例 4.7 Python 程序代码

```
import random
import numpy as np
from tqdm import tqdm

# 平行线距离
D = 2
# 针的长度
L = 1
# 实验次数
exp_num = 100000000
# 触碰次数
touch_num = 0
for i in tqdm(range(1, exp_num+1)):
    X = random.uniform(0, D / 2)
    theta = random.uniform(0, np.pi / 2)
    if X < (L/2)*np.cos(theta):
        touch_num += 1
# 计算 π
P = touch_num/exp_num
print('π = {}'.format((2*L)/(P*D)))

"""
或者用下面的代码来实现
"""
import random
import numpy as np
from tqdm import tqdm

# 平行线距离
D = 2
# 针的长度
L = 1
# 实验次数
exp_num = 100000000
# 触碰次数
touch_num = 0
for i in tqdm(range(1, exp_num+1)):
    X = random.uniform(0, D / 2)
    theta = random.uniform(0, 5 / 2)
    if X < (L/2)*np.cos(theta):
        touch_num += 1
# 计算 π
P = touch_num/exp_num
```

```
print(' π = {}'.format((2*L)/(P*D)))
```