To study various signal types, this MATLAB programme does signal analysis and breakdown. The code creates charts and offers details on each signal's characteristics.

(a)y[n] = cos[n/6] sequence

produces a 'n' discrete sequence ranging from -100 to 100.
produces the cosine signal, y = cos(n / 6), and graphs it.
This range is chosen as it gives suitable plot
uses the' stem' plot to display the sequence.
"Sequence y[n] = cos[n/6]" is the subtitle of the subplot.
shows that the signal's fundamental frequency is not present.

(b)y[n] = cos[8n/31] sequence

produces a 'n' discrete sequence ranging from -100 to 100.
produces the cosine signal, y = cos(n / 6), and graphs it.
This range is chosen as it gives suitable plot
In contrast to the prior signal, this one has a frequency of 8/31 cycles per unit 'n'.
the cosine signal, y = cos(8n / 31), is calculated and shown.
uses the 'stem' plot to display the sequence.
"Sequence y[n] = cos[8n/31]" is the subtitle of the subplot.

shows n = 0.03225 or n=1/31 as the computed fundamental frequency.

(c)Y(t) = cos(t/6) signal

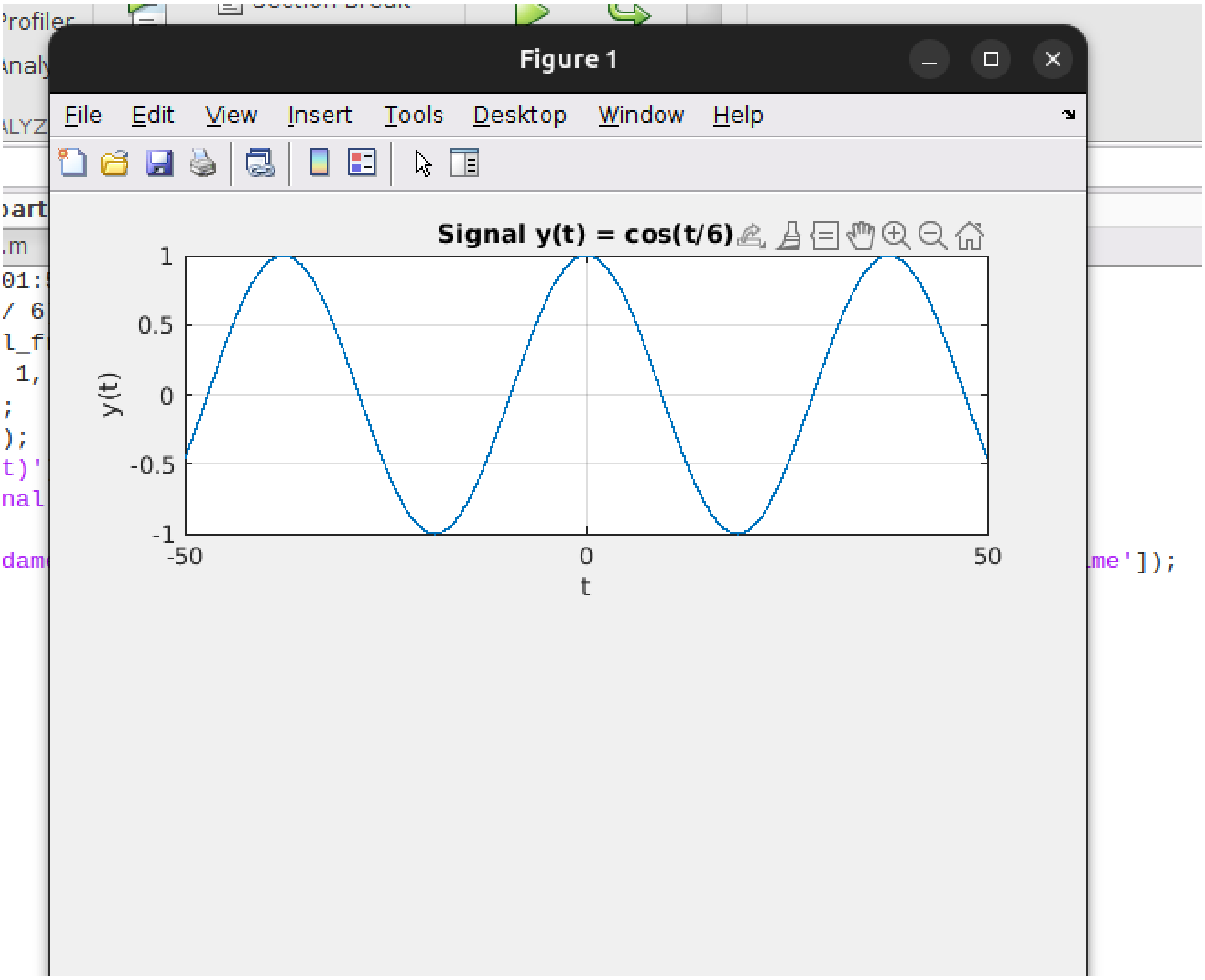
creates a time range that runs continuously from -50 to 50.It is chosen we
Can have proper visualisation of plot
the continuous cosine signal y = cos(t / 6) is calculated and shown.
uses the 'plot' function to display the continuous signal.
has the subtitle "Signal y(t) = cos(t/6)" for the subplot.
The step size of 0.01 between consecutive values ensures
a fine-grained representation of the continuous parameter 't
calculates the fundamental frequency as cycles per unit of time and displays it.

