```
% Phase 1: Load the input image and convert it to grayscale
input_image = imread('dog.jpg');
grayscale_image = rgb2gray(input_image);  % Convert to grayscale if it's RGB

% Phase 2: Normalize the grayscale image to the range [0, 1]
normalized_image = double(grayscale_image) / 255;

% Phase 3: Quantize the image to 32 grayscale levels using imresize
% We will use imresize to reduce the number of intensity levels
% First, resize the image to a smaller "quantized" version
downscale_factor = 1/8;  % Since 32 levels of grayscale is 2^5, we use a
factor of 1/8
quantized_image_downscaled = imresize(normalized_image, downscale_factor,
'nearest');

% Phase 4: Resize back to the original size to complete the quantization
process
quantized_image_upscaled = imresize(quantized_image_downscaled,
[size(grayscale_image, 1), size(grayscale_image, 2)], 'nearest');

% Phase 5: Convert the quantized image back to 32 grayscale levels in [0,
255] range
quantized_image = uint8(quantized_image_upscaled * 255);

% Phase 6: Display the original and quantized images
figure;
subplot(1, 2, 1), imshow(grayscale_image), title('Original Grayscale
Image');
subplot(1, 2, 2), imshow(quantized_image), title('Quantized Image (32
levels)');
```

Original Grayscale Image

Quantized Image (32 levels)