

# Jsteg/F3/F4

## Import & def funcs

In [6]:

```

import DCT
import numpy as np
from F4 import F4
from F3 import F3
from Jsteg import Jsteg
from plot import plotIt
import matplotlib.pyplot as plt

readData = False

def plotdct(obj, title):
    b = {0: 0, 1: 0, 2: 0, 3: 0, 4: 0, 5: 0, 6: 0, 7: 0, 8: 0, -
          1: 0, -2: 0, -3: 0, -4: 0, -5: 0, -6: 0, -7: 0, -8: 0}
    for i in obj:
        if i in b:
            b[i] += 1
    print(b)
    plotIt(b, title)

def plotDCT(obj, title):
    img = DCT.indct(obj.get_sequence_after_dct(), "tmp.png")

    f, arr = plt.subplots(1, 2)
    arr[0].imshow(DCT.img, cmap='gray')
    arr[0].set_title('origin')
    arr[1].imshow(img, cmap='gray')
    arr[1].set_title(title)
    plt.show()

    plotdct(obj.get_sequence_after_dct(), title)

def tobits(s):
    result = []
    for c in s:
        bits = bin(ord(c))[2:]
        bits = '00000000'[len(bits):] + bits
        result.extend([int(b) for b in bits])
    return result

def frombits(bits):
    chars = []
    for b in range(int(len(bits) / 8)):
        byte = int(bits[b*8:(b+1)*8])
        chars.append(chr(int(''.join([str(bit) for bit in byte]), 2)))
    return ''.join(chars)

```

## Define classes, load picture

In [7]:

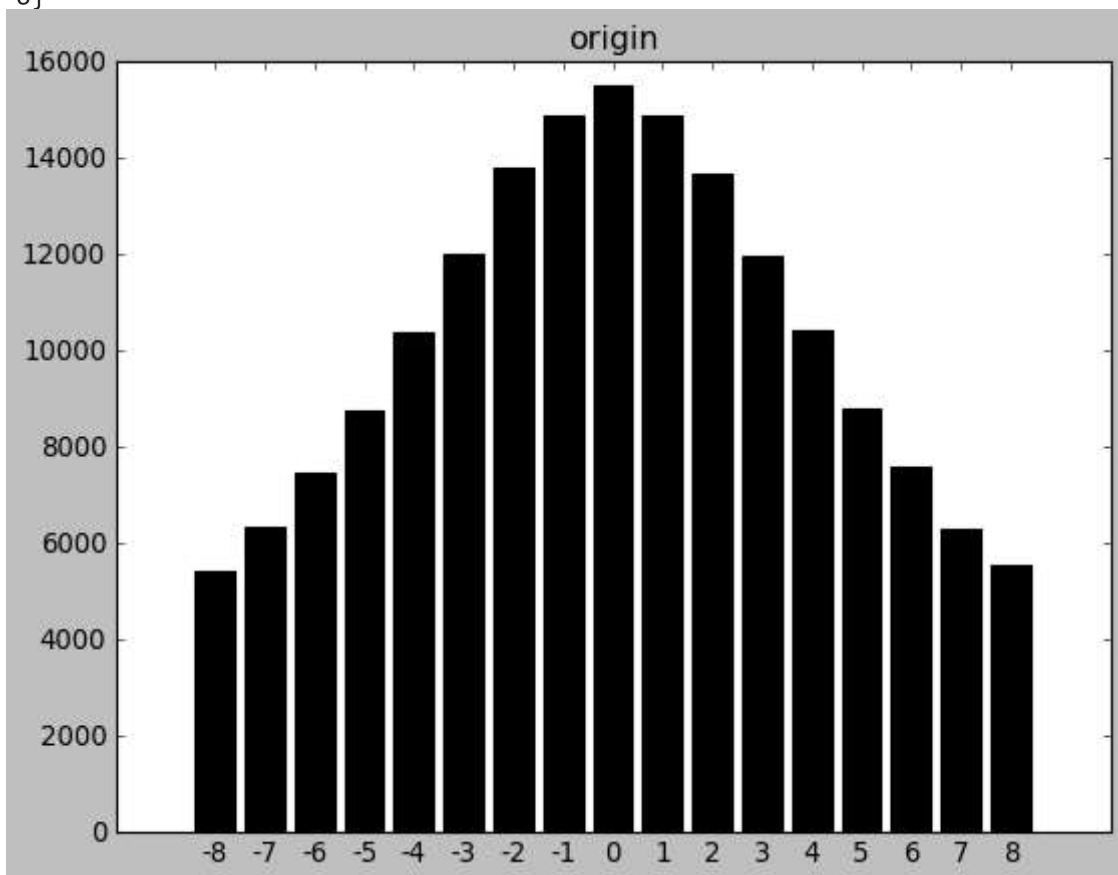
```
jsteg=Jsteg()
```

```
f3=F3()
f4=F4()
# 写
sequence_after_dct=DCT.load('a.jpeg')
jsteg.set_sequence_after_dct(sequence_after_dct)
f3.set_sequence_after_dct(sequence_after_dct)
f4.set_sequence_after_dct(sequence_after_dct)
a={0:0,1:0,2:0,3:0,4:0,5:0,6:0,7:0,8:0,-1:0,-2:0,-3:0,-4:0,-5:0,-6:0,-7:0,-8:0}
for i in sequence_after_dct:
    if i in a:
        a[i]+=1
print(a)
plotIt(a,"origin")
# info1=[0 for i in np.random.rand(200000)]
info1 = tobits('U201811662')
info1 = [int(i+0.5) for i in np.random.rand(200000)]
```

```
Load>> 可嵌入 216947 bits
Load>> 大约可嵌入 231812 bits
Load>> 最少可嵌入 216947 bits
```

```
Load>> 大约可嵌入 231812 bits
Load>> 最少可嵌入 216947 bits
```

```
{0: 15467, 1: 14868, 2: 13661, 3: 11951, 4: 10401, 5: 8793, 6: 7562, 7: 6268, 8: 5519, -1: 14862, -2: 13763, -3: 11966, -4: 10353, -5: 8738, -6: 7426, -7: 6317, -8: 5416}
```



