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% Step 1: Read the image
I = imread('Images/City.jpg');
% Step 2: Convert to grayscale if necessary
if size(I, 3) == 3
    I = rgb2gray(I);
end

% Step 3: Normalize the image
I_normalized = double(I) / 255;

% Step 4: Create a quantization map to 32 levels
n_levels = 32; % Number of grayscale levels
I_quantized = round(I_normalized * (n_levels - 1)); % Scale to [0, 31]

% Step 5: Rescale the image back to the [0, 1] range
I_quantized = I_quantized / (n_levels - 1); % Scale back to [0, 1]

% Step 6: Display the results
figure;

subplot(1, 2, 1);
imshow(I_normalized);
title('Original Grayscale Image');

subplot(1, 2, 2);
imshow(I_quantized);
title('Quantized Image to 32 Levels');

```

Original Grayscale Image



Quantized Image to 32 Levels

