

	ME444 MATLAB FOR ENGINEERS
	Practice 03- Programming in MATLAB -1

1. Create a script that calculates the sum of two numbers entered from the keyboard and prints it on the screen.
2. Create a script that asks the user to enter midterm and final grades from the keyboard, calculates the calculate grade point average and prints it on the screen. (NOTE: The midterm grade is 40% of the final grade and 60% of the final grade.)
3. Write a script program that calculates the volume of a hollow sphere $\left[V = \frac{4\pi}{3}(r_o^3 - r_i^3) \right]$. Assign a value to one variable for the inner radius (r_i) and also assign a value (r_o) to another variable for the outer radius. Then assign the volume (V) to a third variable using these variables. * Add comments to the script. Use the **help** command to view the block description in your script .
4. In the Command Window, try using the fprintf function for real numbers. Note what happened for each. realnumber =12345.6789 ;
 - Without specifying field width
 - It has a field width of 10 and a number of decimal places of 4
 - Has a field width of 10 and 2 decimal places?
 - Has a field width of 6 and a number of decimal places.
 - Has 2 field widths and 4 decimal places.
5. When would you use **fprintf** instead of **disp**?
6. Follow the code below and determine what will be printed, and then enter the commands in an editor and execute the code to verify your results.

```
num = 12.3;
disp('Hello!')
fprintf('Hmm how many ')
fprintf('lines\n\nwill print?\n')
fprintf('%6.2f\n', num)
```

7. An electricity company charges 6.6 cents per kilowatt-hour (KWH) when billing for household electricity. Write a " power_bill " script that will ask the user for the number of KWHs used in a given month and print the price for the month in dollars in the following format. When the script is run, we want it to run as follows:

Command Window

```
>> electricity
Enter the electricity consumption in kWh: 40
Your bill is $ 2.64 for your usage of 40 kWh this month
>> help electricity
Program that prices electricity consumption
```

8. Surface tension force is defined by the expression $F_d = 4 \pi T r$ where T is the surface tension measured in force per unit length and r is the radius of the bubble. The surface tension for water at 25 °C is 72 dyn /cm. Write a script that will ask the user for the radius of a water bubble in centimeters, then calculate F_d and print it out in a sentence. Let's say the temperature of the water is 25°C, so use 72 for the T-value.

9. Prepare a script that does the following:

- Asking the user to enter the maximum value for a variable x,
- Elements; Creates a vector x, in increments of 0.1, between 1 and the maximum value the user enters,
- a vector y whose elements are defined by the *sin(x) function*.
- The one that prints these two vectors to the screen.

SOLUTIONS

1.

```
%uygulama 03-1 çözüm
a=input('Birinci sayıyı girin: ');
b=input('İkinci sayıyı girin: ');
disp('Toplam= ');
disp(a+b);
```

2.

```
%uygulama 03-2 çözüm
v=input('Vize notunu giriniz: ');
f=input('Final notunu giriniz: ');
not=0.4*v+0.6*f;
disp('Sınav Ortalaması= ');
disp(not);
```

3.

Çözüm 1

```
%İçi boş bir kürenin hacmini hesaplaya program
ro=input('Dış yarıçapı giriniz: ');
ri=input('İç yarıçapı giriniz: ');
V=4*pi/3*(ro^3-ri^3);
disp('Kürenin hacmi= ');
disp(V);
```

Çözüm 2

```
%İçi boş bir kürenin hacmini hesaplaya program
ro=input('Dış yarıçapı giriniz: ');
ri=input('İç yarıçapı giriniz: ');
V=4*pi/3*(ro^3-ri^3);
fprintf('Dış yarıçapı %.2f cm ve iç yarıçapı %.2f cm olan ',ro,ri);
fprintf('Kürenin hacmi= %.3f cm3''tür.\n', V);
```

4.

```
>> fprintf('%f \n',12345.6789)
12345.678900
>> fprintf('%10.4f \n',12345.6789)
12345.6789
>> fprintf('%10.2f \n',12345.6789)
12345.68
>> fprintf('%6.4f \n',12345.6789)
12345.6789
>> fprintf('%2.4f \n',12345.6789)
12345.6789
```

5.

Herhangi bir biçimlendirme gerekmediğinde **disp** işlevi kullanılır. **disp** kullanarak vektörleri ve matrisleri yazdırmak da daha kolaydır. **fprintf** işlevi biçimlendirilmiş çıktı için kullanılır.

6.

```
Hello!
Hmm how many lines
_____
will print?
12.30
_____
```

1 satır boşluk

7.

```
Editor - C:\Users\N.Furkan\Desktop\Matlab Uygulama\electricity.m
electricity.m x +
1 %Program that prices electricity consumption
2 consumption=input('Enter the electricity consumption in kWh: ');
3 price=consumption*6.6/100;
4 fprintf('Your bill is $ %.2f for your usage of %d kWh this month\n',price,...
5 consumption);
```

8.

```
Editor - D:\Belgelerim\MATLAB\yuzey_gerilimi.m
yuzey_gerilimi.m x +
1 %Suyun yüzey gerilim kuvvetini hesaplayan programdır.
2 T=72; %25 C'deki yüzey gerilimi, dyn/cm
3 r=input('Lütfen kabarcığın yarıçapını cm cinsinden giriniz: \n');
4 Fd=4*pi*T*r; % Fd yüzey gerilimi
5 fprintf('Suyun yüzey gerilim kuvveti %3.2f cm yarıçap için %g dyn''dir. \n',r,Fd);
```

9.

```
Editor - D:\Belgelerim\MATLAB\Untitled4.m
Untitled4.m x +
1 % uygulama03-9.çözümü
2 - xmax=input('x değerinin maksimum değerini giriniz: ');
3 - x=1:0.1:xmax;
4 - y=sin(x);
5 - disp('x');
6 - disp(x);
7 - disp('y');
8 - disp(y);
```