(d)Signal y(t) = sin(2/3t) + cos(t/6):

creates a time range that runs continuously from -50 to 50.It is chosen we
Can have proper visualisation of plot
With an additional sine component, the signal is similar to the preceding one.
the combined signal y = cos(t / 6) + sin(2/3 * t) is calculated and shown.
utilises the 'plot' tool to display the combined signal.
reads "Signal y(t) = cos(t/6) + sin(2pi/3t)" as the subtitle of the subplot.
explains that the complex waveform precludes the use of the fundamental frequency.
The step size of 0.01 between consecutive values ensures a fine-grained representation of the continuous parameter 't

\\

part(b)
I have given user a choice to choose alpha but if i had to choose
Alpha it would have been 0.5 as it would have been beat for visualising
the odd and even part of the graph for a users view
creates a unique signal with the formula x(t) = 2e-(alpha)t.
A step of 0.01 is used to generate positive time values
A range of (0,5) is chosen in it . A thorough representation
 is ensured by this range.
computes the signal's even and odd components.
different subplots for the original, even, and odd components.
provides proper subplot titles and axis labels.
arranges the subplots differently for improved visualisation



.

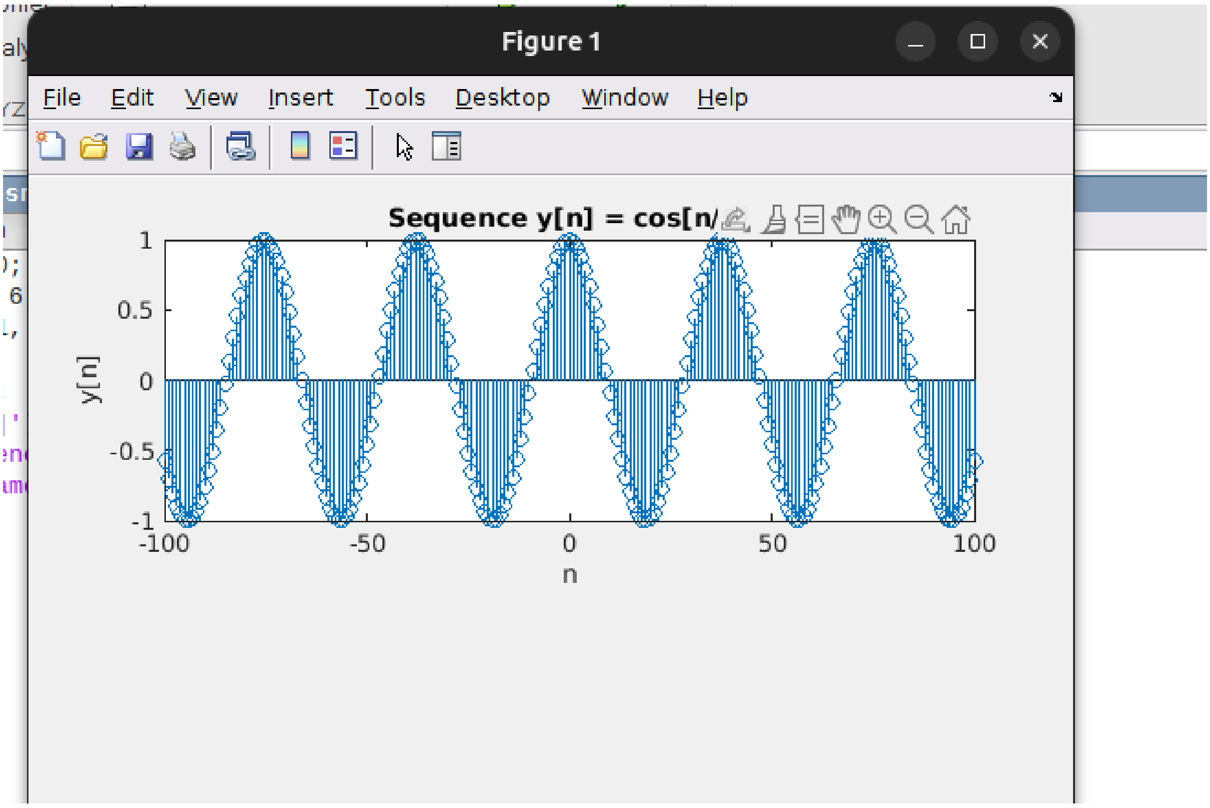
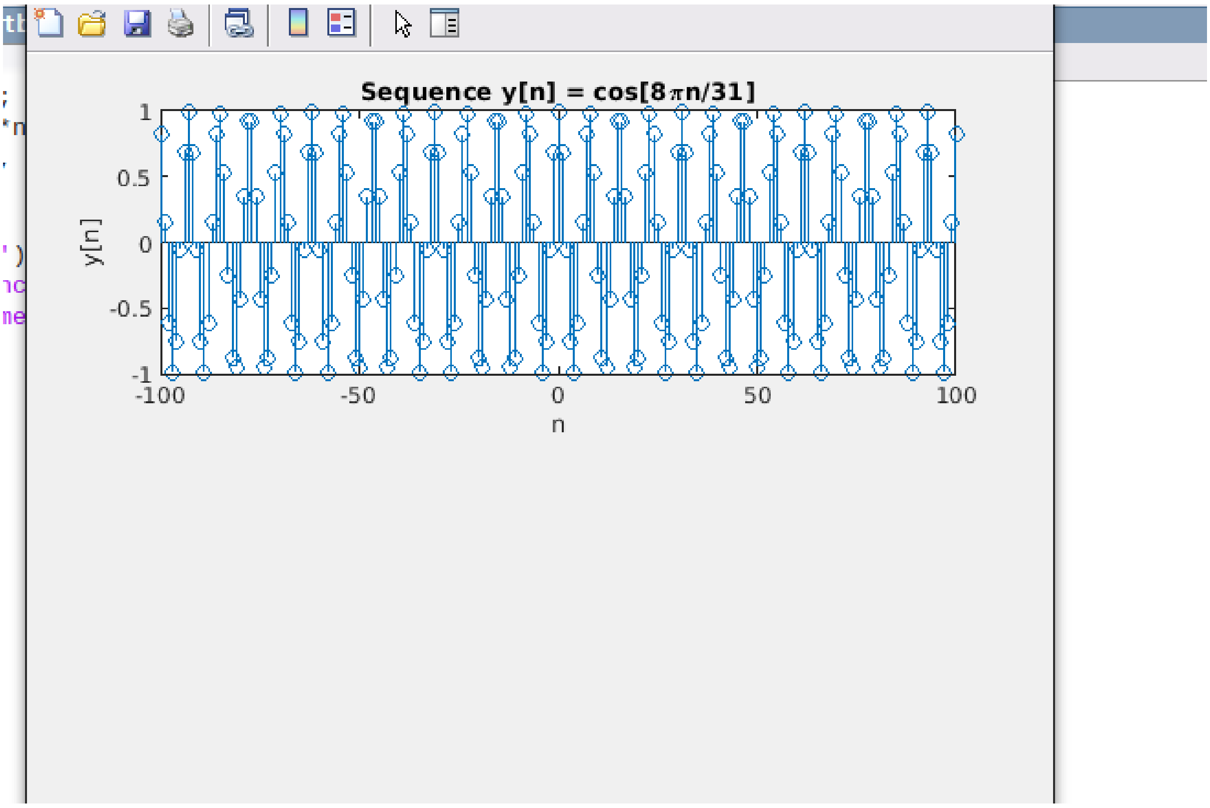


