Practical Task

Your Practical Task must contain the following:

1- Draw "using **plot** function" your **continuous** periodic signal (for example,$y = \sin(t)$).
   a. Change its amplitude with any value.
   b. Change its phase with any value.
   c. Change its frequency with any value.

   Using "**Subplot function**" to combine all in one figure like Fig.1.

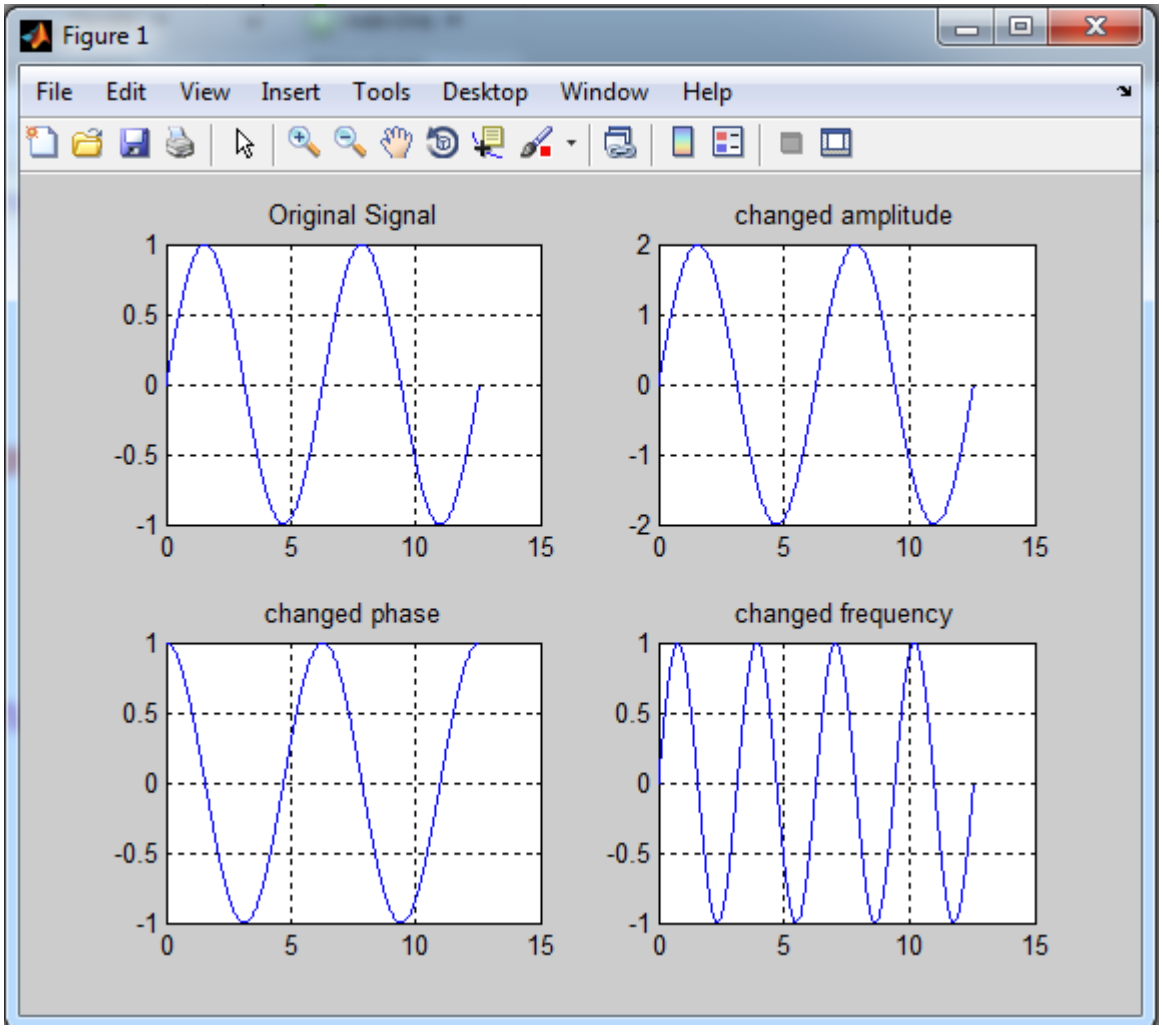

Fig.1

Practical Task

2- Draw "using **stem** function" your **discrete** periodic signal (for example,$y = \cos(n)$).
   a. Change its amplitude with any value.
   b. Change its phase with any value.
   c. Change its frequency with any value.

   Using "**Subplot function**" to combine all in one figure like Fig.2.

