**Intro:**

General signal generator

Mini project

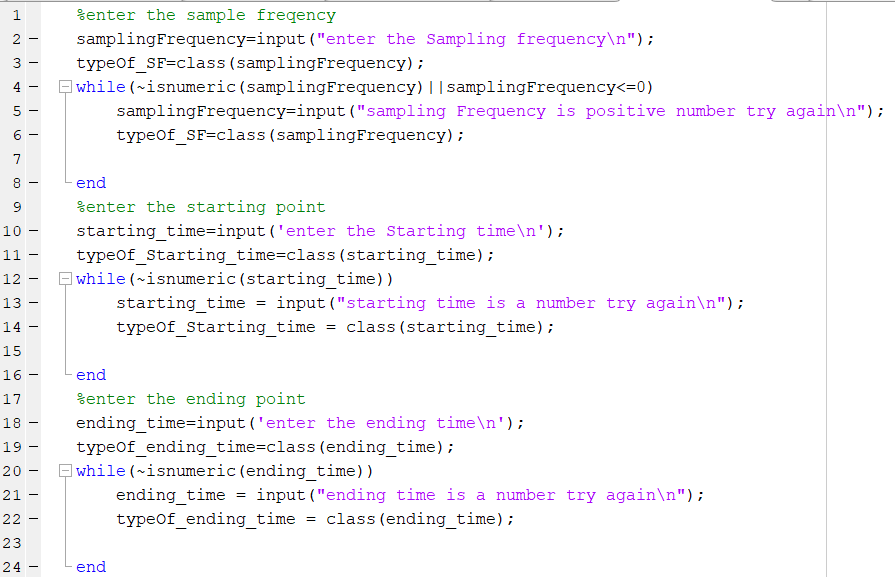
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| --- | --- |
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A signal generator is one of a class of electronic devices that generates electrical signals with set properties of amplitude, frequency, and wave shape. These generated signals are used as a stimulus for electronic measurements, typically used in designing, testing, troubleshooting, and repairing electronic or electroacoustic devices, though it often has artistic uses as well.

