Sesión 1

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Apuntes de VC

```
%lee la imagen
im = imread('cafe.tif');
%% muestra la imagen formato RGB
imshow(im)
%%title
title('imatge original')
%%informacio del pixels
impixelinfo
%%permite seleccionar dentro de la imagen un conjunto de lineas
improfile
%%Mapas ...
colormap winter
colormap default
colormap hot
colormap jet %util para debuggar informacion de imagenes
%%conservar finestra abierta
```

ERROR FRECUENTE LAS MATRIC SON UINT8 POR CULPA DE MUCHAS FUNCIONES IMP0LEMENTADAS COMO IMSHOW

```
im2 = rand(256)*1000
figure
imshow(im2)
imshow(im2,[0,1000]);
imshow(im2,[]);
```

```
%%guardar imagenes
imwrite(im2,'resultat.jpg')
```

EJERCICIOS 1

```
im = imread('flowers.tif')
```

```
im = 362×500×3 uint8 array
im(:,:,1) =

    48    49    52    56    49    51    53    64    54    57    61    53    55    58    59    54    50    48    55
    48    54    49    50    53    63    62    59    56    54    57    54    48    51    52    60    54    60    53
    51    51    53    53    59    57    52    56    52    59    56    61    55    56    54    54    57    61    61
    54    51    51    58    53    60    49    49    56    54    61    57    55    59    53    55    53    52    60
    51    48    57    53    51    61    52    51    52    58    52    58    58    55    54    59    58    56    63
```

```
    52    52    52    51    55    64    64    56    53    55    49    54    57    65    55    59    52    58    60
    63    56    53    59    55    56    63    64    53    59    55    59    61    67    61    62    56    60    65
    63    57    57    61    54    49    55    57    51    51    55    60    58    67    64    54    53    58    66
    51    55    61    56    62    59    57    54    56    54    58    55    52    58    58    56    57    58    61
    56    59    55    55    58    59    55    52    53    57    60    50    54    53    58    57    57    53    59
    55    55    52    56    60    56    57    55    54    58    54    53    55    62    60    53    53    60    61
    58    56    53    53    56    53    55    56    59    57    61    58    52    58    62    62    60    55    56
    59    53    56    56    56    59    68    61    54    65    61    60    67    64    63    62    63    57    66
    51    53    60    58    54    52    68    59    58    66    65    62    66    55    62    57    53    60    64
    54    62    66    60    60    51    60    58    62    64    60    62    58    66    62    57    56    58    54
    67    64    56    53    51    57    60    56    60    64    64    56    59    69    63    58    54    62    58
    68    61    57    60    55    56    60    64    64    55    55    62    54    66    67    58    59    62    65
    63    58    58    57    54    59    59    54    54    60    52    63    61    63    64    59    62    59    64
    59    53    62    61    60    66    63    65    68    68    61    60    51    53    61    67    55    62    64
     ⋮
```

```
imshow(im)
```

```
r = im(:,:,1);
g = im(:,:,2),
```

```
g = 362×500 uint8 matrix
    45    46    49    53    46    48    50    61    51    54    59    51    51    57    57    52 ···
    45    50    45    48    50    61    58    56    54    50    54    49    45    48    50    58
    48    49    50    49    56    55    49    53    49    56    53    57    52    54    50    51
    51    48    48    53    51    56    44    46    52    52    57    54    52    55    48    52
    47    44    53    50    49    58    49    48    50    55    51    53    55    51    50    56
    49    47    49    51    52    59    61    52    51    53    47    51    55    62    54    54
    60    53    51    57    51    51    58    59    50    56    52    55    57    63    57    58
```

```
    59    54    53    57    50    44    52    55    48    46    52    56    54    63    61    50
    46    53    58    52    58    55    53    52    53    50    55    54    50    55    55    55
    51    54    53    53    55    56    52    47    50    55    57    46    52    51    55    53
     ⋮
```

```
b = im(:,:,3);
figure
subplot(2,2,1);
imshow(im);
subplot(2,2,2);
imshow(r);
title('component R');
subplot(2,2,3);
imshow(r);
title('component G');
subplot(2,2,4);
imshow(r);
title('component B');
```

IMAGEN EN NIVEL DE GRIS (OBENER LA ILUMINACION) INTENSIDAD O VALUE

```
%OPCION1
I = double(r)+double(g)+double(b)
```

```
I = 362×500
   169   171   185   198   175   178   187   224   188   201   214   189   189 ···
   170   187   172   176   187   223   212   206   198   188   198   186   168
   178   180   185   184   211   201   183   197   184   207   196   214   191
```

```
   190   181   179   197   192   208   170   172   194   189   210   202   194
   178   167   196   186   184   215   186   182   187   204   187   197   207
   181   179   183   187   193   218   223   196   189   197   176   188   202
   220   196   188   213   189   191   215   215   188   208   193   202   210
   219   200   196   210   186   169   191   202   180   175   193   206   200
   173   193   210   194   216   206   197   193   197   187   201   194   185
   193   202   199   198   206   207   192   176   187   203   211   173   191
     ⋮
```

```
figure
imshow(I,[])
```

```
%OPCION2
%%I = rgb2gray(im)
```

IMPORANTE NO HACER ESTO PARA OBTENER EL NIVEL DE GRIS

figure

imshow((r+g+b)/3) <- sumar elementos de uint8 (overflow)

figure

imshow((r/3+g/3+b/3)) <- Division Enter (overflow)

