Examples on Programing in MATLAB

Ex1: write a program read two amounts and change between them.

```
a = input('Please choose 1st number. a =');
b = input('Please choose 2nd number. b =');
change=a;
a=b;
b=change;
fprintf('a = %d\n',a)                    % use % d\n in this command
fprintf('b = %d\n',b)
```

Ex2: write a program read three amounts and display them from small amount to the large amount.

```
a = input('Please choose 1st number. a =');
b = input('Please choose 2nd number. b =');
c = input('Please choose 3rd number. c =');
if (a<b)
        if (b<c)
                fprintf (' a < b < c  %d\n',a ,b ,c )
        elseif (a<c)
                fprintf (' a < c< b   %d\n',a ,c ,b )
        else
                fprintf (' c < a < b  %d\n',c ,a ,b )
        end
 end
 if (b>c)
                fprintf (' c < b < a  %d\n',c ,b ,a )
     elseif(c>a)
                fprintf (' b < a < c  %d\n',b ,a ,c )
     else
                fprintf (' b < c < a  %d\n',b ,c ,a )
  end
```

Ex: write a program to produce a 100 random number then calculate how many positive, negative and zeros numbers on it.

```
sum1= 0;                % represents the sum of negative numbers
sum2= 0;                % represents the sum of zero numbers
sum3=0 ;                % represents the sum of positive numbers
A = randn(100,1);
for i = 1:100
    if   A(i) < 0
         sum1 = sum1 + 1;
   elseif  A(i) == 0
         sum2 = sum2 + 1;
  else
       sum3 = sum3 + 1;
  end
end
fprintf (' the sum of negative numbers =  %d\n',sum1 )
fprintf (' the sum of zero numbers =  %d\n',sum2 )
fprintf (' the sum of positive numbers =  %d\n',sum3 )
```

EX) (A) if you have a random matrix of 3×4×2. Write a program to change the shape of the matrix to fourth row and two columns and three layers.

(B) if you have $f = x^2 + 4x$, find the derivative of f and the find f ' at x = 3

```
a = randn(3,4,2)
c = permute(a,[2,3,1])

syms x f
f = x^2 + 4 *x
diff(f,x)
subs(diff(f,x),2)
```

EX) (A) if you have a random matrix of 2×3×1. Write a program to change the shape of the matrix to three row and one column and two layers.

(B) if you have $f = x^2 + 4x$, find the integral of f with $x_{min}=1$, $x_{max}=4$

```
a = randn(2,3,1)
c = permute(a,[2,3,1])

syms x
f = x^2 + 4*x;
int(f,1,4)
```