In [1]:
```
import numpy as np
from sklearn.cluster import KMeans
from scipy import misc
import matplotlib.pyplot as plt
```

In [2]:
```
face = misc.face(gray=True)
face.shape
```

Out[2]:
```
(768, 1024)
```

In [3]:
```
n_clusters = 5
## Reshaping the matrix to 1-dim
X = face.reshape((-1, 1))
X.shape
```

Out[3]:
```
(786432, 1)
```

In [4]:
```
X
```

Out[4]:
```
array([[114],
       [130],
       [145],
       ...,
       [142],
       [141],
       [140]], dtype=uint8)
```

In [5]:
```
k_Means = KMeans(n_clusters=n_clusters)
k_Means.fit(X)
```

Out[5]:
```
KMeans(algorithm='auto', copy_x=True, init='k-means++', max_iter=300,
       n_clusters=5, n_init=10, n_jobs=None, precompute_distances='auto',
       random_state=None, tol=0.0001, verbose=0)
```

In [6]:
```
k_Means.cluster_centers_
```

Out[6]:
```
array([[114.99362851],
       [ 27.62031146],
       [194.13840989],
       [ 75.41095451],
       [153.31393344]])
```

In [7]:
```
k_Means.labels_
```

Out[7]:
```
array([0, 0, 4, ..., 4, 4, 4])
```

In [8]:
```
## Reshaping the 2-dim array to 1-dim array
k_Means.cluster_centers_.squeeze()
```

Out[8]:
```
array([114.99362851,  27.62031146, 194.13840989,  75.41095451,
       153.31393344])
```

In [9]:
```
values = k_Means.cluster_centers_.squeeze()
labels = k_Means.labels_
```

In [10]:
```
face_compressed = np.choose(labels, values)
face_compressed.shape
```

Out[10]:
```
(786432,)
```

In [11]:
```
## Reshaping array to the original shape
face_compressed.shape = face.shape
```

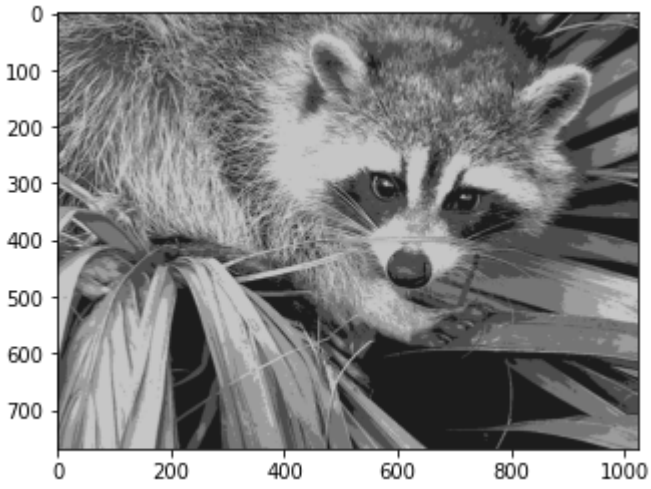
In [12]:
```
vmin = face.min()
vmax = face.max()
```

In [13]:
```
## Original face
plt.figure(1)
plt.imshow(face, cmap=plt.cm.gray, vmin=vmin, vmax=256)
```

Out[13]:
```
<matplotlib.image.AxesImage at 0x18d07121f08>
```

In [14]:
```
## Original face
plt.figure(1)
plt.imshow(face_compressed, cmap=plt.cm.gray, vmin=vmin, vmax=vmax)
```

Out[14]: <matplotlib.image.AxesImage at 0x18d0727b848>



In [ ]: