Question 3

Read, open, and display an image file

```
close all;clear; clc;
filename = uigetfile({'*.jpg;*.tif;*.png;*.gif;*.pgm','All Image
 Files';...
            '*.*','All Files' },'Pick an Image File');
imshow(filename)
```


Report ColorType of image file

```
info = imfinfo(filename);
type = info.ColorType;
stringType = sprintf('The type is %s. \n', type);
disp(stringType)
```

The type is grayscale.

Convert image to grayscale if needed.

```matlab
grayImage = imread(filename);
```

Get the dimensions of the image. numberOfColorBands should be = 1.

```matlab
[rows, columns, numberOfColorChannels] = size(grayImage);
if numberOfColorChannels > 1
```

Image is not grayscale Convert it to grayscale by taking only the green channel.

```matlab
 filename = grayImage(:, :, 2); % Take green channel.
    disp('Converting to Grayscale')

end
```

Display maximum gray level values

```matlab
maxGrayLevel = max(filename(:));
intMax = sprintf('The maximum gray level is %d. \n', maxGrayLevel);
disp(intMax)
```

The maximum gray level is 116.

Display minimum gray level values

```matlab
minGrayLevel = min(filename(:));
intMin = sprintf('The minimum gray level is %d. \n', minGrayLevel);
disp(intMin)
```

The minimum gray level is 46.

Display average gray level values

```matlab
avgGrayLevel = mean(filename(:));
floatAvg = sprintf('The average gray level is %f. \n', avgGrayLevel);
disp(floatAvg)
```

The average gray level is 80.272727.

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