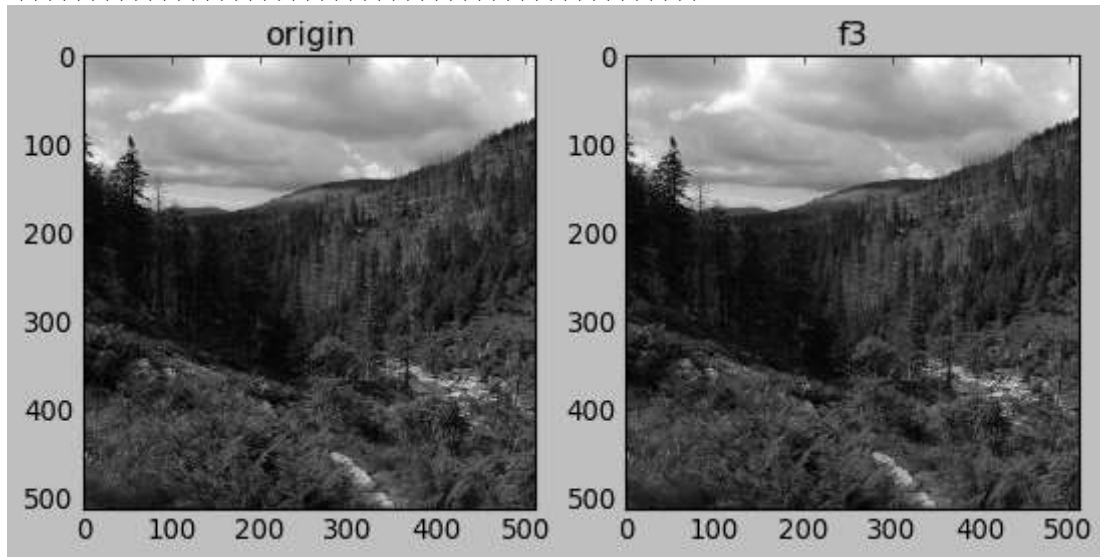
## Jsteg

[illegible]

