



CONTINGENCIES



FREQUENTLY USED COMMANDS

- `if ... else ... end`
- `switch ... case ... end`
- `for-loop`
- `while-loop`



IF ... ELSE ... END

IF...ELSE...

```
>> a = 2;
>> b = 1;
>> if a == 2
b = 2*b;
else
b = -2*b;
end
>> b

b =
     2

>> if a == 1
b = 2*b;
end

>> a = 2;
>> b = 1;
>> if a == 2
b = 2*b;
else
b = -2*b;
end
>> b

b =
     2

>> if a == 1
b = 2*b;
end

>> a = 1;
>> b = 2;
>> c = [];
>> if a == 1 & b == 2
c = a+b;
end
>> c

c =
     3

>> c = [];
>> c

c =
     []

>> if a == 1 | b == 4
c = a+b;
end
>> c

c =
     3

>> if a == 1 & b == 4
c = a+b;
end
>> c

c =
     []
```

IF...ELSE...

```
>> if true
disp('correct')
end
correct
>> if false
disp('correct')
end
>> if 1
disp('correct')
end
correct
>> variable_a = 2;
>> exist('variable_a')

ans =
    1
```

```
>> exist('variable_b')

ans =
    0

>> if exist('variable_a')
variable_a = 10;
end
>> variable_a

variable_a =
    10

>> variable_b = [];
```

```
>> exist('variable_b')

ans =
    1

>> isempty(variable_a)

ans =
    0

>> isempty(variable_b)

ans =
    1
```



SWITCH ... CASE ... END

SWITCH....CASE....END

```
>> year = 2017;
>> switch year
case 2018
disp('first-year')
case 2017
disp('sophomore')
case 2016
disp('junior')
case 2015
disp('senior')
otherwise
disp('not a valid class year')
end
sophomore
```

```
% yearScript.m

yearStr = input('College entrance year: ', 's');

year = str2num(yearStr);

switch year
case 2018
    disp('first-year')
case 2017
    disp('sophomore')
case 2016
    disp('junior')
case 2015
    disp('senior')
otherwise
    disp('not a valid class year')
end
```



FOR-LOOP

FOREND LOOP!!!

```
% display1.m
```

```
disp('    i    a');  
disp(' ');
```

```
for i = 1:10  
    a = 2*i;  
    disp([i, a]);  
end
```

```
>> display1  
    i    a  
    1    2  
    2    4  
    3    6  
    4    8  
    5   10  
    6   12  
    7   14  
    8   16  
    9   18  
   10   20
```

```
>> a
```

```
a =  
    20
```

```
>> for i = 1:10  
    a(i) = 2*i;  
end  
>> a
```

```
a =  
    2    4    6    8   10   12  
   14   16   18   20
```

FOREND LOOP!!!

```
% testFile1.m  
  
a = [];  
for i = 1:5  
    for j = 1:8;  
        a(i,j) = i+j;  
    end  
end
```

```
>> testFile1  
>> a
```

```
a =  
  
     2     3     4     5     6     7     8     9  
     3     4     5     6     7     8     9    10  
     4     5     6     7     8     9    10    11  
     5     6     7     8     9    10    11    12  
     6     7     8     9    10    11    12    13
```

```
>> for i = 0:10  
a(i) = i+1;  
end
```

첨자 인덱스는 실수형 양의 정수 (복소수형 정수가 아님) 이거나 논리형이어야 합니다 .

FOREND LOOP!!!

```
% display2.m
```

```
x = 10;
```

```
disp('    i    a');
```

```
disp('    ');
```

```
for i = -3:3
```

```
    a = x*i;
```

```
    disp([i a]);
```

```
end
```

```
>> display2
```

```
    i    a
```

```
   -3   -30
```

```
   -2   -20
```

```
   -1   -10
```

```
    0    0
```

```
    1   10
```

```
    2   20
```

```
    3   30
```

FOREND LOOP!!!

```
% display3.m
```

```
x = 10;
```

```
disp('    i    a');
```

```
disp(' ');
```

```
for i = -3:3
```

```
    if i ~= 0
```

```
        a = round(x/i);
```

```
        disp([i a]);
```

```
    end
```

```
end
```

```
>> display3
```

```
    i    a
```

```
   -3   -3
```

```
   -2   -5
```

```
   -1  -10
```

```
    1   10
```

```
    2    5
```

```
    3    3
```

FOREND LOOP!!!

```
% display3.m

x = 10;

disp('    i    a');
disp(' ');

for i = -3:3
%   if i ~= 0
        a = round(x/i);
        disp([i a]);
%   end
end
```

```
>> display3
    i    a
   -3   -3
   -2   -5
   -1  -10
    0   Inf
    1   10
    2    5
    3    3
```

EXERCISE

1. Finding prime numbers

- a. Make a script file 'findPrime.m'. Use 'for-loop' where N changes from 2 to 30. For each value of N, display '[value of N] is not prime' if N is not a prime number or display '[value of N] is prime' if N is a prime number. Also make a length([2:30]) by 2 matrix where the first column has values of N and the second column has indicies telling if each row's N value is prime number (for example, put 1 if N is a prime number and 0 if N is not a prime number).
- b. When you display '[value of N] is prime', you should use int2str function to convert integer to string.
- c. You should use 1) 'isprime' function and 2) 'rem' function.