```matlab
%Code Written by Soham Roy

clc;
clear;
close all;

% Read and convert the image to grayscale
img = imread('test.jpg');
if size(img, 3) == 3
    img = rgb2gray(img); % Convert to grayscale if image is RGB
end
img = double(img);

% Initialize variables
pixel_values = (0:255)';
total_pixels = numel(img);

% Compute histogram and probabilities
histogram = histcounts(img(:), 256);
probabilities = histogram / total_pixels;

% Remove zero probabilities and corresponding pixel values
nonzero_mask = probabilities > 0;
probabilities = probabilities(nonzero_mask);
pixel_values = pixel_values(nonzero_mask);

% Sort probabilities in descending order
[probabilities, sort_idx] = sort(probabilities, 'descend');
pixel_values = pixel_values(sort_idx);

% Initialize codes cell array
codes = cell(length(probabilities), 1);

% Generate Shannon-Fano codes
codes = shannon_fano_encoding(probabilities, 1, length(probabilities), codes);

% Create encoding dictionary
encoding_dict = containers.Map('KeyType', 'double', 'ValueType', 'char');
for i = 1:length(pixel_values)
    encoding_dict(double(pixel_values(i))) = codes{i};
end

% Display results
disp('Shannon-Fano Encoding Results:');
disp('----------------------------');
fprintf('Pixel Value | Probability | Code\n');
disp('----------------------------');
for i = 1:length(pixel_values)
    fprintf('%11d | %10.6f | %s\n', pixel_values(i), probabilities(i), codes{i});
end

% Shannon-Fano encoding function
function codes = shannon_fano_encoding(probabilities, start_idx, end_idx, codes)
    if start_idx >= end_idx
        return;
    end

    % Find splitting point
    total_prob = sum(probabilities(start_idx:end_idx));
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    current_sum = 0;
    split_idx = start_idx;

    for i = start_idx:end_idx
        current_sum = current_sum + probabilities(i);
        if current_sum >= total_prob/2
            split_idx = i;
            break;
        end
    end

    % Assign codes
    for i = start_idx:split_idx
        codes{i} = [codes{i} '0'];
    end
    for i = (split_idx+1):end_idx
        codes{i} = [codes{i} '1'];
    end

    % Recursive calls
    codes = shannon_fano_encoding(probabilities, start_idx, split_idx, codes);
    codes = shannon_fano_encoding(probabilities, split_idx+1, end_idx, codes);
end
```

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Shannon-Fano Encoding Results:
-------------------------------
Pixel Value | Probability | Code
-------------------------------
        5 |   0.268259 | 00
        4 |   0.116529 | 0100
        6 |   0.012268 | 0101
       25 |   0.012241 | 0110000
       21 |   0.011907 | 0110001
       24 |   0.011523 | 011001
       26 |   0.011504 | 011010
       22 |   0.010811 | 011011
       27 |   0.010296 | 0111000
       20 |   0.009889 | 0111001
       28 |   0.009148 | 011101
       23 |   0.008641 | 0111100
       30 |   0.006545 | 0111101
       31 |   0.006300 | 011111
       19 |   0.006289 | 10000000
       29 |   0.006216 | 10000001
       53 |   0.006179 | 1000001
       34 |   0.005839 | 10000100
       33 |   0.005710 | 10000101
        7 |   0.005700 | 1000011
       32 |   0.005618 | 10001000
       35 |   0.005529 | 10001001
       49 |   0.005358 | 1000101
       48 |   0.005324 | 1000110
       43 |   0.005323 | 1000111
       40 |   0.005313 | 10010000
