

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
    case 2
        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 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])
    case 6
        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 =

     2     8     7     3    11    10     2     1

v =

     2    10     7    10    11    21     2     3
```

```
>> 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 =
```

```
     4     3     2     1
    -4    -3    -2    -1
     4     3     2     1
    -4    -3    -2    -1
```

```
ans =
```

```
    -1    -2    -3    -4
     1     2     3     4
    -1    -2    -3    -4
     1     2     3     4
```

```
ans =
```

```
     3     2
    -3    -2
     3     2
    -3    -2
```

```
ans =
```

```
    -1    -2    -3    -4
     1     2     3     4
```

```
ans =
```

```
     1     2     3     4
     1     2     3     4
    -1    -2    -3    -4
    -1    -2    -3    -4
```

```
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	0	0	0	-2
3	0	0	0	-3
4	0	0	0	-4
5	0	0	0	-5

```
y =
```

1	2	3	4	5
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
-1	-2	-3	-4	-5

```
z =
```

1	2	3	2	1
0	0	0	0	0
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	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
```

fx >>