

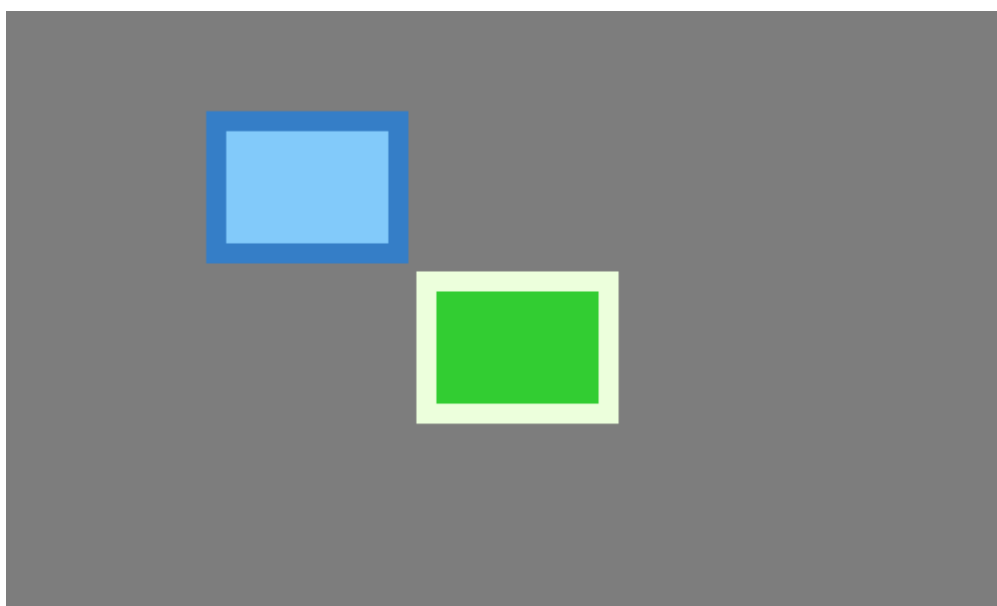
```
In [1]: from IPython.display import Image as dis_image
        from IPython.display import display
        from PIL import Image, ImageDraw
        import numpy as np
```

14.1. Доорх зургуудийг Pil ашиглан зур.

```
In [2]: img = Image.new('RGB', (500, 300), (125, 125, 125))
        draw = ImageDraw.Draw(img)

        draw.rectangle((100, 50, 200, 125), fill=(130, 202, 250), outline=(53, 126, 199),
        draw.rectangle((205, 130, 305, 205), fill=(50, 205, 50), outline=(236, 255, 220),

        display(img)
```



14.2. Доорх зургуудийг Thumbnails болгож, хооронд 2 хос үүсгэж нэгтгэ.

```
In [3]: image1 = Image.open('./assets/images/cat.jpg')
image2 = Image.open('./assets/images/dog.jpg')
image3 = Image.open('./assets/images/horse.jpg')
image1 = image1.resize((426, 240))
image2 = image2.resize((426, 240))
image3 = image3.resize((426, 240))
image1_size = image1.size
image2_size = image2.size
image3_size = image3.size
new_image1 = Image.new('RGB', (2*image1_size[0], image1_size[1]), (250,250,250))
new_image1.paste(image1, (0,0))
new_image1.paste(image2, (image1_size[0],0))
new_image1.save("./assets/images/merged_image.jpg", "JPEG")
new_image2 = Image.new('RGB', (2*image1_size[0], image1_size[1]), (250,250,250))
new_image2.paste(image1, (0,0))
new_image2.paste(image3, (image1_size[0],0))
new_image2.save("./assets/images/merged_image.jpg", "JPEG")
display(new_image2)
```



14.3. Дурын JPG зураг оруулж, зургийн өргөтгөлийг PNG болгон өөрчил.

```
In [4]: img = Image.open(r'./assets/images/test.jpg')  
img.save(r'./assets/images/test.png')  
display(dis_image(filename='./assets/images/test.png'))
```



#### 14.4. Монгол улсын төрийг далбайг Numpy массив ашиглан бүтээ.

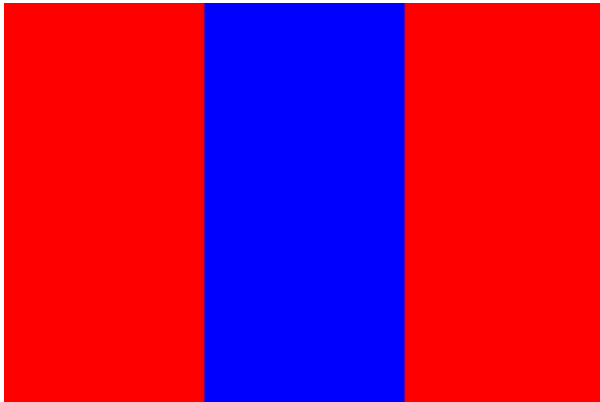
```
In [5]: items = np.array([[200, 100, 3],[200, 100, 3],[200, 100, 3]])

arr = [np.zeros(items[0], dtype=np.uint8), np.zeros(items[1], dtype=np.uint8), np.zeros(items[2], dtype=np.uint8)]

arr[0][::] = [255, 0, 0]
arr[1][::] = [0, 0, 255]
arr[2][::] = [255, 0, 0]

img1 = Image.fromarray(arr[0])
img2 = Image.fromarray(arr[1])
img3 = Image.fromarray(arr[2])
img = Image.new('RGB', (300, 200), (255,255,255))
img.paste(img1, (0, 0))
img.paste(img2, (100, 0))
img.paste(img3, (200, 0))

display(img)
```



In [ ]: