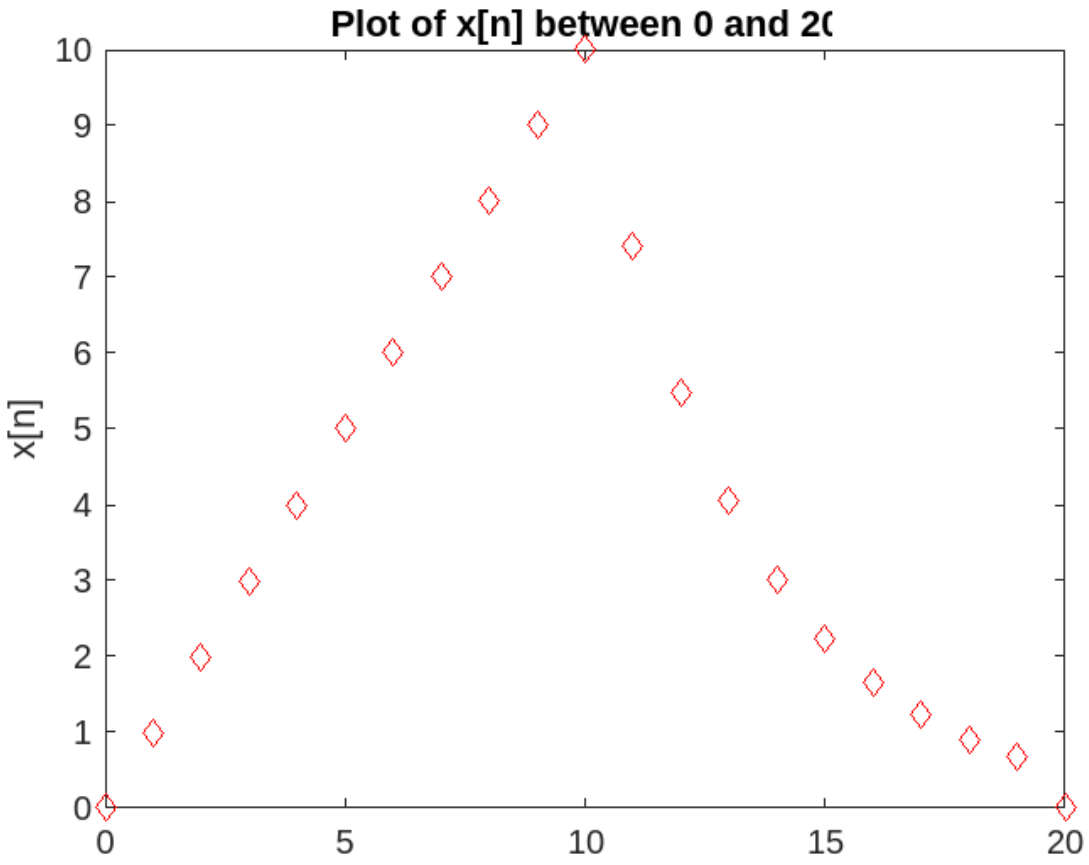
ASSIGNMENT-1

Aakarsh Jain
2021507

Question - 5

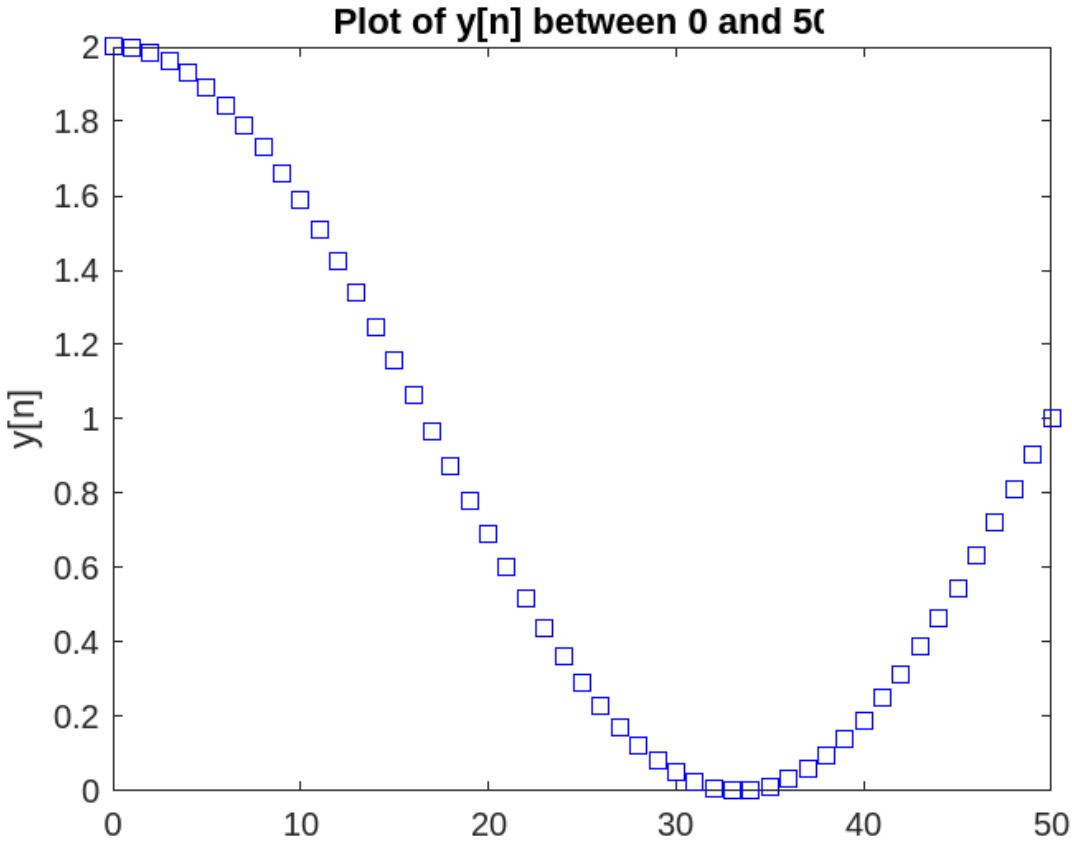
For X[n]:

