```
% Use imread to load the image and convert it to grayscale using rgb2gray
(if the image is in RGB format).
im = imread('tint1.jpg');
im_gray = rgb2gray(im);
im_gray = double(im_gray);% Convert to double for intensity manipulation
```

```
% Apply imresize to Reduce Resolution: Use imresize to resize the image down
and back up. This step simulates a pixelation effect,
% reducing the resolution and then scaling it back to the original size
using nearest-neighbor interpolation.
% Effective resolutions of 64x64, 32x32, 16x16, and 8x8 are calculated.
im_64 = imresize(imresize(im_gray, 1/4), 4, 'nearest');  % Effective
resolution: 64x64
im_32 = imresize(imresize(im_gray, 1/8), 8, 'nearest');  % Effective
resolution: 32x32
im_16 = imresize(imresize(im_gray, 1/16), 16, 'nearest');  % Effective
resolution: 16x16
im_8 = imresize(imresize(im_gray, 1/32), 32, 'nearest');  % Effective
resolution: 8x8
```

```
% Quantize the Grayscale Levels: Normalize the grayscale values to a range
between 0 and 1.
% Multiply the normalized image by 31 to map the pixel values into 32
grayscale levels.
% Round the values and rescale back to the original 0-255 range for proper
display.
% Normalize the grayscale image to range between 0 and 1
im_normalized = im_gray / 255;
```

```
% Quantize to 32 levels by multiplying the normalized image by 31 and
rounding
quantized_im = round(im_normalized * 31);  % Quantized to 32 levels (0-31)
```

```
% Scale the quantized image back to the 0-255 range for display
quantized_im = uint8(quantized_im * (255/31));
```

```
% Display the original and quantized images
figure;
subplot(1, 2, 1), imshow(uint8(im_gray)), title('Original');
subplot(1, 2, 2), imshow(quantized_im), title('Quantized to 32 Levels');
```

Original

Quantized to 32 Levels