20231121_HW9

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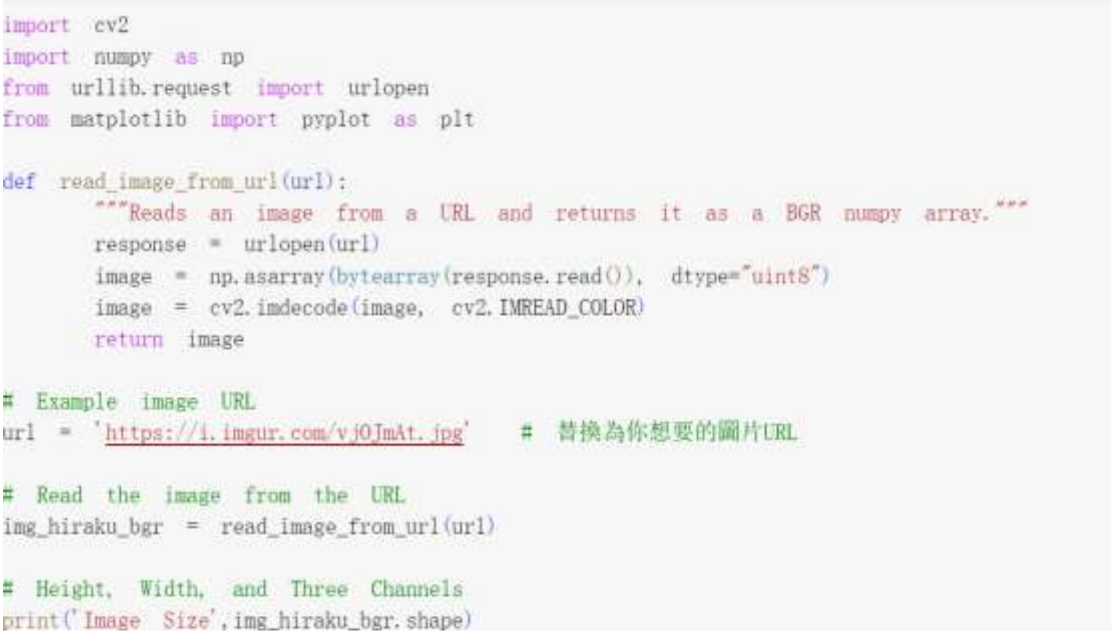
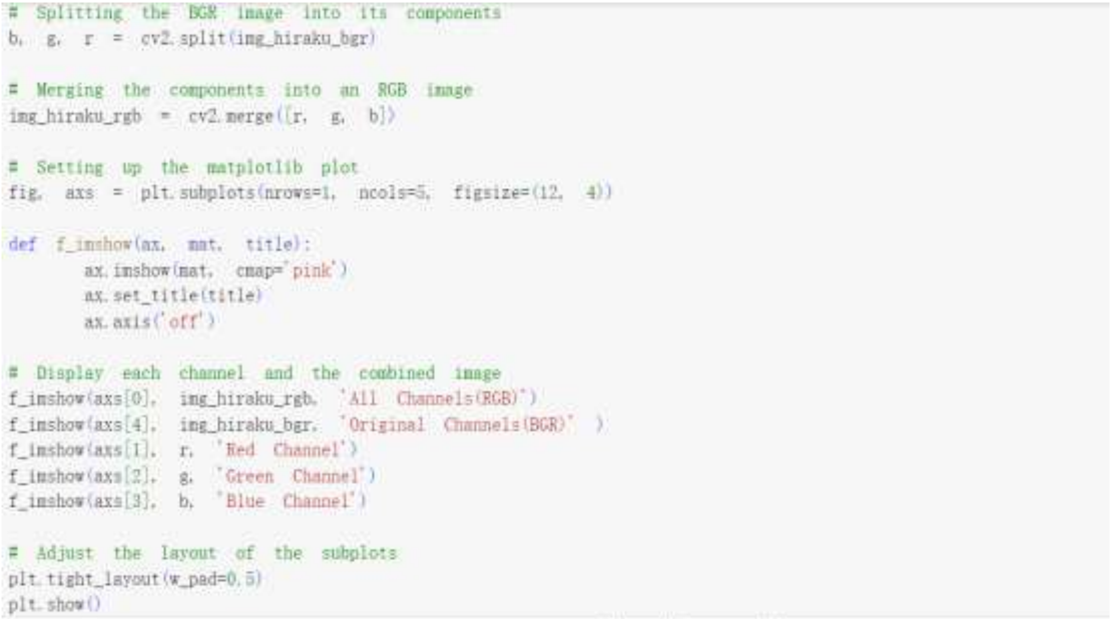
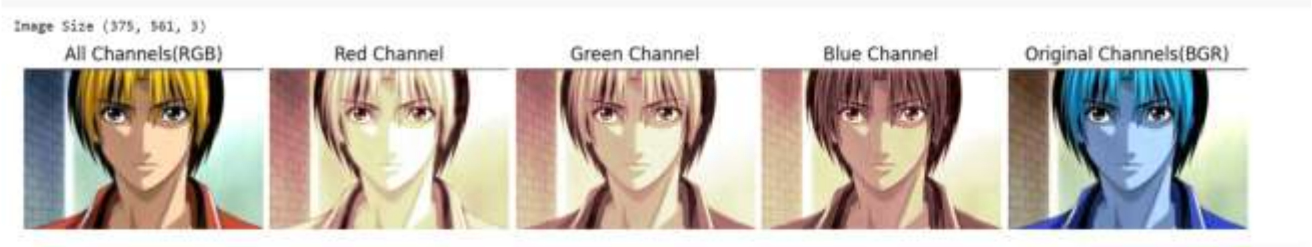


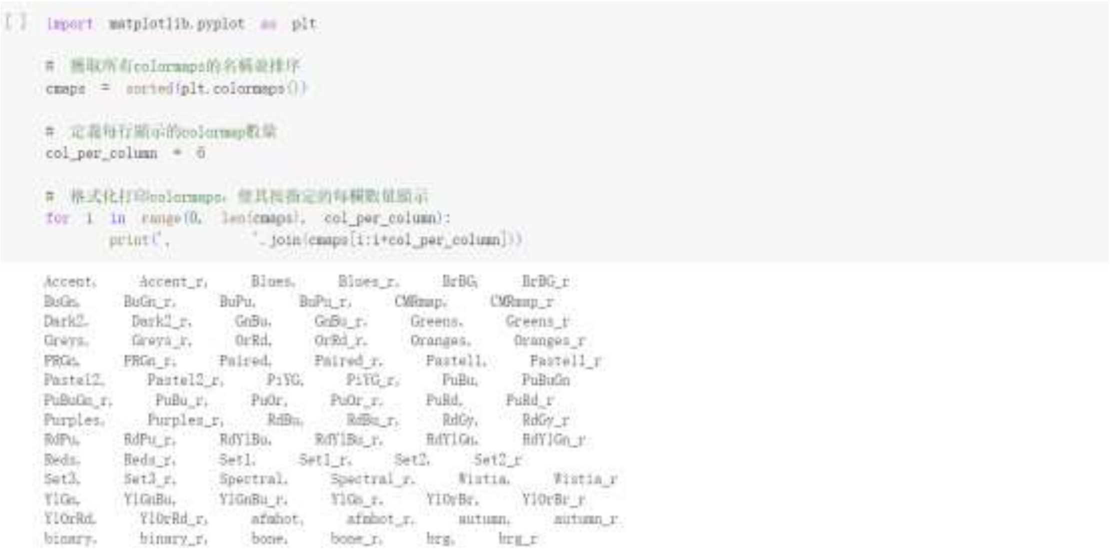
```
import cv2
import numpy as np
from urllib.request import urlopen
from matplotlib import pyplot as plt

def read_image_from_url(url):
        """Reads an image from a URL and returns it as a BGR numpy array."""
