Tasks

1 - Load a color image and visualize each channel separately. Eg: 'baboon.png', 'chips.png', 'rgbcube_kbkg.png'

2 - Convert Between color spaces and Visualize each channel separately. ¶

```
NTSC (BGR2YCrCb)
HSV  (BGR2HSV)
CMYK
```

In [1]:

```python
import cv2
import matplotlib.pyplot as plt
import numpy as np
```

In [2]:

```python
def visualizeChannels(img, colors):
    for i, col in enumerate(colors):
        plt.subplot(1,len(colors),i+1)
        plt.title(col)
        plt.imshow(img[:,:,i], cmap='gray')
    plt.show()

def bgr_to_cmyk(img):
    b, g, r = cv2.split(img)
    C = 255 - r
    M = 255 - g
    Y = 255 - b
    K = np.minimum(C,M,Y)
    return cv2.merge((C, M, Y, K))
```

Task 1

```
PATH = '../../db/'
listimgs = ['rgbcube_kBKG.png', 'baboon.png', 'chips.png']
for curr in listimgs:
    currImg = cv2.imread(PATH + curr, cv2.IMREAD_COLOR)
    colors = ['Blue','Green','Red']
    visualizeChannels(currImg, colors)
```
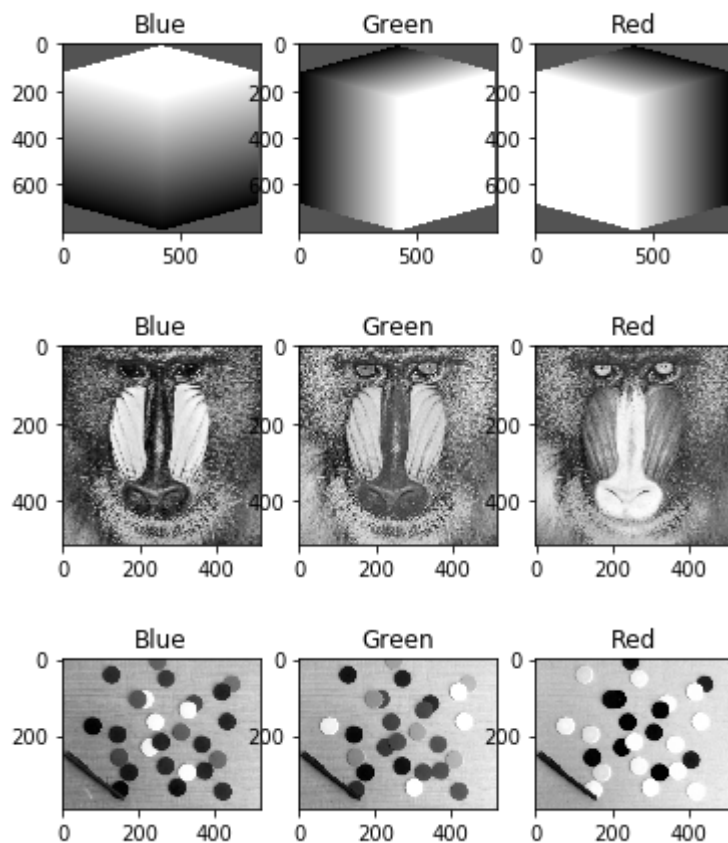

Task 2

```python
listimgs = ['rgbcube_kBKG.png', 'baboon.png', 'chips.png']
for curr in listimgs:

    imgBGR = cv2.imread(PATH + curr, cv2.IMREAD_COLOR)
    BGR = ['Blue','Green','Red']
    visualizeChannels(imgBGR, BGR)

    imgHSV = cv2.cvtColor(imgBGR, cv2.COLOR_BGR2HSV)
    HSV = ['Hue', 'Sat', 'Br']
    visualizeChannels(imgHSV, HSV)

    imgNTSC = cv2.cvtColor(imgBGR, cv2.COLOR_BGR2YCR_CB)
    NTSC = ['Y', 'Cr', 'Cb']
    visualizeChannels(imgNTSC, NTSC)

    imgCMYK = bgr_to_cmyk(imgBGR)
    CMYK = ['Cyan', 'Magenta', 'Yellow', 'Black']
    visualizeChannels(imgCMYK, CMYK)
```

Blue | Green | Red

Hue | Sat | Br

Y | Cr | Cb

Cyan | Magenta | Yellow | Black

Blue | Green | Red

Hue | Sat | Br

Y	Cr	Cb
Cyan	Magenta	Yellow	Black
Blue	Green	Red
Hue	Sat	Br
Y	Cr	Cb
Cyan	Magenta	Yellow	Black