繪圖軟體應用 第3周(9/25)

```
clear;clc
```

可回傳位置資訊的函數

```
v1 = [6 7 1 4 3]
```

```
v1 = 1×5
     6     7     1     4     3
```

```
[val,ind]=max(v1)  %找出最大值
```

```
val = 7
ind = 2
```

```
[val,ind]=sort(v1) %由小到大排序
```

```
val = 1×5
     1     3     4     6     7
ind = 1×5
     3     5     4     1     2
```

二維陣列(查詢陣列相關資訊)

```
m2=[2 3 1 4;5 6 1 2;6 3 7 4]
```

```
m2 = 3×4
     2     3     1     4
     5     6     1     2
     6     3     7     4
```

```
size(m2)
```

```
ans = 1×2
     3     4
```

```
length(m2) %最大行數或列數
```

```
ans = 4
```

```
ndims(m2)  %查詢維度
```

```
ans = 2
```

```
numel(m2)  %查詢元素個數
```

```
ans = 12
```

```
max(m2)    %每行最大值
```

```
ans = 1×4
     6     6     7     4
```

```
max(max(m2))
```

```
ans = 7
```

改變數值

```
m2(3) = [ ] %沒事
```

```
m2 = 1×11
     2     5     3     6     3     1     1     7     4     2     4
```

```
m2(3,2)=[ ] %會錯
```

```
A null assignment can have only one non-colon index.
```

資料型態

衛星資料RGB以**0~255(uint8)**儲存資料型態

一般數值：

1. single ：4位元組
2. double : 8位元組

```
a=12.8
```

```
a = 12.8000
```

```
whos a
```

```
  Name      Size            Bytes  Class     Attributes

  a         1x1                 8  double
```

```
a2=single(a)
```

```
a2 = single

    12.8000
```

```
whos a2
```

```
  Name      Size            Bytes  Class     Attributes

  a2        1x1                 4  single
```

n-bit 整數型態

```
m=[13 120 30;36 42 112]
```

```
m = 2×3
    13   120    30
    36    42   112
```

```
m1 = uint8(m)
```

```
m1 = 2×3 uint8 matrix
    13   120    30
    36    42   112
```

```
uint8([12 300 -250]) %會被卡掉
```

```
ans = 1×3 uint8 row vector
    12   255     0
```

```
int8(120)+int16(250) %型態不同無法加
```

```
Error using  +
Integers can only be combined with integers of the same class, or scalar doubles.
```

```
uint8(12^3)
```

```
ans = uint8

    255
```

```
uint64(2)^3
```

```
ans = uint64

    8
```

字元資料型態

```
ch = 'A'
```

```
ch =
'A'
```

```
double(ch)
```

```
ans = 65
```

```
char(65)
```

```
ans =
'A'
```

```
ch+1
```

```
ans = 66
```

```
char(65:90)
```

```
ans =
'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
```

```
str = 'a string'
```

```
str =
'a string'
```

```
asc = double(str) %空格也算一個字元
```

```
asc = 1×8
    97    32   115   116   114   105   110   103
```

```
char(asc)
```

```
ans =
'a string'
```

邏輯資料型態

```
t1 = isprime(13) %是質數的話回傳1
```

```
t1 = logical
   1
```

```
t2 = (3>6)
```

```
t2 = logical
   0
```

```
t3 = 0
```

```
t3 = 0
```

```
t4 = logical(t3)
```

```
t4 = logical
   0
```

```
t5 = logical([12 1 0 -9.4]) %不為0即為真
```

```
t5 = 1×4 logical array
   1   1   0   1
```

控制顯示方式

```
p = primes(1000); %找出小於1000的質數
length(p)         %有幾個質數
```

```
ans = 168
```

```
max(p)            %p當中的最大質數
```

```
ans = 997
```

輸出格式

- format
- format short
- format short g
- format short e
- format long
- format long g
- format long e

```
pi
```

```
ans = 3.1416
```

```
format long
```

```
pi
```

```
ans =
   3.141592653589793
```

```
format short
pi
```

```
ans = 3.1416
```

格式化輸出 fprintf()

- \n 換行
- \t 跳格
- '' 印出單引號
- \\ 印出反斜線
- %% 印出百分比符號

```
a=22;b=3.14159;c='@';
fprintf('a=%6.3f\n',a);
```

```
a=22.000
```

```
fprintf('b=%5.2f\n',b);
```

```
b= 3.14
```

```
fprintf('a=%5d, b=%7.4f\n',a,b);
```

```
a=   22, b= 3.1416
```

```
fprintf('c=%c\n',c);
```

```
c=@
```

```
fprintf('\n');
```

%g 格式碼

```
fprintf('a=%g, b=%g\n',a,b);
```

```
a=22, b=3.14159
```

disp()

```
disp(a)
```

```
    22
```

```
disp([a b])
```

```
   22.0000    3.1416
```

```
disp('Wensday')
```

Wensday