```
% Step 1: Loading the image
img = imread('img1.jpeg');
img_gray = rgb2gray(img); % Convert to grayscale

% Step 2: Defining the scaling factor
num_levels = 32; % Number of grayscale levels
scale_factor = 255 / (num_levels - 1); % Scaling factor for quantization

% Step 3: Resizing the image to create a reduced resolution version
% Here, we downsample by a factor (e.g., 1/8) to reduce the number of
distinct values.
downsampled_img = imresize(img_gray, 1/8);

% Step 4: Resizing back to original dimensions
resized_img = imresize(downsampled_img, size(img_gray));

% Step 5: Quantizing the image to 32 levels
quantized_img = floor(double(resized_img) / scale_factor) * scale_factor;

% Displaying the original and quantized images
figure;
subplot(1, 2, 1);
imshow(img_gray);
title('Original Grayscale Image');

subplot(1, 2, 2);
imshow(uint8(quantized_img)); % Converting back to uint8 for displaying
title('Quantized Image to 32 Levels');
```

Original Grayscale Image

Quantized Image to 32 Levels