       38 |   0.005313 | 10010001
       55 |   0.005249 | 1001001
       42 |   0.005232 | 10010100
       41 |   0.005232 | 10010101
       50 |   0.005196 | 1001011
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 36 |   0.005110 | 10011000
 56 |   0.005068 | 10011001
 45 |   0.005001 | 1001101
 44 |   0.004977 | 10011100
 37 |   0.004959 | 10011101
 47 |   0.004942 | 1001111
 39 |   0.004896 | 10100000
 61 |   0.004846 | 10100001
 57 |   0.004823 | 10100010
 62 |   0.004601 | 10100011
 51 |   0.004551 | 10100100
 54 |   0.004483 | 10100101
 63 |   0.004416 | 1010011
 18 |   0.004373 | 10101000
 58 |   0.004274 | 10101001
 59 |   0.004237 | 10101010
 46 |   0.004216 | 10101011
 52 |   0.004048 | 10101100
 60 |   0.004047 | 10101101
 64 |   0.004027 | 1010111
 13 |   0.003782 | 101100000
 68 |   0.003703 | 101100001
 67 |   0.003676 | 10110001
 14 |   0.003556 | 10110010
 17 |   0.003536 | 10110011
 65 |   0.003489 | 10110100
 15 |   0.003478 | 10110101
 75 |   0.003402 | 10110110
 12 |   0.003388 | 10110111
  8 |   0.003363 | 101110000
 69 |   0.003347 | 101110001
105 |   0.003312 | 10111001
 97 |   0.003302 | 10111010
118 |   0.003301 | 10111011
 16 |   0.003276 | 10111100
 76 |   0.003271 | 10111101
 99 |   0.003268 | 10111110
 70 |   0.003212 | 10111111
 83 |   0.003190 | 110000000
 82 |   0.003148 | 110000001
120 |   0.003134 | 11000001
 77 |   0.003120 | 110000100
114 |   0.003112 | 110000101
 72 |   0.003111 | 11000011
124 |   0.003103 | 110001000
113 |   0.003076 | 110001001
 85 |   0.003054 | 11000101
  9 |   0.003032 | 11000110
 94 |   0.003032 | 11000111
 98 |   0.003019 | 110010000
125 |   0.003013 | 110010001
 91 |   0.003009 | 11001001
100 |   0.003005 | 11001010
 73 |   0.003003 | 11001011
 96 |   0.002999 | 110011000
 78 |   0.002986 | 110011001
 66 |   0.002977 | 11001101
119 |   0.002971 | 11001110
106 |   0.002963 | 11001111
 90 |   0.002945 | 110100000
 10 |   0.002904 | 110100001
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71	0.002903	11010001
126	0.002885	110100100
112	0.002884	110100101
111	0.002883	11010011
104	0.002874	110101000
123	0.002870	110101001
110	0.002836	11010101
11	0.002819	11010110
74	0.002784	11010111
80	0.002728	110110000
84	0.002727	110110001
109	0.002715	11011001
89	0.002684	110110100
117	0.002671	110110101
116	0.002669	11011011
107	0.002661	110111000
93	0.002643	110111001
129	0.002592	11011101
127	0.002578	11011110
130	0.002578	11011111
132	0.002577	111000000
121	0.002558	111000001
88	0.002533	111000010
101	0.002490	111000011
115	0.002472	111000100
135	0.002411	111000101
86	0.002375	11100011
92	0.002343	111001000
108	0.002339	111001001
81	0.002334	11100101
103	0.002320	111001100
131	0.002306	111001101
122	0.002274	11100111
134	0.002268	111010000
79	0.002249	111010001
95	0.002219	111010010
133	0.002210	111010011
102	0.002064	111010100
87	0.002061	111010101
136	0.002000	11101011
137	0.001698	1110110000
138	0.001346	1110110001
139	0.001083	111011001
140	0.000947	1110110100
178	0.000887	1110110101
141	0.000885	1110110110
3	0.000866	1110110111
177	0.000858	1110111000
179	0.000855	1110111001
176	0.000848	1110111010
169	0.000833	1110111011
175	0.000826	1110111100
174	0.000821	1110111101
184	0.000819	1110111110
156	0.000818	1110111111
170	0.000815	11110000000
183	0.000814	11110000001
171	0.000813	1111000001
190	0.000811	1111000010
163	0.000808	1111000011
167	0.000803	11110001000

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191 |   0.000801 | 11110001001
165 |   0.000794 | 1111000101
164 |   0.000794 | 1111000110
172 |   0.000792 | 1111000111
185 |   0.000791 | 11110010000
162 |   0.000791 | 11110010001
157 |   0.000791 | 1111001001
192 |   0.000790 | 1111001010
166 |   0.000790 | 1111001011
193 |   0.000787 | 11110011000
155 |   0.000784 | 11110011001
142 |   0.000778 | 1111001101
180 |   0.000777 | 1111001110
182 |   0.000776 | 1111001111
168 |   0.000774 | 11110100000
189 |   0.000769 | 11110100001
173 |   0.000764 | 1111010001
158 |   0.000753 | 1111010010
150 |   0.000739 | 1111010011
154 |   0.000738 | 11110101000
181 |   0.000734 | 11110101001
161 |   0.000731 | 1111010101
149 |   0.000730 | 1111010110
160 |   0.000728 | 1111010111
194 |   0.000727 | 11110110000
151 |   0.000719 | 11110110001
143 |   0.000718 | 1111011001
148 |   0.000709 | 1111011010
159 |   0.000703 | 1111011011
188 |   0.000701 | 11110111000
198 |   0.000698 | 11110111001
186 |   0.000697 | 1111011101
152 |   0.000683 | 1111011110
153 |   0.000683 | 1111011111
187 |   0.000682 | 11111000000
144 |   0.000681 | 11111000001
195 |   0.000680 | 1111100001
197 |   0.000677 | 11111000100
199 |   0.000668 | 11111000101
196 |   0.000662 | 1111100011
147 |   0.000657 | 11111001000
145 |   0.000652 | 11111001001
200 |   0.000626 | 1111100101
146 |   0.000625 | 11111001100
234 |   0.000612 | 11111001101
236 |   0.000611 | 1111100111
235 |   0.000609 | 11111010000
233 |   0.000605 | 11111010001
201 |   0.000596 | 11111010010
240 |   0.000590 | 11111010011
237 |   0.000578 | 11111010100
239 |   0.000576 | 11111010101
202 |   0.000571 | 1111101011
231 |   0.000571 | 11111011000
232 |   0.000561 | 11111011001
205 |   0.000558 | 1111101101
204 |   0.000557 | 11111011100
238 |   0.000551 | 11111011101
203 |   0.000550 | 1111101111
241 |   0.000550 | 11111100000
227 |   0.000519 | 11111100001
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226 |   0.000514 |   11111100010
206 |   0.000514 |   11111100011
228 |   0.000514 |   11111100100
230 |   0.000510 |   11111100101
220 |   0.000510 |   11111100110
218 |   0.000509 |   11111100111
242 |   0.000505 |   11111101000
229 |   0.000498 |   11111101001
225 |   0.000495 |   11111101010
219 |   0.000492 |   11111101011
223 |   0.000484 |   11111101100
224 |   0.000483 |   11111101101
222 |   0.000475 |   1111110111
217 |   0.000472 |   11111110000
221 |   0.000471 |   11111110001
207 |   0.000460 |   11111110010
215 |   0.000446 |   11111110011
212 |   0.000442 |   11111110100
216 |   0.000441 |   11111110101
213 |   0.000438 |   11111110110
214 |   0.000434 |   11111110111
211 |   0.000418 |   111111110000
208 |   0.000411 |   111111110001
210 |   0.000399 |   11111111001
243 |   0.000397 |   11111111010
209 |   0.000381 |   11111111011
244 |   0.000343 |   111111111000
245 |   0.000334 |   111111111001
246 |   0.000259 |   11111111101
247 |   0.000173 |   111111111100
248 |   0.000107 |   111111111101
249 |   0.000076 |   1111111111100
250 |   0.000052 |   1111111111101
251 |   0.000034 |   1111111111110
252 |   0.000014 |   11111111111110
253 |   0.000007 |   111111111111110
254 |   0.000002 |   1111111111111100
  2 |   0.000001 |   1111111111111101
  1 |   0.000001 |   1111111111111110
255 |   0.000000 |   111111111111111110
  0 |   0.000000 |   111111111111111111
```