```
% image testing
% you may copy and use this code in your homework

clear
close all

fprintf('Also see Matlab Help, Product Help, Image Processing Toolbox \n\n')

imageFileName = 'b8.jpg' % ENTER YOUR OWN IMAGE FILENAME HERE

x = imread(imageFileName); % read in image

imfinfo_result = imfinfo(imageFileName) % display image file info

imshow(x) % show image
title('ORIGINAL IMAGE')

% JPG image data are stored in "3D arrays" consisting
% of 3 "pages" of the usual "2D arrays" (table of rows & columns).
% Red info is stored in page 1, Green in page 2, Blue in page 3
% Each value stored in an array element is proportional to the
% intensity of that color to be displayed in the subpixel at that
% row, column location on the image.

[r,c,p] = size(x);
z = zeros(r,c); % make page of zeros

% make RGB 3D array of red info only
xred = x; % copy full array
% do not change red page (page 1)
xred(:,:,2) = z; % make green page zeros (page 2)
xred(:,:,3) = z; % make blue page zeros (page 3)

% make RGB 3D array of green info only
xgreen = x;
xgreen(:,:,1) = z;
xgreen(:,:,3) = z;

% make RGB 3D array of blue info only
xblue = x;
xblue(:,:,1) = z;
xblue(:,:,2) = z;

% make composite image showing the three
% separate 3D RGB arrays
figure(2)
xcomp = [xred xgreen xblue];
imshow(xcomp)
tt = ['RED - GREEN - BLUE: R, G or B pixel = 0 is black, '];
tt = [tt 'pixel = 255 is bright R, G or B'];
title(tt) % split to show all on published PDF
```

```
% make composite image showing the three
% 2D color pages separately
% 2D arrays are shown in gray scale
figure(3)
xcomp3 = [x(:,:,1) x(:,:,2) x(:,:,3)];
imshow(xcomp3)
title('RED - GREEN - BLUE: pixel = 0 is black, pixel = 255 is white')

% YOU CAN USE THE DATA CURSOR tool in the figure toolbar
% and click on image to see RGB values for any pixel.
% The improfile() function allows you to click and drag
% a line across the image to get a plot of the three color values.
% BUT USE ASSIGNMENT STMTS AND ARRAY INDICES TO DO THAT IN HOMEWORK
```

Also see Matlab Help, Product Help, Image Processing Toolbox

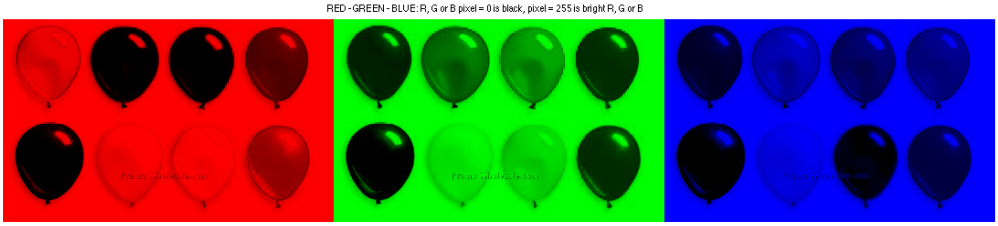
```
imageFileName =

b8.jpg


imfinfo_result =

           Filename: '/Users/richardherz/Desktop/b8.jpg'
        FileModDate: '28-Aug-2013 12:01:30'
           FileSize: 22877
             Format: 'jpg'
      FormatVersion: ''
              Width: 543
             Height: 331
           BitDepth: 24
          ColorType: 'truecolor'
    FormatSignature: ''
    NumberOfSamples: 3
       CodingMethod: 'Huffman'
      CodingProcess: 'Sequential'
            Comment: {}

Warning: Image is too big to
fit on screen; displaying at
67%
Warning: Image is too big to
fit on screen; displaying at
67%
```



