

# MATLAB Practical File

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## 1 Using MATLAB, find the largest number among three numbers

```
a=input('First Number:');
b=input('Second Number:');
c=input('Third Number:');
if (a>b && a>c)
    great=a;
elseif (b>a && b>c)
    great=b;
elseif (c>a && c>b)
    great=c;
end
fprintf('%d is the largest',great)
```

```
First Number:3
Second Number:4
Third Number:5
5 is the largest
```

Listing 1: Output

## 2 Check if a number is Odd or Even using MATLAB

```
x=input('Enter Number:');
r=mod(x,2);
if r==0
    disp('Number is Even')
else
    disp('Number is Odd')
end
```

```
Enter Number: 3
Number is Odd

Enter Number: 2
Number is Even
```

Listing 2: Output

### 3 Check if a number is positive or negative using MATLAB

```
a=input('Enter number to check:');
if(a==0)
    disp('A is zero')
elseif(a<0)
    disp('A is negative')
elseif(a>0)
    disp('A is positive')
else
    print('Invalid')
end
```

```
Enter number to check: 3
A is positive

Enter number to check: -3
A is negative

Enter number to check: 0
A is zero
```

Listing 3: Output

## 4 Print the Factorial of a number

```
x=input('Enter Number:');  
y=factorial(x);  
fprintf('Factorial of %d is %d', x, y)
```

```
Enter Number:Factorial of 5 is 120
```

```
Enter Number:Factorial of 4 is 24
```

Listing 4: Output

## 5 Print the multiplication table of a number

```
number=input('Enter a number:');  
fprintf('Multiplication table of %d:\n', number)  
for i = 1:10  
    result=number*i;  
    fprintf('%d x %d = %d\n', number, i, result)  
end
```

```
Enter a number:Multiplication table of 9:  
9 x 1 = 9  
9 x 2 = 18  
9 x 3 = 27  
9 x 4 = 36  
9 x 5 = 45  
9 x 6 = 54  
9 x 7 = 63  
9 x 8 = 72  
9 x 9 = 81  
9 x 10 = 90
```

Listing 5: Output

## 6 Display the elements of a matrix one by one using MATLAB

```
matrix=[1,2,3;4,5,6;7,8,9];  
disp('The Matrix is:');  
disp(matrix(:));
```

```
The Matrix is:  
 1  
 4  
 7  
 2  
 5  
 8  
 3  
 6  
 9
```

Listing 6: Output

## 7 Print the Fibonacci series of a number

```
n=input('Enter a number:');  
fib[0,1];  
while true  
    fib_next = fib(end) + fib(end-1);  
    if fib_next > n  
        break;  
    end  
    fib=[fib, fib_next];  
end  
fprintf('Fibonacci series up to %d: ', n);  
fprintf('%d', fib);  
fprintf('\n');
```

```
Enter a number: Fibonacci series up to 4: 0 1 1 2 3  
Enter a number: Fibonacci series up to 10: 0 1 1 2 3 5 8
```

Listing 7: Output

## 8 Write a program to show multiple matrix operations

```
a=[1,2,3;4,5,6;7,8,9];  
b=[9,8,7;6,5,4;3,2,1];  
  
%Addition  
c=a+b;  
disp('Addition: ')  
disp(c);  
  
%Subtraction  
d=a-b;  
disp('Subtraction: ')  
disp(d);  
  
%Multiplication  
e=a*b;  
disp('Multiplication:')  
disp(e);  
  
%Multiplying every element  
f=a.*b;  
disp('Multiplying every element:')  
disp(f);  
  
%Transpose  
g=a';  
disp('Transpose: ')  
disp(g);
```

```

%Dividing every element
h=a./b;
disp('Dividing every element: ')
disp(h);

%Squaring the Matrix
i=a^2;
disp('Squaring the matrix: ')
disp(i);

%Squaring every element
j=a.^b;
disp('Squaring every element: ')
disp(j);

%Matrix Concatination Horizontal
k=[a b];
disp('Matrix Concatination Horizontal: ')
disp(k);

%Matrix Concatination Vertical
l=a;b;
disp('Matrix Concatination Vertical: ')
disp(l);

```

Addition:

10	10	10
10	10	10
10	10	10

Subtraction:

-8	-6	-4
-2	0	2
4	6	8

Multiplication:

30	24	18
84	69	54
138	114	90



```
Multiplying every element:
```

```
  9   16   21
 24   25   24
 21   16    9
```

```
Transpose:
```

```
 1   4   7
 2   5   8
 3   6   9
```

```
Dividing every element:
```

```
0.1111  0.2500  0.4286
0.6667  1.0000  1.5000
2.3333  4.0000  9.0000
```

```
Squaring the matrix:
```

```
 30   36   42
 66   81   96
102  126  150
```

```
Squaring every element:
```

```
  1   256  2187
4096  3125  1296
 343   64    9
```

```
Matrix Concatination Horizontal:
```

```
 1   2   3   9   8   7
 4   5   6   6   5   4
 7   8   9   3   2   1
```

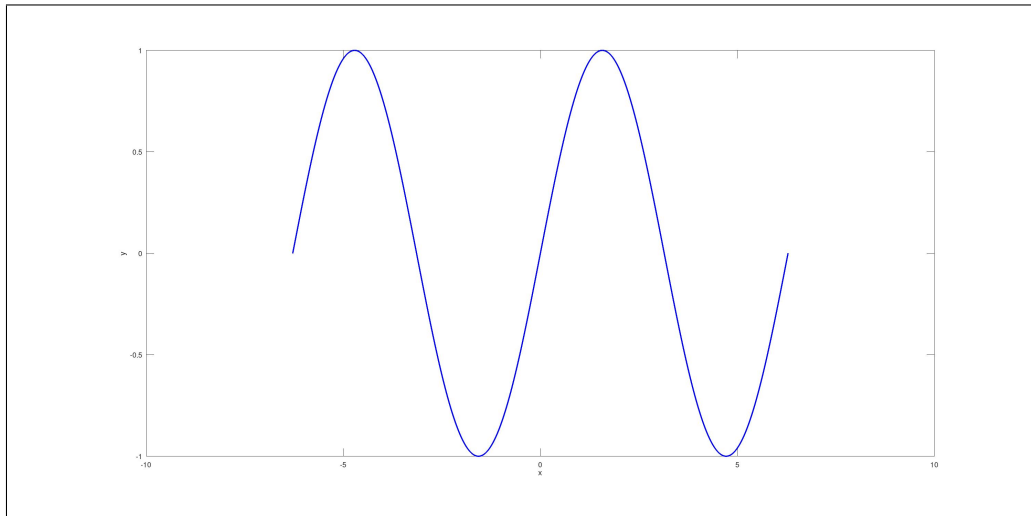
```
Matrix Concatination Vertical:
```

```
 1   2   3
 4   5   6
 7   8   9
```

Listing 8: Output

## 9 Write a program to plot Sin(x) on a graph

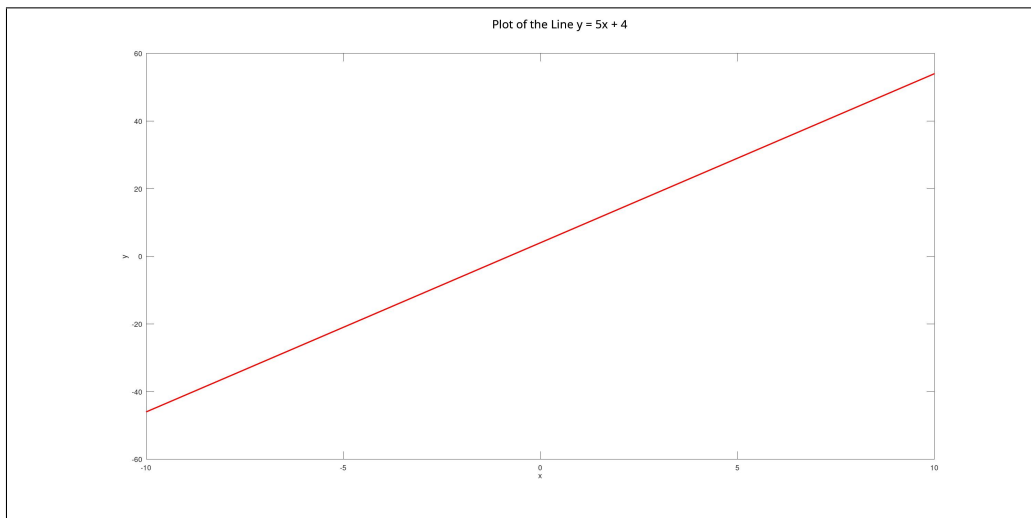
```
x = linspace(-2*pi, 2*pi, 1000);  
  
y = sin(x);  
  
plot(x, y, 'b', 'LineWidth', 2);  
  
xlabel('x');  
ylabel('y');  
title('sine graph');
```



Listing 9: Output

## 10 Write a program to plot the graph of a line

```
x = linspace(-10, 10, 100);  
  
y = 5 * x + 4;  
  
plot(x, y, 'r', 'LineWidth', 2);  
  
xlabel('x');  
ylabel('y');  
title('Plot of the Line y = 5x + 4');
```



Listing 10: Output

## 11 Write a program to show the use of linspace

```
vector1 = linspace(0, 10, 5);  
vector2 = linspace(-5, 5, 10);  
disp('5 values between 0 and 10:');  
  
disp('Vector 1 is:');  
disp(vector1);  
disp('Vector 2 is:');  
disp(vector2);
```

```
5 values between 0 and 10:  
Vector 1 is:  
      0      2.5000      5.0000      7.5000     10.0000  
Vector 2 is:  
 -5.0000 -3.8889 -2.7778 -1.6667 -0.5556  0.5556  
  1.6667  2.7778  3.8889  5.0000
```

Listing 11: Output

## 12 Write a program to grade eval based on Marks input.

```
marks = input('Enter the marks (0-100): ');
if marks >= 90
    grade = 'A+';
elseif marks >= 80
    grade = 'A';
elseif marks >= 70
    grade = 'B+';
elseif marks >= 60
    grade = 'B';
elseif marks >= 50
    grade = 'C';
elseif marks >= 40
    grade = 'D';
else
    grade = 'F';
end

fprintf('The grade of %d marks is %s\n',marks, grade);
```

```
Enter the marks (0-100): 95
The grade of 95 marks is A+

Enter the marks (0-100): 33
The grade of 33 marks is F

Enter the marks (0-100): 85
The grade of 85 marks is A
```

Listing 12: Output

## 13 To check whether a year is leap year or not

```
year = input('Enter a year: ');  
  
if mod(year, 4) == 0 && (mod(year, 100) == 0 ||  
    mod(year, 400) == 0)  
    disp('Leap Year');  
else  
    disp('Not a leap year');  
end
```

```
Enter a year: 2000  
Leap Year  
  
Enter a year: 1995  
Not a Leap Year
```

Listing 13: Output