```matlab
function H=ComputeRGBHistogram(img,Q)

% INPUT: img, an RGB image where pixels have RGB values in range 0-255
% INPUT: Q, the level of quantization of the RGB space e.g. 4

% First, create qimg, an image where RGB are normalised in range 0 to (Q-1)
% We do this by dividing each pixel value by 256 (to give range 0 - just
% under 1) and then multiply this by Q, then drop the decimal point.

qimg=double(img)./256;
qimg=floor(qimg.*Q);

% Now, create a single integer value for each pixel that summarises the
% RGB value.  We will use this as the bin index in the histogram.

bin = qimg(:,:,1)*Q^2 + qimg(:,:,2)*Q^1 + qimg(:,:,3);

% 'bin' is a 2D image where each 'pixel' contains an integer value in
% range 0 to Q^3-1 inclusive.

% We will now use Matlab's hist command to build a frequency histogram
% from these values.  First, we have to reshape the 2D matrix into a long
% vector of values.

vals=reshape(bin,1,size(bin,1)*size(bin,2));

% Now we can use hist to create a histogram of Q^3 bins.

H = hist(vals,Q^3);

% It is convenient to normalise the histogram, so the area under it sum
% to 1.

H = H ./sum(H);
```