Image processing Task 1

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Task Requirements (by using MATLAB):

1. **Change the most common color in the image to black.**

2. **Change the color of a specific part of the image into any other color.**

The original image:

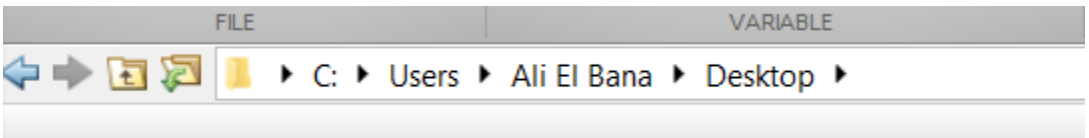
The first requirement:

Step1: Identifying the most common color in the image

→ **It's clear that the most common color in the above image is White.**

Step2: Reading the image from my device and storing it on a Matrix to be capable to access its pixels and modifying them

→ **We can do that by identifying the right path of the image working directory**



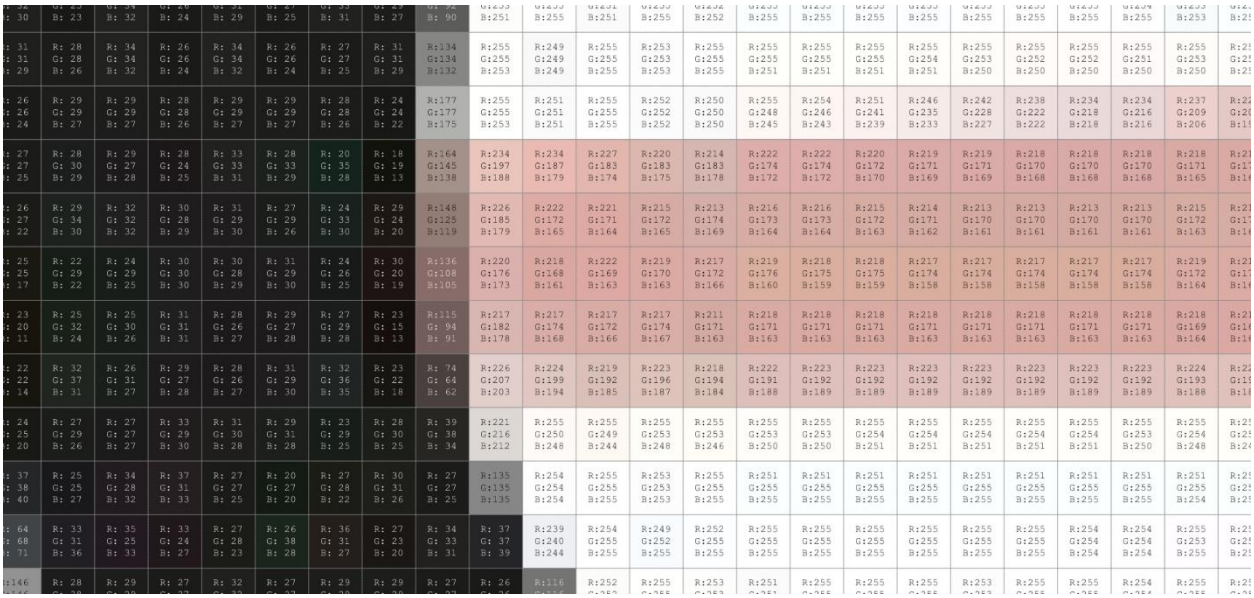
→ **Then calling the function imread('faces.jpg') and passing the image name to it as an input argument, then storing it in a variable like that:**
fig1 = imread('faces.jpg');

→ **Result:** fig1 *150x300x3 uint8*

Step3: Showing the pixel region of the image to know their RGB percentage

→ **We do that by calling this function: impixelregion ()**
→ **And passing our image matrix as an input argument to this function: impixelregion(imshow(fig1))**

→ **Result:**



→ **After we know the RGB percentage of the colors of the image, now we can move forward to the next step.**

Step4: Building an Algorithm to change the color of the white to black

→ **Firstly:** **We need to search on all the image matrix**

→ **Then:** **Make a condition using The RGB percentage from step2 to turn the percentage of the white RGB into [0,0,0]**

Shades of Black and Grey				
Color Name	RGB Dec	RGB Hex	CSS	Swatch
Grey	84;84;84	545454		
Grey, Silver	192;192;192	C0C0C0		
grey	190;190;190	BEBEBE		
LightGray	211;211;211	D3D3D3		
LightSlateGrey	119;136;153	778899	789	
SlateGray	112;128;144	708090		
SlateGray1	198;226;255	C6E2FF		
SlateGray2	185;211;238	B9D3EE		
SlateGray3	159;182;205	9FB6CD		
SlateGray4	108;123;139	6C7B8B		
black	0;0;0	000000	000	
grey0	0;0;0	000000	000	
grey1	3;3;3	030303		
grey2	5;5;5	050505		

After that: **We should handle the condition if of the other colors beside the white one, we should store the original RGB percentages of the image.**

Then: **We should store these changes on the original image matrix to a new one, to be able to show it and compare it with the original one.**

After that: **End the condition and the looping on the image matrix.**

Finally: **Showing the new image after these changes.**

Step5: Converting this Algorithm into a MATLAB code

```
>> for r = 1:150

    for c = 1:300

        if( fig1(r,c,1) > 250 )

            fig2(r,c,1:3) = 0 ;

        else

        fig2(r,c,1:3) = fig1(r,c,1:3) ;

        end

    end

end
```

→ **Result:**

The second requirement: (Changing the color of وجوه from pink to green)

Step1: Building an Algorithm to change the color of وجوه from pink to green:

→ **Firstly:** **We need to search on all the image matrix**

→ **Then:** **Make a condition using The RGB percentage to turn the percentage of the Pink RGB into the Green one.**

Pale Green	143;188;143	8FBC8F		
Sea Green	35;142;104	238E68		
Spring Green	0;255;127	00FF7F		
Free Speech Green	9;249;17	09F911		
Free Speech Aquamarine	2;157;116	029D74		

After that: **We should handle the condition if of the other colors beside the white one, we should store the original RGB percentages of the image.**

Then: **We should store these changes on the original image matrix to a new one, to be able to show it and compare it with the original one.**

After that: **End the condition and the looping on the image matrix.**

Finally: **Showing the new image after these changes.**

Step2: Converting this Algorithm into a MATLAB code

```
>> for r = 1:150
    for c = 1:300
        if( fig1(r,c,1) < 240 && fig1(r,c,1) > 200 )
            fig3(r,c,1:3) = [ 9 249 17 ] ;
        else
        fig3(r,c,1:3) = fig1(r,c,1:3) ;
        end
    end
end
```

→ **Result:**


TASK DONE