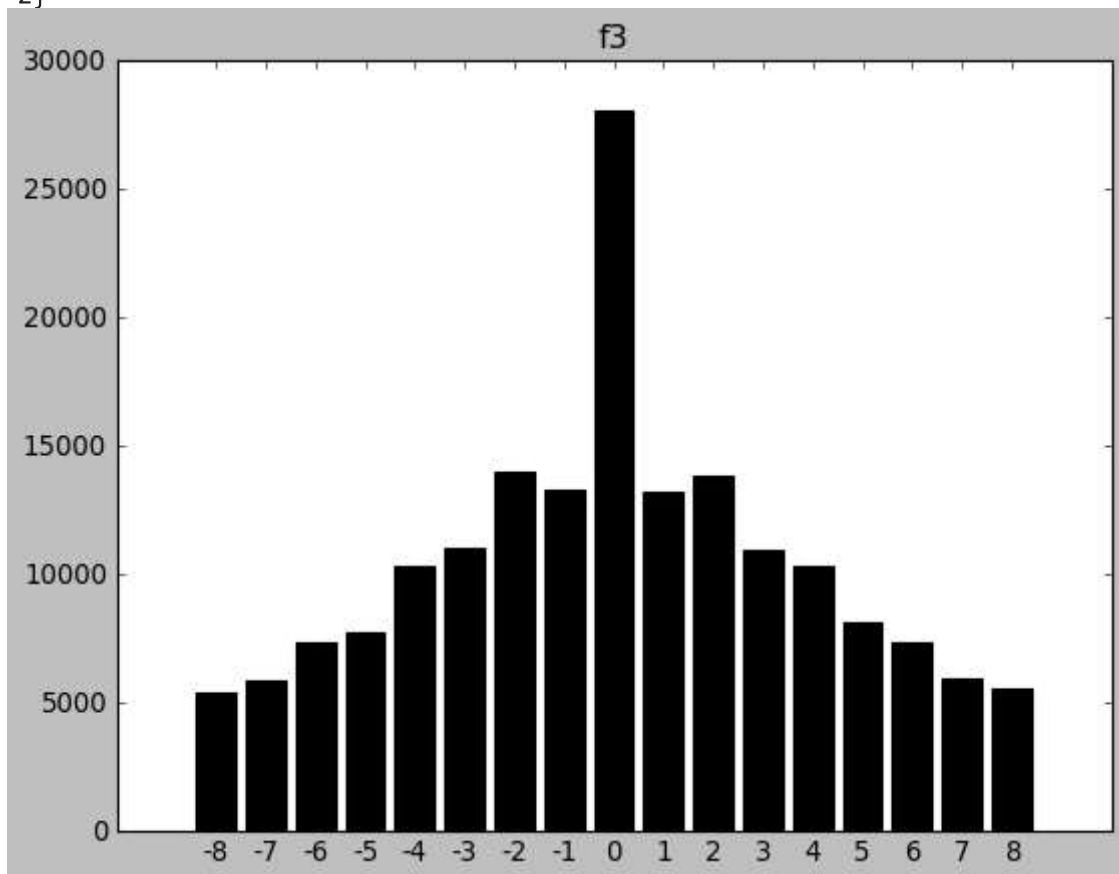


```
info3 = f3.read()
plotDCT(f3, "f3")
if readData:
    print("读取结果: ", frombits(info3))
```

```
F3steg begin writing!
```

[illegible]

```
{0: 28017, 1: 13175, 2: 13759, 3: 10865, 4: 10280, 5: 8083, 6: 7310, 7: 5866, 8: 5474, -1: 13247, -2: 13955, -3: 10942, -4: 10303, -5: 7724, -6: 7323, -7: 5832, -8: 5352}
```



**F4**

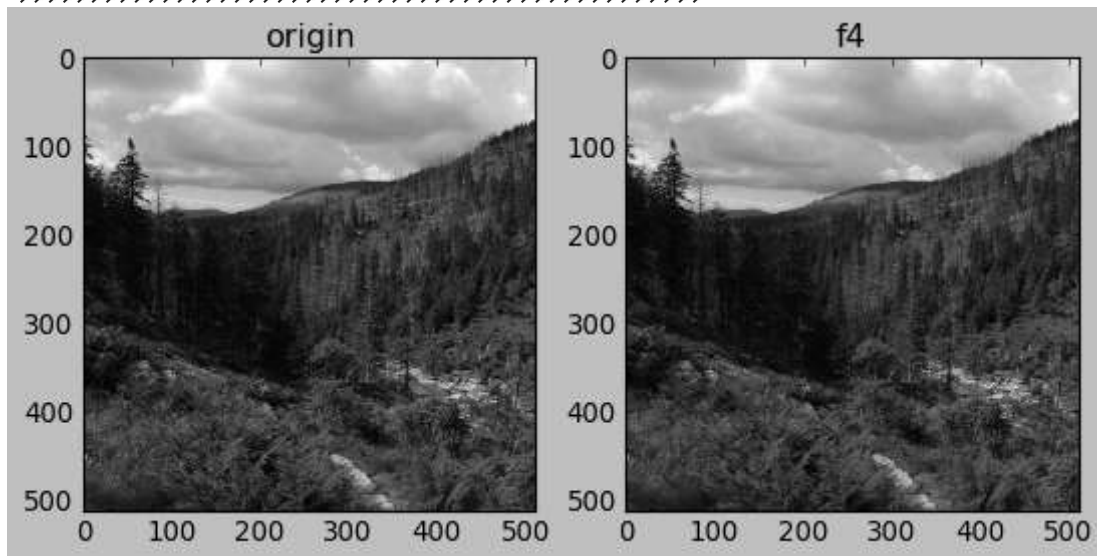
In [10]:

```
print("F4steg begin writing!")  
print(">>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>")  
f4.write(info1)  
DCT.indct(f4.get_sequence_after_dct(), "f4_out.png")  
if readData:
```

```
info4 = f4.read()
```

```
plotDCT(f4, "f4")  
# print("读取结果: ", frombits(info4))
```

```
F4steg begin writing!
```

[illegible]

```
{0: 38476, 1: 13862, 2: 12441, 3: 10884, 4: 9250, 5: 7919, 6: 6514, 7: 5805, 8: 4928, -1: 13932, -2: 12587, -3: 10845, -4: 9151, -5: 7726, -6: 6608, -7: 5679, -8: 4916}
```