Figure 1
File Edit View Insert Tools Desktop Window Help
Sequence y[n] = cos[n/
y[n]
n


Sequence y[n] = cos[8πn/31]
y[n]
n

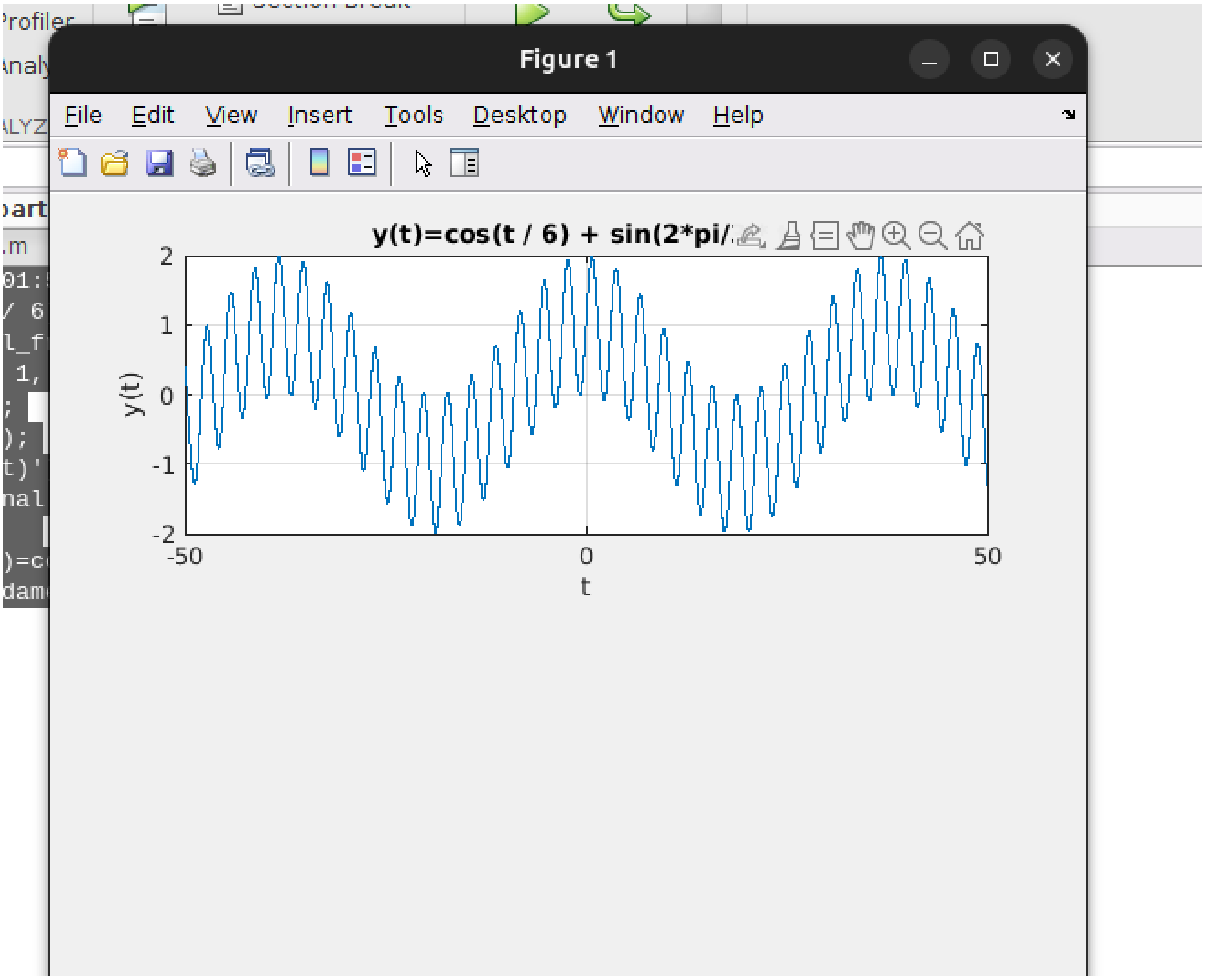


Figure 1
File Edit View Insert Tools Desktop Window Help
y(t)=cos(t / 6) + sin(2*pi/
y(t)
t
2
1
0
-1
-2
-50
0
50

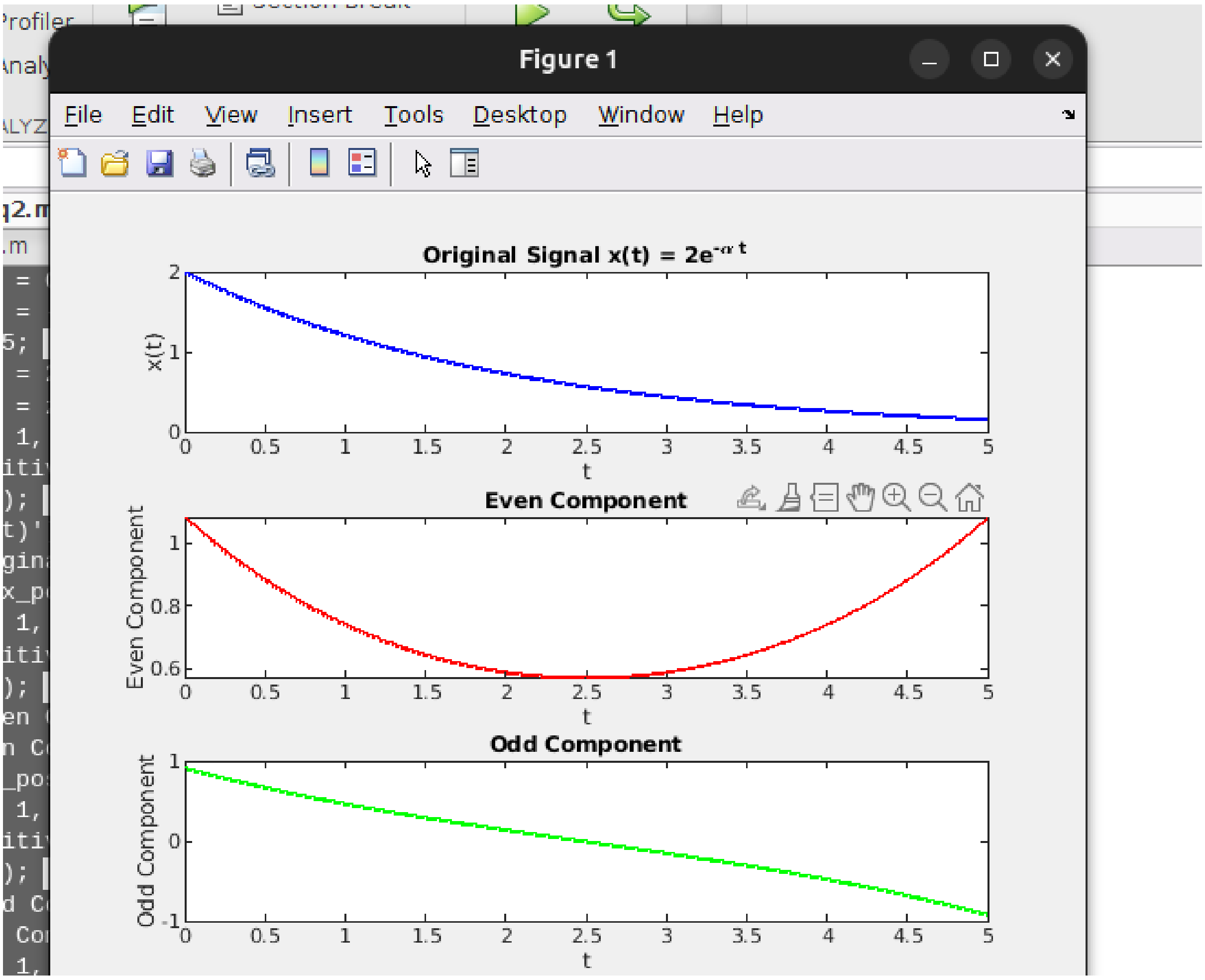


Figure 1
File Edit View Insert Tools Desktop Window Help
Original Signal x(t) = 2e^-α t
x(t)
t
Even Component
t
Odd Component
Odd Component
t