```matlab
% Image Quantization Process

% Step 1: Read the image
img = imread('apple.png');

% Step 2: Convert the image to grayscale (if it's not already grayscale)
if size(img, 3) == 3 % Check if the image has 3 channels (RGB)
    img_gray = rgb2gray(img); % Convert to grayscale
else
    img_gray = img; % Already grayscale
end

% Step 3: Normalize the grayscale image to range between 0 and 1
% Convert to double and normalize
img_gray_normalized = double(img_gray) / 255;

% Step 4: Quantize the image to 32 grayscale levels
% Multiply by 31 to get values 0-31, then floor to get integer values
% Use imresize to maintain original dimensions (effectively performing
quantization)
quantized_img = imresize(floor(img_gray_normalized * 31), [size(img_gray,
1), size(img_gray, 2)]);

% Step 5: Scale the quantized image back to 0-255 range for display
quantized_img = uint8(quantized_img * (255 / 31));

% Step 6: Display the original and quantized images
figure;
subplot(1, 2, 1), imshow(img_gray), title('Original Grayscale Image');
subplot(1, 2, 2), imshow(quantized_img), title('Quantized Image (32
Levels)');
```

Original Grayscale Image **Quantized Image (32 Levels)**