Live Editor/Code Demonstration

1. The below code copies images from MATLAB's default image directory and places them in the directory of your script.
2. Taking the **colour** image, the code splits it into the three channels (Red channel, Green channel, and Blue channel) that make up the colour image.
3. The three channels, as well as the sum of the 3 channels are plotted.
4. We do this with another image. But we download the image from the web!

Copying images from MATLAB's image repository

```
% Create director called sample_images and
% Copy all the sample MATLAB images into it
sampImgDir = 'sample_images'; % directory of sample images
if ~exist(sampImgDir,'dir')
    mkdir(sampImgDir);
end
copyfile(fullfile(matlabroot, 'toolbox/images/imdata', '*.*'), sampImgDir, 'f')
```

Read an image from the copied images!

```
% Declare variables
sampImgDir = 'sample_images'; % directory of sample images
filenameImgC = fullfile(sampImgDir, 'autumn.tif'); % image filename
imgC = imread(filenameImgC); % read an image
```

Get and print image size

```
% Get the image size and print.
imSize = [size(imgC,1) size(imgC,2)];
fprintf("Image size is %d by %d pixels.", imSize(1), imSize(2))
```

```
Image size is 206 by 345 pixels.
```

Get individual image RGB components and plot them, as well as the image

```
% Get pure RGB components of an image
imgCR = imgC(:,:,1); % Red
imgCG = imgC(:,:,2); % Green
imgCB = imgC(:,:,3); % Blue

figure;
% Transform each component back into a 3D array
imgCRImg = cat(3,imgCR, zeros(imSize, 'uint8'), zeros(imSize, 'uint8')); % how to use c
imgCGImg = cat(3, zeros(imSize, 'uint8'), imgCG, zeros(imSize, 'uint8'));
imgCBImg = cat(3, zeros(imSize, 'uint8'), zeros(imSize, 'uint8'), imgCB);
```

```
% Plot each channel (RGB)
subplot(131); imshow(imgCRImg); title('Red');
subplot(132); imshow(imgCGImg); title('Green');
subplot(133); imshow(imgCBImg);  title('Blue');
```


```
% Combine the channels to form the colour image
figure; imshow(imgCRImg+imgCGImg+imgCBImg);   title('Original Image');
```

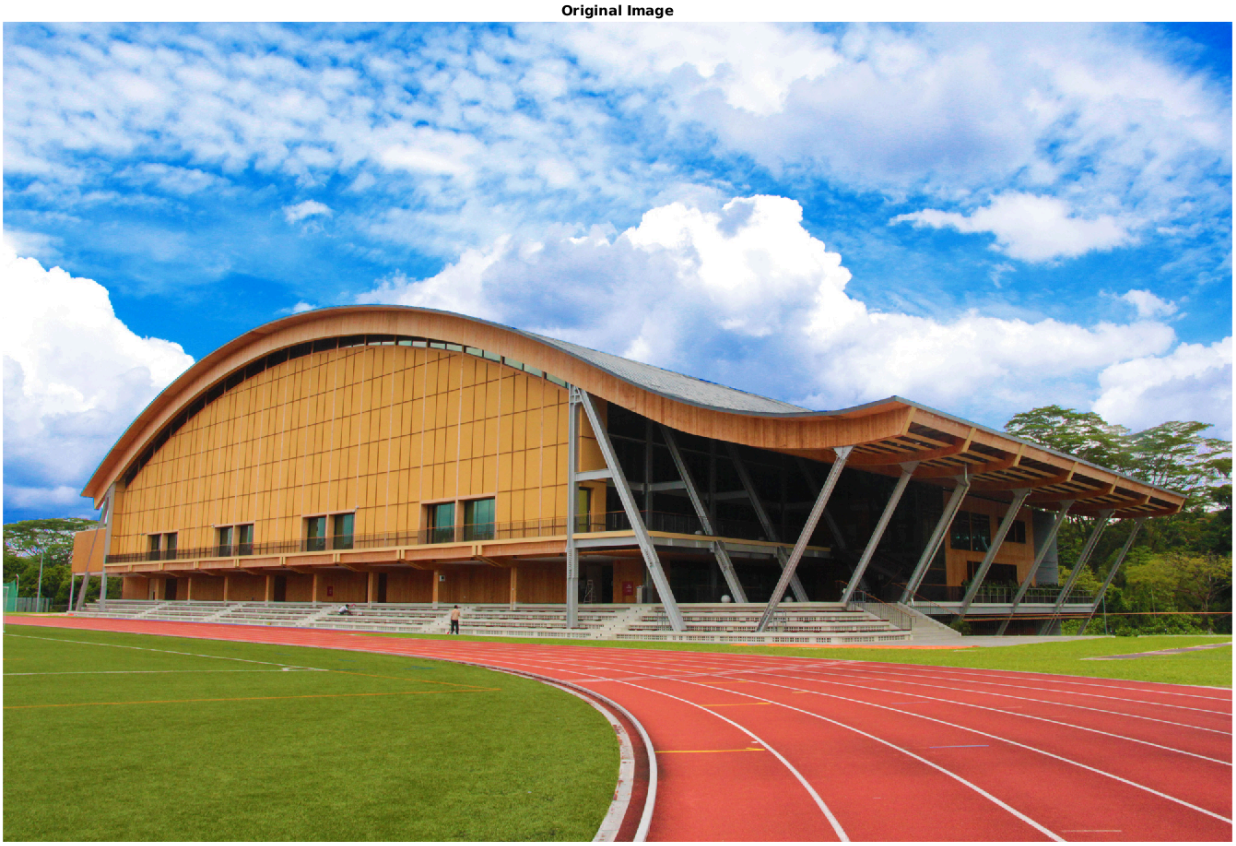
Do the same with another example we will download from the internet!

```
% Another example!
sampImgDir = 'sample_images'; % directory of sample images
url_img = 'https://www.binderholz.com/uploads/tx_frsupersized/NTU-IMG_1725_copy-gross_
url_img_2 = 'https://archinect.imgix.net/uploads/ob/obz8qmquri6zx24a.jpg?auto=compress%
url_img_3 = 'https://images.pexels.com/photos/325044/pexels-photo-325044.jpeg?auto=comp
filenameImg = fullfile(sampImgDir, 'img.jpeg'); % image filename
% Download image
urlwrite(url_img, filenameImg);
% Read the image
img = imread(filenameImg); % read an image

% Plot the RGB components in greyscale
figure;
subplot(131); imshow(img(:,:,1));  title('Red Intensity');
subplot(132); imshow(img(:,:,2));  title('Green Intensity');
subplot(133); imshow(img(:,:,3));  title('Blue Intensity');
```


```
figure; imshow(img);  title('Original Image');
```

Original Image



```
Warning: Image is too big to fit on screen; displaying at 67%
```