NORMALIZACIÓN

```
rn = double(r)./I;
```

```
gn = double(g)./I;
bn = double(b)./I;
%rn+gn+bn = 1
rgbNormalizada = cat(3,rn,gn,bn)
```

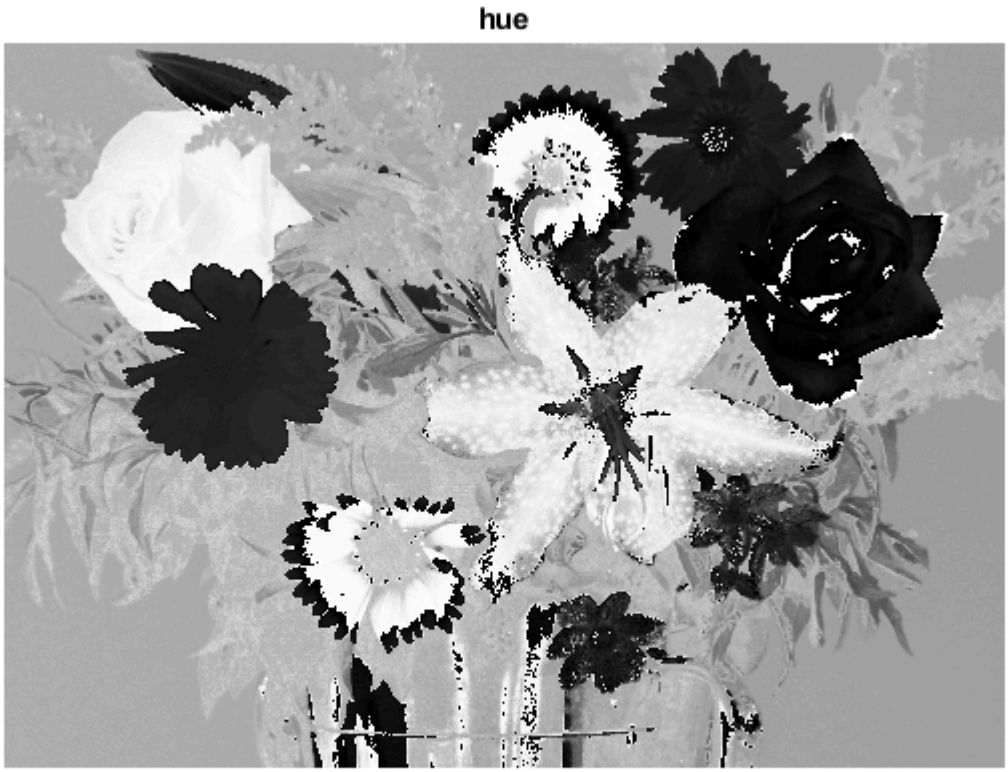
```
rgbNormalizada =
rgbNormalizada(:,:,1) =

    0.2840    0.2865    0.2811    0.2828    0.2800    0.2865    0.2834    0.2857    0.2872    0.2836    0.2850    0
    0.2824    0.2888    0.2849    0.2841    0.2834    0.2825    0.2925    0.2864    0.2828    0.2872    0.2879    0
    0.2865    0.2833    0.2865    0.2880    0.2796    0.2836    0.2842    0.2843    0.2826    0.2850    0.2857    0
    0.2842    0.2818    0.2849    0.2944    0.2760    0.2885    0.2882    0.2849    0.2887    0.2857    0.2905    0
    0.2865    0.2874    0.2908    0.2849    0.2772    0.2837    0.2796    0.2802    0.2781    0.2843    0.2781    0
    0.2873    0.2905    0.2842    0.2727    0.2850    0.2936    0.2870    0.2857    0.2804    0.2792    0.2784    0
    0.2864    0.2857    0.2819    0.2770    0.2910    0.2932    0.2930    0.2977    0.2819    0.2837    0.2850    0
    0.2877    0.2850    0.2908    0.2905    0.2903    0.2899    0.2880    0.2822    0.2833    0.2914    0.2850    0
    0.2948    0.2850    0.2905    0.2887    0.2870    0.2864    0.2893    0.2798    0.2843    0.2888    0.2886    0
    0.2902    0.2921    0.2764    0.2778    0.2816    0.2850    0.2865    0.2955    0.2834    0.2808    0.2844    0
    0.2792    0.2835    0.2796    0.2786    0.2885    0.2902    0.2893    0.2941    0.2857    0.2900    0.2784    0
      ⋮
```

```
figure
imshow(rgbNormalizada)
title('normalitzacio naive')
```

CONVERSIO RGB A HSV

```
hsv = rgb2hsv(im);
h = hsv(:,:,1);
s = hsv(:,:,2);
v = hsv(:,:,3);
figure
imshow(h)
title('hue')
```




```
figure
imshow(s)
title('saturation')
```


```
figure
imshow(hsv)
```

EJERCICIO A ENTREGAR (NORMALIZAR HSV)

```
% OPCION 1
hsv = rgb2hsv(im);
I = hsv(:,:,3)*765;
rn = double(r)./I;
gn = double(g)./I;
bn = double(b)./I;
figure
imshow(cat(3,rn,gn,bn));
title('normalitzacio hsv');
```

normalitzacio hsv