        response = urlopen(url)
        image = np.asarray(bytearray(response.read()), dtype="uint8")
        image = cv2.imdecode(image, cv2.IMREAD_COLOR)
        return image

# Example image URL
url = 'https://i.imgur.com/vjOJmAt.jpg'   # 替換為你想要的圖片URL

# Read the image from the URL
img_hiraku_bgr = read_image_from_url(url)

# Height, Width, and Three Channels
print('Image Size',img_hiraku_bgr.shape)
```



```
# Splitting the BGR image into its components
b, g, r = cv2.split(img_hiraku_bgr)

# Merging the components into an RGB image
img_hiraku_rgb = cv2.merge([r, g, b])

# Setting up the matplotlib plot
fig, axs = plt.subplots(nrows=1, ncols=5, figsize=(12, 4))

def f_imshow(ax, mat, title):
        ax.imshow(mat, cmap='pink')
        ax.set_title(title)
        ax.axis('off')

# Display each channel and the combined image
f_imshow(axs[0], img_hiraku_rgb, 'All Channels(RGB)')
f_imshow(axs[4], img_hiraku_bgr, 'Original Channels(BGR)' )
f_imshow(axs[1], r, 'Red Channel')
f_imshow(axs[2], g, 'Green Channel')
f_imshow(axs[3], b, 'Blue Channel')

# Adjust the layout of the subplots
plt.tight_layout(w_pad=0.5)
plt.show()
```

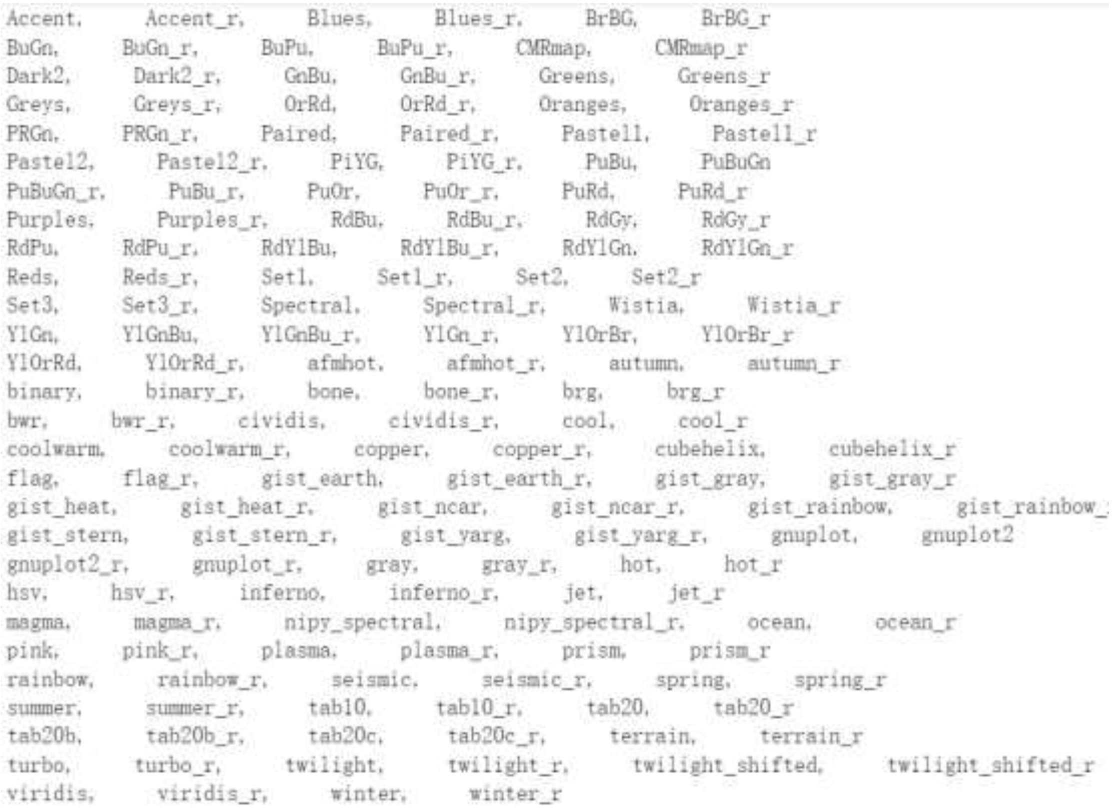


```
Image Size (375, 561, 3)
```



```
[ ]  import  matplotlib.pyplot  as  plt

     #  获取所有colormaps的名称并排序
     cmaps  =  sorted(plt.colormaps())

     #  定义每行显示的colormap数量
     col_per_column  =  6

     #  格式化打印colormaps，使其按指定的每列数量显示
     for  i  in  range(0,  len(cmaps),  col_per_column):
             print(',          '.join(cmaps[i:i+col_per_column]))
```

```
Accent,     Accent_r,     Blues,     Blues_r,     BrBG,     BrBG_r
BuGn,     BuGn_r,     BuPu,     BuPu_r,     CMRmap,     CMRmap_r
Dark2,     Dark2_r,     GnBu,     GnBu_r,     Greens,     Greens_r
Greys,     Greys_r,     OrRd,     OrRd_r,     Oranges,     Oranges_r
PRGn,     PRGn_r,     Paired,     Paired_r,     Pastel1,     Pastel1_r
Pastel2,     Pastel2_r,     PiYG,     PiYG_r,     PuBu,     PuBuGn
PuBuGn_r,     PuBu_r,     PuOr,     PuOr_r,     PuRd,     PuRd_r
Purples,     Purples_r,     RdBu,     RdBu_r,     RdGy,     RdGy_r
RdPu,     RdPu_r,     RdYlBu,     RdYlBu_r,     RdYlGn,     RdYlGn_r
Reds,     Reds_r,     Set1,     Set1_r,     Set2,     Set2_r
Set3,     Set3_r,     Spectral,     Spectral_r,     Wistia,     Wistia_r
