```
function [] = Single_Color(read_file, write_file, color_num)

% Get Original
full_color = imread(read_file);

% Extract Colors
red = full_color(:,:,1);
green = full_color(:,:,2);
blue = full_color(:,:,3);

% Convert to black and white
blackwhite = rgb2gray(full_color);

% Create a Blank Matrix the size of the original
single_color = uint8(zeros(size(full_color)));

% Make Black and White
single_color(:,:,1) = blackwhite;
single_color(:,:,2) = blackwhite;
single_color(:,:,3) = blackwhite;

% Color Conversion
% Traverse every pixel, if more of one color, then keep the full color
for x = 1 : size(single_color,1)
    for y = 1 : size(single_color,2)
        if color_num == 1
            if red(x,y) > 128 && green(x,y) < 128 && blue(x,y) < 128
                for z = 1 : 3
                    single_color(x,y,z) = full_color(x,y,z);
                end
            end
        elseif color_num == 2
            if green(x,y) > 128 && red(x,y) < 128 && blue(x,y) < 128
                for z = 1 : 3
                    single_color(x,y,z) = full_color(x,y,z);
                end
            end
        elseif color_num == 3
            if blue(x,y) > 128 && red(x,y) < 128 && green(x,y) < 128
                for z = 1 : 3
                    single_color(x,y,z) = full_color(x,y,z);
                end
            end
        end
    end
end

% Show Original v Mod
figure(1), imshow(full_color)
figure(2), imshow(single_color)
```

```
% Write to File
imwrite(single_color, write_file)
```