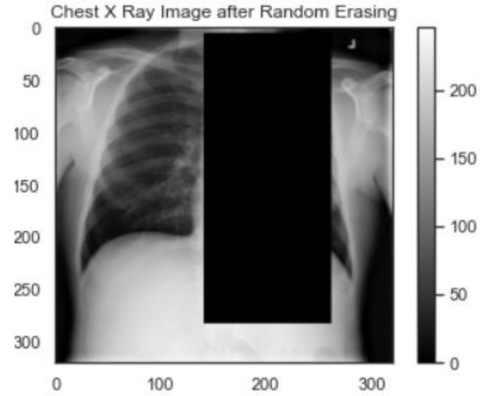


Figure 6 Image after Random Erasing