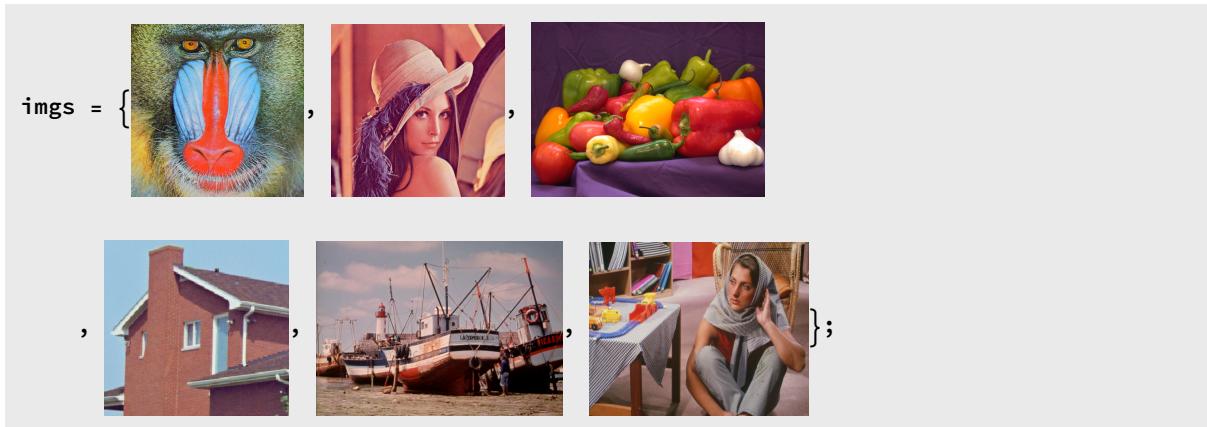


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# Homework 01 : Img2Gray, Gray2Bin

## Load Image



## Convert image to grayscale

```
In[1]:= ImgToGray[img_, weight_] := Module[{dim, grayData, imgData},
  dim = ImageDimensions[img];
  imgData = ImageData[img, "Byte"];
  grayData = Table[
    Dot[weight, imgData[[i, j, {1, 2, 3}]]],
    {i, dim[[2]]}, {j, dim[[1]]}];
  Return[grayData];
]
```

```
In[2]:= grayImg = Table[ImgToGray[img, {0.3, 0.59, 0.11}], {img, imgs}];
```

```
In[④]:= GraphicsGrid[
  ArrayReshape[
    Table[
      Image[grayImg, "Byte"]
    , {grayImg, grayImgss}]
  , {2, 3}]
]
```

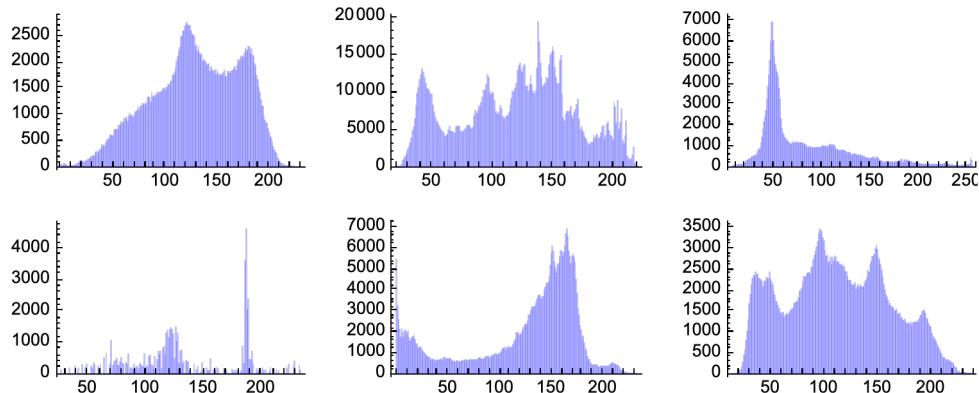
Out[④]=



## Plot histogram of gray intensity

```
In[⑤]:= GraphicsGrid[
  ArrayReshape[
    Table[
      Histogram[Flatten[grayImg, 1], {1}, ChartStyle -> {Opacity[.25, Blue]}]
    , {grayImg, grayImgss}]
  , {2, 3}]
]
```

Out[⑤]=



## Convert grayscale image to binary image

```
In[1]:= GrayToBin[img_, thres_] := Module[{dim},
  dim = Dimensions[img];
  Return[
    Table[If[img[[i, j]] > thres, 1, 0], {i, dim[[1]]}, {j, dim[[2]]}]
  ];
]
```

```
In[2]:= threshold = {150, 130, 80, 120, 150, 130};
binImg = Table[GrayToBin[grayImg[i]], threshold[[i]]], {i, Length[threshold]}];
```

```
In[3]:= GraphicsGrid[
  ArrayReshape[
    Table[
      Image[binImg]
    , {binImg, binImg}]
  , {2, 3}]
]
```

Out[3]=