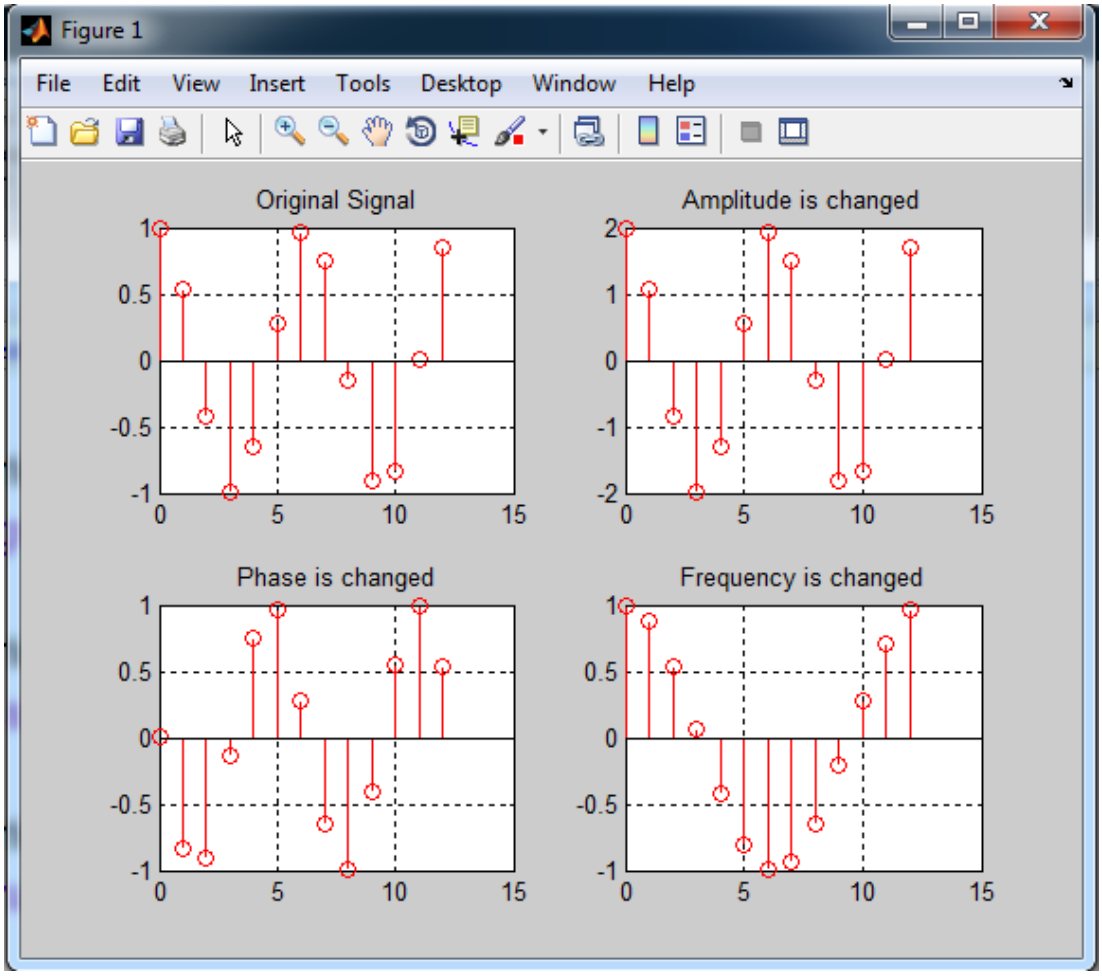

Fig.2

Practical Task

3- Prove that the value of the following summations (**using MATLAB**):

a. $\sum_{k=0}^{\infty}(0.5)^k = 2$

b. $\sum_{k=0}^{5}(2)^k = 63$

4- Prove that the value of the following Integration (**using MATLAB**):

$\int_{-\infty}^{0} e^t . dt = 1$

5- Prove that the value of the following Differentiation (**using MATLAB**):

$y = x^3 \qquad \frac{dy}{dx} = 3x^2$

6- Find the value of Convolution (**y[n]**) of the following discrete signal (**using MATLAB**) and by **your hand (in external Paper)**:

$h[n] = \{2, 1, 3\}$
$x[n] = \{3, 2, 1\}$

7- Find the Z-Transform of any signal such as:
$x[n] = (1/4)^n$

Note that z-transform in MATLAB is using (**Unilateral z-transform**)

8- Find the Fourier Transform of any signal and plot it in both time-domain and complex frequency-domain.

Note that:

1- If you want a **bonus**, you can use GUI (**you will be asked on it "be careful"**), or you can do more things using **MATLAB.**
2- You will be asked in some of the concepts in signals processing. **For example**, what is the importance of Fourier transform and its applications?

You will not get a bonus if the required task is not completed