

## **MATLAB Memory:**

Variables  
Functions

## **Variables:**

Scalar  
Vector  
Matrix (vector)

```
>> A = 10;  
>> B = zeros(1,A);  
>> C = zeros(A,1);  
>> D = zeros(A,A);  
>> E = zeros(A,A,A);  
>>  
>> whos  
Name          Size          Bytes  Class  
A             1x1            8    double array  
B             1x10           80    double array  
C             10x1           80    double array  
D             10x10          800    double array  
E             10x10x10      8000    double array  
  
Grand total is 1121 elements using 8968 bytes  
>>
```

## **Output**

```
>> A = zeros(1,10);  
>> B = zeros(1,10)  
  
B =  
  
    0    0    0    0    0    0    0    0    0    0  
  
>>
```

```
>> clear      % CLEAR VARIABLES  
>> clear all % CLEAR VARIABLES AND FUNCTIONS
```

## Using Functions

```
MATLAB Workspace

givi1 = 0;
givi2 = 1;

[jora1 jora2] = tempf(givi1, givi2);
```

```
tempf.m

function [out1 out2] = tempf(in1,in2);

local_variable = 5;

out1 = 0;
out2 = 0;
```

## Arithmetic operations

```
>> A = 10;
>> B = zeros(1,A);
>> C = zeros(A,1);
>> D = zeros(A,A);
>> E = zeros(A,A,A);
>>
>>
>>
>> A1 = A + 5 + A*5 + A/5 + A^5 + sin(A);
>> % SCALAR OPERATIONS
>>
>> B1 = B + B*5 + B.*B + B./B + B.^5 + sin(B);
>> % VECTOR OPERATIONS
>>
>> C1 = C + B';
>> % TRANSPOSE
>>
>>
>>
```

## Logics

sample.m

```
for ind = 1:10,
    T(ind)=ind;
    Blabla=1;
    Blabla=2;
end
```

## Graphics

plotting.m

```
for ind=1:10,
    T(ind)=ind;
end

figure(1);
plot(T,sin(T));
```

**Check:**

```
plot /  
  
subplot  
xlabel  
ylabel  
  
hold on / hold off  
  
comet
```

**Plot:**

```
x=(0.1:0.1:10); % vector of 0.1->10 with step 0.1
```

sin(x)/x	(red)
x^3	(blue)
x^2	(green)

```
on single plot;
```

**Function:**

```
phases.m
```

<pre>function [a1 a2] = phases(x);  a1 = sin(0.9*x); a2 = cos(1.1*x);</pre>
---

write pirveli.m that will:

1. `x=(0:0.1:10);`
2. `plot a1(x), a2(x)` on single plot, `figure(1);`
3. `plot a1(a2), a2(a1)` on `subplot(1,2,1)` and `subplot(2,1,2)` of `figure(2);`
4. `figure(3):` animation `a1(a2)` with `comet`.