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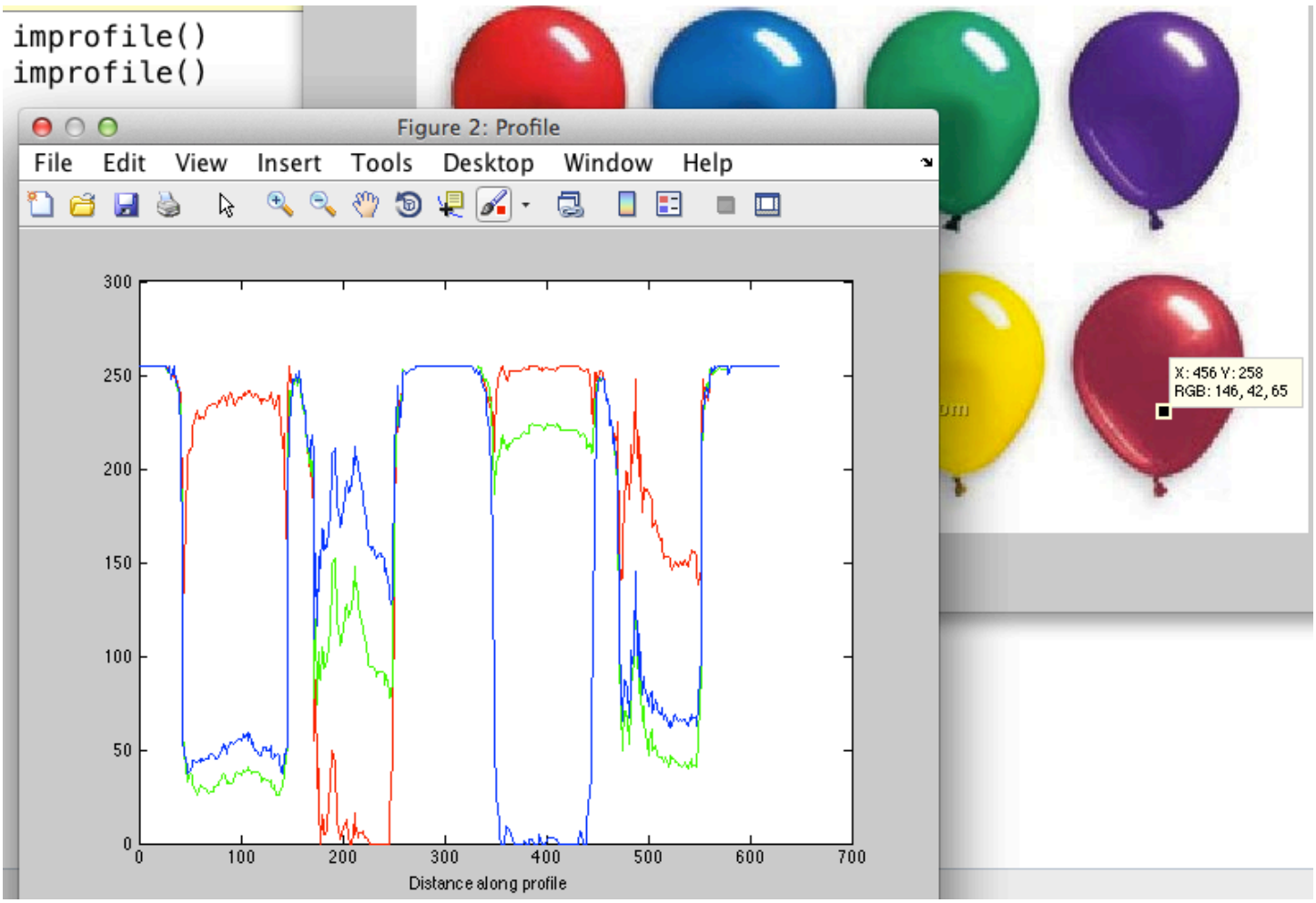
improfile()
improfile()
Figure 2: Profile
File Edit View Insert Tools Desktop Window Help
300
250
200
150
100
50
0
0 100 200 300 400 500 600 700
Distance along profile
X: 456 Y: 258
RGB: 146, 42, 65