YlGn,     YlGnBu,     YlGnBu_r,     YlGn_r,     YlOrBr,     YlOrBr_r
YlOrRd,     YlOrRd_r,     afmhot,     afmhot_r,     autumn,     autumn_r
binary,     binary_r,     bone,     bone_r,     brg,     brg_r
```



```
Accent,     Accent_r,     Blues,     Blues_r,     BrBG,     BrBG_r
BuGn,     BuGn_r,     BuPu,     BuPu_r,     CMRmap,     CMRmap_r
Dark2,     Dark2_r,     GnBu,     GnBu_r,     Greens,     Greens_r
Greys,     Greys_r,     OrRd,     OrRd_r,     Oranges,     Oranges_r
PRGn,     PRGn_r,     Paired,     Paired_r,     Pastel1,     Pastel1_r
Pastel2,     Pastel2_r,     PiYG,     PiYG_r,     PuBu,     PuBuGn
PuBuGn_r,     PuBu_r,     PuOr,     PuOr_r,     PuRd,     PuRd_r
Purples,     Purples_r,     RdBu,     RdBu_r,     RdGy,     RdGy_r
RdPu,     RdPu_r,     RdYlBu,     RdYlBu_r,     RdYlGn,     RdYlGn_r
Reds,     Reds_r,     Set1,     Set1_r,     Set2,     Set2_r
Set3,     Set3_r,     Spectral,     Spectral_r,     Wistia,     Wistia_r
YlGn,     YlGnBu,     YlGnBu_r,     YlGn_r,     YlOrBr,     YlOrBr_r
YlOrRd,     YlOrRd_r,     afmhot,     afmhot_r,     autumn,     autumn_r
binary,     binary_r,     bone,     bone_r,     brg,     brg_r
bwr,     bwr_r,     cividis,     cividis_r,     cool,     cool_r
coolwarm,     coolwarm_r,     copper,     copper_r,     cubehelix,     cubehelix_r
flag,     flag_r,     gist_earth,     gist_earth_r,     gist_gray,     gist_gray_r
gist_heat,     gist_heat_r,     gist_ncar,     gist_ncar_r,     gist_rainbow,     gist_rainbow_
gist_stern,     gist_stern_r,     gist_yarg,     gist_yarg_r,     gnuplot,     gnuplot2
gnuplot2_r,     gnuplot_r,     gray,     gray_r,     hot,     hot_r
hsv,     hsv_r,     inferno,     inferno_r,     jet,     jet_r
magma,     magma_r,     nipy_spectral,     nipy_spectral_r,     ocean,     ocean_r
pink,     pink_r,     plasma,     plasma_r,     prism,     prism_r
rainbow,     rainbow_r,     seismic,     seismic_r,     spring,     spring_r
summer,     summer_r,     tab10,     tab10_r,     tab20,     tab20_r
tab20b,     tab20b_r,     tab20c,     tab20c_r,     terrain,     terrain_r
turbo,     turbo_r,     twilight,     twilight_r,     twilight_shifted,     twilight_shifted_r
viridis,     viridis_r,     winter,     winter_r
```