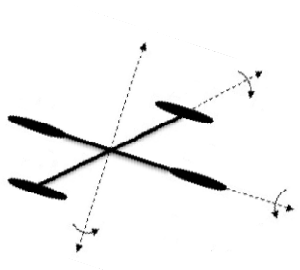


---

# MATLAB

## 조건문과 반복문



---

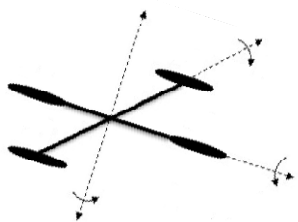
- 조건문 if – elseif – else

```
if expression
    statements
elseif expression
    statements
else
    statements
end
```

```
if I == J
    A(I,J) = 2;
elseif abs(I-J) == 1
    A(I,J) = -1;
else
    A(I,J) = 0;
end
```

Expression

$==, >, <, <=, >=, \sim =$



---

- 반복문 for

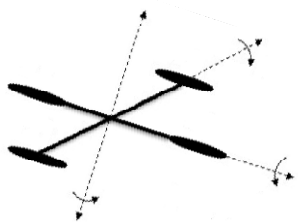
```
for variable = init : n : final
    statements
end
```

```
a = zeros(k,k) % Preallocate matrix
for m = 1:k
    for n = 1:k
        a(m,n) = 1/(m+n -1);
    end
end
```

```
for k=1:2
    disp(sprintf(' At the start of the loop, k = %d', k))
    k = 10;
    disp(sprintf(' Following the assignment, k = %d\n', k))
end
```

```
At the start of the loop, k = 1
Following the assignment, k = 10
```

```
At the start of the loop, k = 2
Following the assignment, k = 10
```



- 예러대비 try - catch

```
1 clear all
2
3 try
4     x=1;
5     y=z;
6 catch exception
7     s=1;
8 end
```

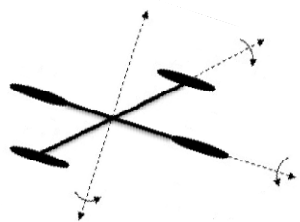


Workspace

Name	Value
exception	<1x1 MException>
s	1
x	1

Variable Editor - exception

Property	Value
identifier	'MATLAB:UndefinedFunction'
message	'Undefined function or variable 'z''
cause	<0x0 cell>
stack	<0x1 struct>

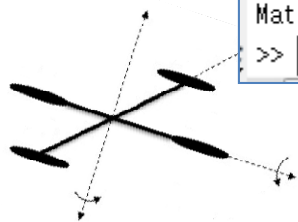


```
A = rand(5,3);   B = rand(5,4);
C = [A; B];
?? Error using ==> vertcat
CAT arguments dimensions are not consistent.
```

```
try
    C = [A; B];
catch exception
    if strcmp(exception.identifier, ...
        'MATLAB:catenate:dimensionMismatch')
        [~, colA] = size(A);   [~, colB] = size(B);
        disp(exception.message);
        fprintf('Matrix A has %d columns while matrix B has %d\n', ...
            colA, colB);
    end
end
```

Property ▲	Value
identifier	'MATLAB:catenate:dimensionMismatch'
message	'CAT arguments dimensions are not consistent.'
cause	<0x0 cell>
stack	<0x1 struct>

```
CAT arguments dimensions are not consistent.
Matrix A has 3 columns while matrix B has 4
>> |
```

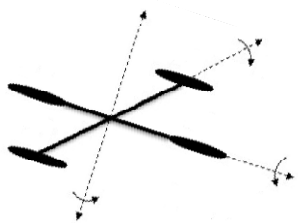


- 코드 수행 시간 측정 tic - toc

```
1 tic
2 s=0;
3 for n=1:100000
4     s=s+1/n^2;
5 end
6 toc
7
8 tic
9 n = 1:100000;
10 s2 = sum(1./n.^2);
11 toc
```



Elapsed time is 0.021608 seconds.  
Elapsed time is 0.009230 seconds.



- 연습문제

$$y = \begin{cases} t = 0, & 1 \\ t \neq 0, & \frac{\sin t}{t} \end{cases}$$

를 시간  $-10 \leq t \leq 10$  의 구간에서 그리시오.  
(단, 샘플링 타임은 10ms)

