University of the Punjab

Gujranwala Campus

Department of Information Technology

Computer Vision

Assignment

Submitted by:

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Section: BSIT (Morning)

Semester: 7th

Submitted to:

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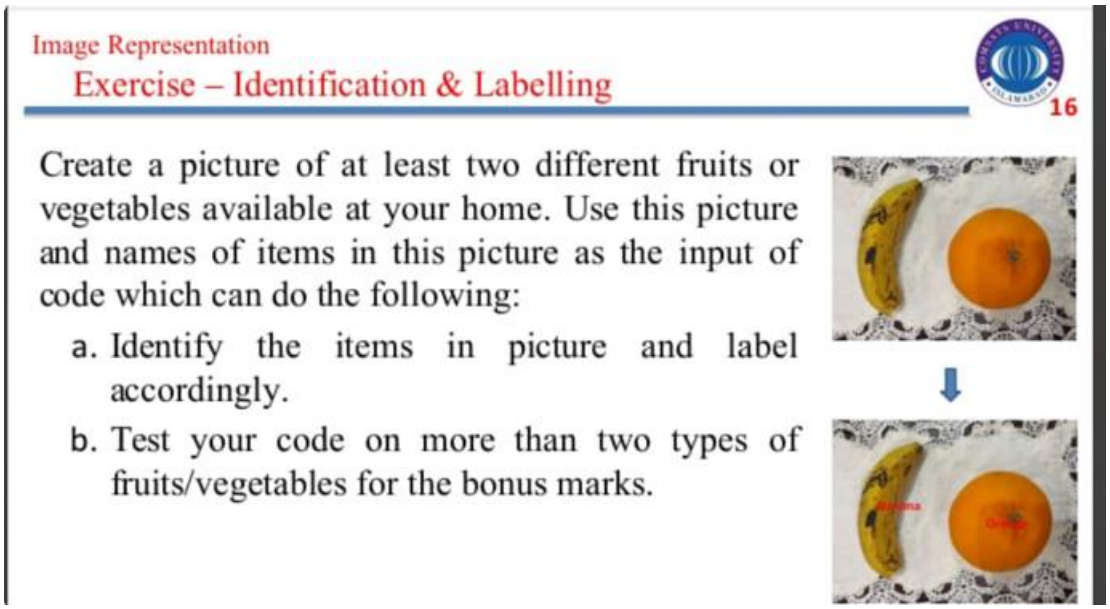
EXERCISE:



SOLUTION:

```
clc; clear; close all;
% Load Image
img = imread('image.png'); % Ensure correct image
figure, imshow(img), title('Original Image');
% Convert to HSV Color Space
hsvImg = rgb2hsv(img);
hue = hsvImg(:,:,1);
% Define Color Ranges
bananaMask = (hue > 0.10 & hue < 0.20); % Yellow range for banana
orangeMask = (hue > 0.02 & hue < 0.08); % Orange range for orange
```

```
% Remove Small Objects
bananaMask = bwareaopen(bananaMask, 1500);
orangeMask = bwareaopen(orangeMask, 1500);
% Get Properties of Detected Objects
bananaProps = regionprops(bananaMask, 'BoundingBox', 'Centroid', 'Area');
orangeProps = regionprops(orangeMask, 'BoundingBox', 'Centroid', 'Area');
% Display Image
figure, imshow(img), title('Correctly Labeled Image');
hold on;
% Label Banana
if ~isempty(bananaProps)
    [~, idx] = max([bananaProps.Area]); % Select largest banana
    bananaCentroid = bananaProps(idx).Centroid;
    text(bananaCentroid(1), bananaCentroid(2) + 20, 'Banana', ...
        'Color', 'r', 'FontSize', 14, 'FontWeight', 'bold', 'HorizontalAlignment', 'center');
end
% Label Orange
if ~isempty(orangeProps)
    [~, idx] = max([orangeProps.Area]); % Select largest orange
    orangeCentroid = orangeProps(idx).Centroid;
    text(orangeCentroid(1), orangeCentroid(2) + 20, 'Orange', ...
        'Color', 'r', 'FontSize', 14, 'FontWeight', 'bold', 'HorizontalAlignment', 'center');
end
hold off;
```

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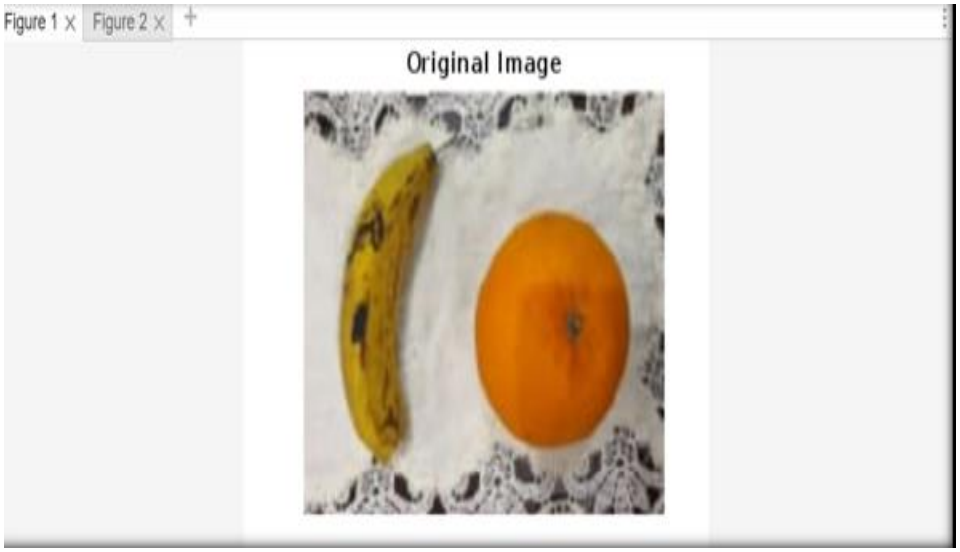
MATLAB SREENSHOTS:



Figure# 1

Figure# 2