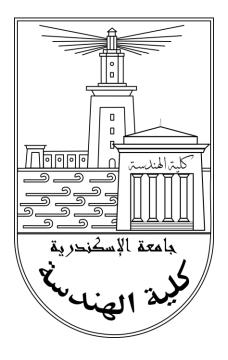
## Lab 1 Report



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Electrical Power and Machines Engineering Program

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## The Code

```
ex num = input("Enter the Exercise Number: ");
switch ex num
    case 1
        output = ([150 \ 150 \ 150 \ 160] + 10)*1.1
        v = [2 8 7 3 1 0 8 9];
        output = -mod(v,2) - mod(v,2)
    case 3
        v = [2 8 7 3 1 0 8 9];
        v([end-2:end]) = v([end-2:end]) + 2
        v([end-3:end]) = wrev(v([end-3:end]))
        v([2:2:end]) = v([1:2:end]) + v([2:2:end])
    case 4
        output = [(1:9).^2 \text{ wrev}((1:8).^2)]
    case 5
        M = [1 \ 2 \ 3 \ 4; \ -1 \ -2 \ -3 \ -4; \ 1 \ 2 \ 3 \ 4; \ -1 \ -2 \ -3 \ -4];
        M(:,[4 3 2 1])
        M([4 \ 3 \ 2 \ 1],:)
        M(:,[3\ 2])
        M([4 1],:)
        M([1 \ 3 \ 4 \ 2],:)
        M(:,[3 2 4 1])
        x = [(1:5)' zeros(5,3) ((1:5).*(-1))']
        y = x'
        z = y;
        z(1,4) = z(1,4) -2;
        z(1,5) = z(1,5) -4;
        z(5,4) = z(5,4) +2;
        z(5,5) = z(5,5) +4
        w = abs(x);
        w(:, [2:4]) = 100;
        w(:,1) = w(:,1).*2;
        w(:,5) = w(:,5)./10
    case 7
        A = [
            2 3 5 6 21;
            5 0 2 2 0;
             6 7 8 9 11;
            0 13 17 5 6;
             1 4 0 3 9
                 ];
        B = [152; 19; 135; 127; 66];
        S = rank(A) == length(B)
        output = (inv(A))*B
end
```

I used a single M-File to write the solution for all the exercises. You give the program the exercise number and it will prompt the solution to the command window.

The function names in MATLAB (ex is exp(x)), (ln(x) is log(x)), (log2(x)) and log10(x) for the base-2 and base-10 logarithms), (sqrt(X)) for square root), (the sound command convert a matrix data into a sound), and (the image command display the matrix data as an image)

## The solution results.

```
Command Window
  >> ex
  Enter the Exercise Number: 1
 output =
   176.0000 176.0000 176.0000 187.0000
Command Window
 >> ex
 Enter the Exercise Number: 2
 output =
     1 1 -1 -1 -1 1 1 -1
Command Window
 >> ex
 Enter the Exercise Number: 3
 v =
     2 8 7 3 1 2 10 11
 v =
        8 7 3 11 10 2 1
     2
 v =
     2
        10 7 10 11 21 2 3
```

Command Window >> ex Enter the Exercise Number: 4 output = 1 4 9 16 25 36 49 64 81 64 49 36 25 16 9 4 1 >> ex Enter the Exercise Number: 5 ans = 3 2 4 1 -4 -3 -2 -1 3 2 4 1 -4 -3 -2 -1 ans = -2 -3 -1 -4 1 2 3 4 -1 -2 -3 -4 2 3 1 4 ans = 3 2 -3 -2 3 2 -3 -2 ans = -3 -1 -2 -4 2 3 1 4 ans = 2 3 1 4 2 1 3 4 -1 -2 -3 -4 -1 -2 -4 -3 ans = 3 2 4 1 -3 -2 -4 -1 3 2 4 1

-3

-2

-4

-1

```
>> ex
Enter the Exercise Number: 6
x =
        1
                  0
                           0
                                       0
                                                -1
                                               -2
        2
                  0
                             0
                                       0
        3
                  0
                             0
                                       0
                                                -3
                                               -4
        4
                  0
                            0
                                      0
        5
                  0
                          0
                                      0
                                                -5
у =
        1
                         0
                                    0
        0
                  0
                                                 0
                          0
        0
                0
                                    0
                                               0
        0
                 0
                          0
       -1
                 -2
                           -3
                                     -4
                                               -5
z =
        1
                2
                          3
        0
                0
                          0
                                    0 0
                 0
                           0
                                     0
        0
                                               0
       -1
                 -2
                           -3
                                     -2
                                                -1
w =
      2.0000 100.0000 100.0000 100.0000 0.1000

      4.0000
      100.0000
      100.0000
      100.0000
      0.2000

      6.0000
      100.0000
      100.0000
      100.0000
      0.3000

      8.0000
      100.0000
      100.0000
      100.0000
      0.4000

      10.0000
      100.0000
      100.0000
      0.5000

>>
```

```
Command Window

>> ex
Enter the Exercise Number: 7

S =

logical

1

output =

1.0000
2.0000
3.0000
4.0000
5.0000
```