Using x[n] = $n \times (u(n) - u(n-10)) + 10e^{-0.3(n-10)} * (u(n-10) - u(n-20))$, we generate the following graph in matlab for $0 \leq n \leq 20$:



For Y[n]:

Using y[n] = $cos(0.03\pi n) + u(n)$, we generate the following graph in matlab for $0 \leq n \leq 50$:



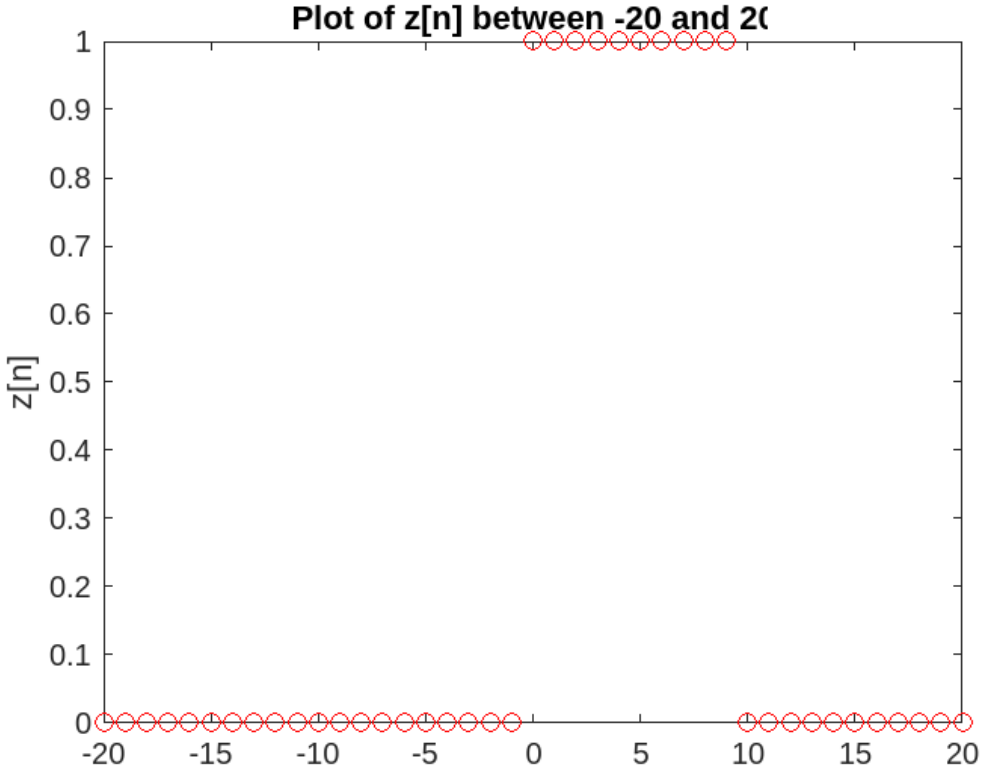
Question - 6

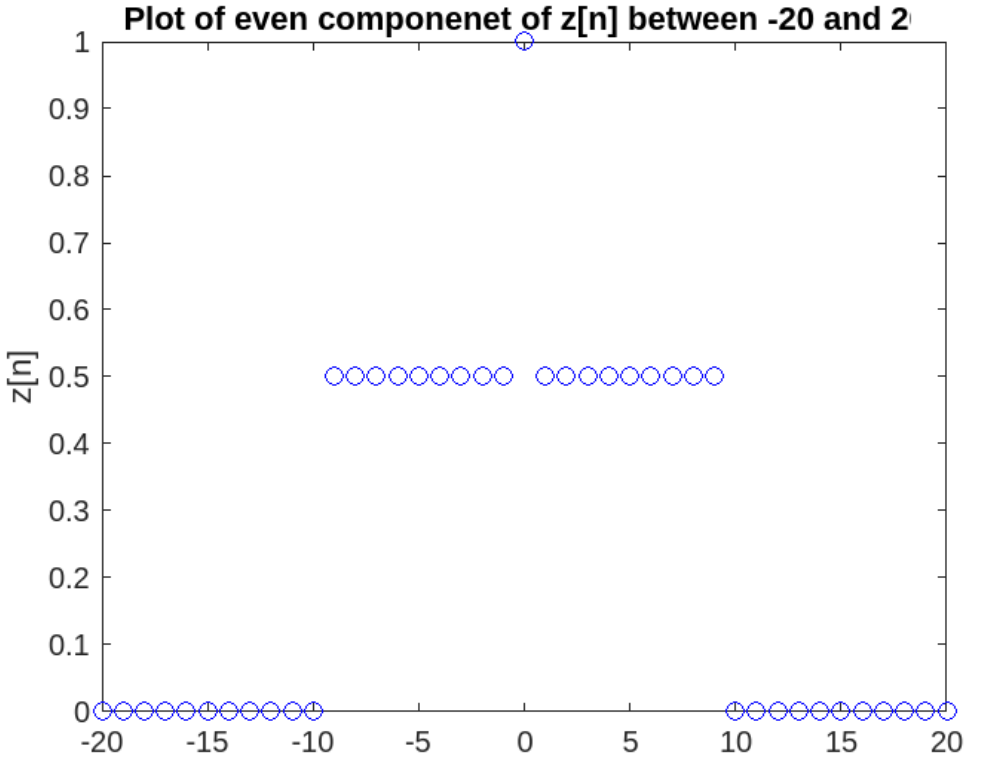
Using z[n] = $u(n) - u(n - 10)$, we can generate the even and odd components by using the following formulas:

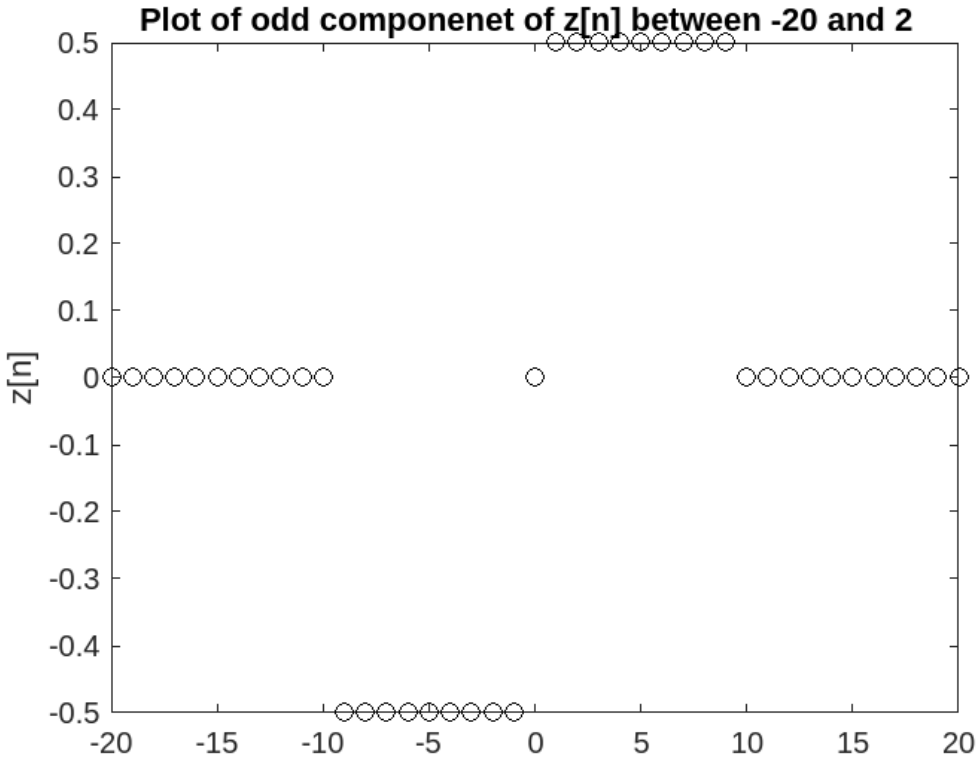
$$Even\{z[n]\} = \frac{z[n] + z[-n]}{2}$$

$$Odd\{z[n]\} = \frac{z[n] - z[-n]}{2}$$

The resulting graphs are as follows:


Plot of z[n] between -20 and 2(
z[n]
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-20
-15
-10
-5
0
5
10
15
20


Plot of even componenet of z[n] between -20 and 2
z[n]
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-20
-15
-10
-5
0
5
10
15
20



Code execution:

I have written all the functions used to modify signals, i.e. u, x, y and z, in separate .m files. The main.m file is supposed to use these functions and generate the graphs for all these functions. Hence, all the files should be in the current working directory during execution and only main.m needs to be executed. Unfortunately, while working on the online editor, main.m was only generating plot for the last graph, i.e. odd component of z[n]. Thus I have also included a copy of the file with the .mlx extension (Matlab live script) by the name of “Copy_of_main.mlx”. Running this file instead should solve the issue, the code provided in both the files is the same.