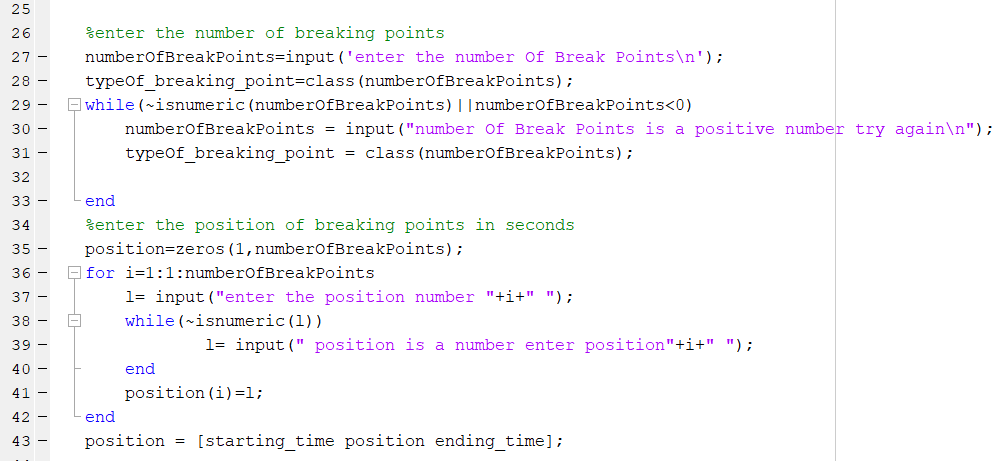
Here is a MATLAB code to implement it

**Code explanation:**

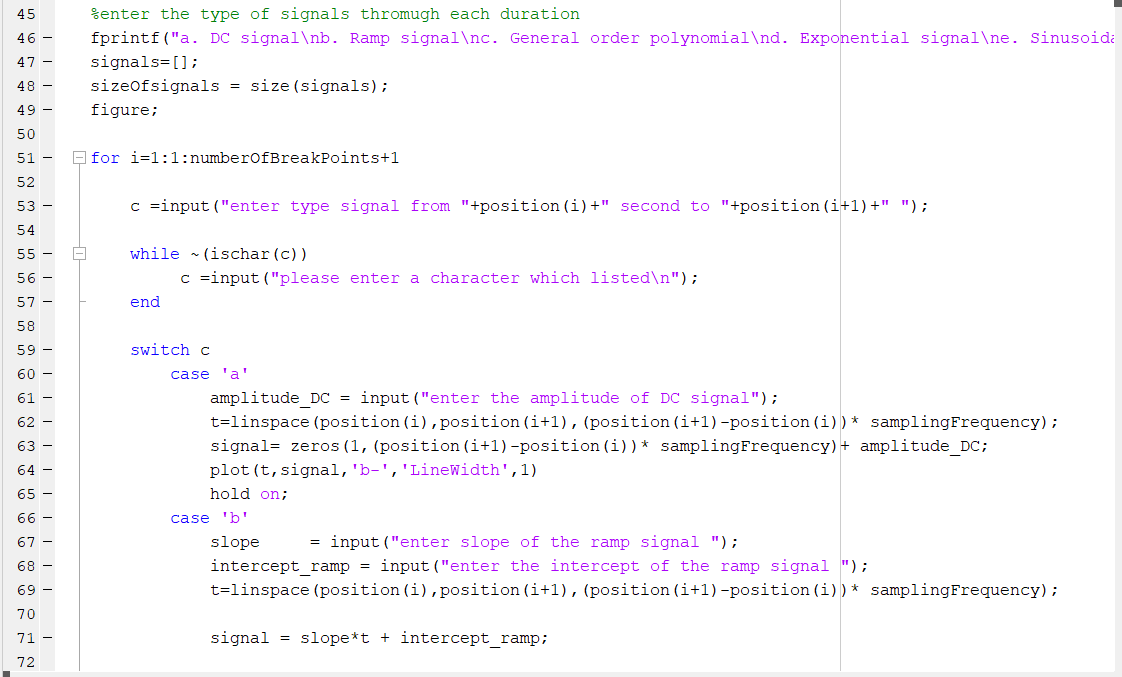
* Ask the user for sampling frequency, start, and end of time scale. Then check that data is valid.

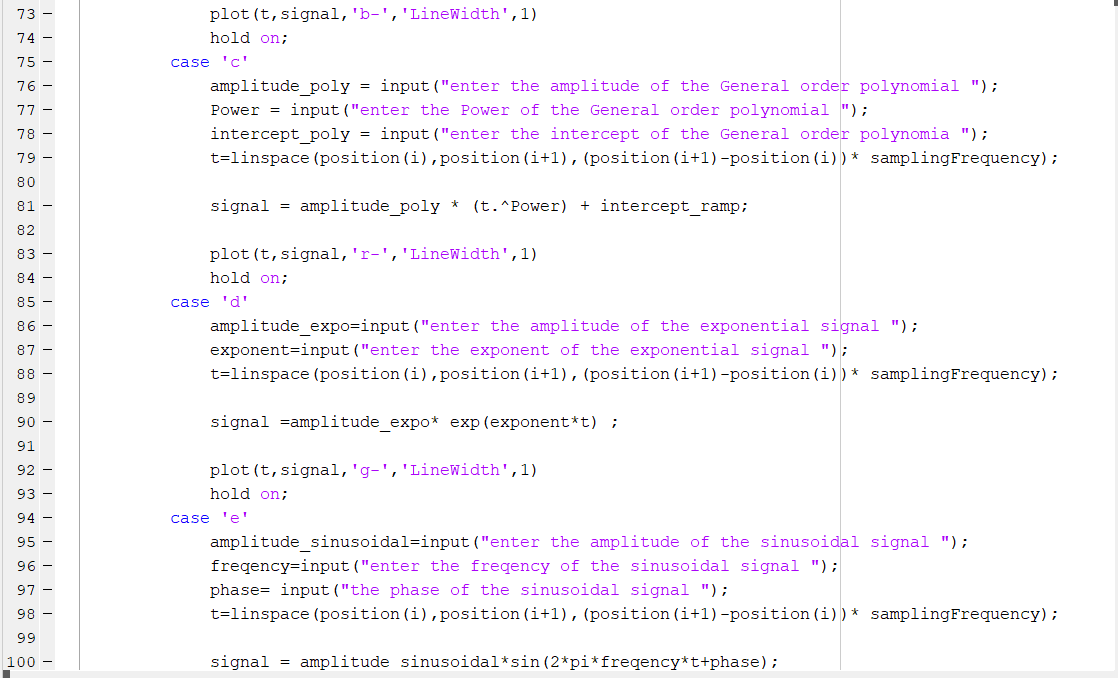


* Ask the user the number of break points and their position



* Generate the signal: Ask the user the type of signal at each region according to the number of break point.







-The program asks the user the type of signals he wants at each region

-For each type, the program asks the user for the signals specification like amplitude for dc signal or slope for ramp signal

-the number of iterations of for loop = no. of break points+1

* Ask the user if he wants to perform any operation on the signal  
  -After choosing the operation, the user enters the c/cs of the operation (like shift value for time shift) and the programs displays the new signal in time domain.

Graphical user interface, text, application

Description automatically generated

Text

Description automatically generated

Text

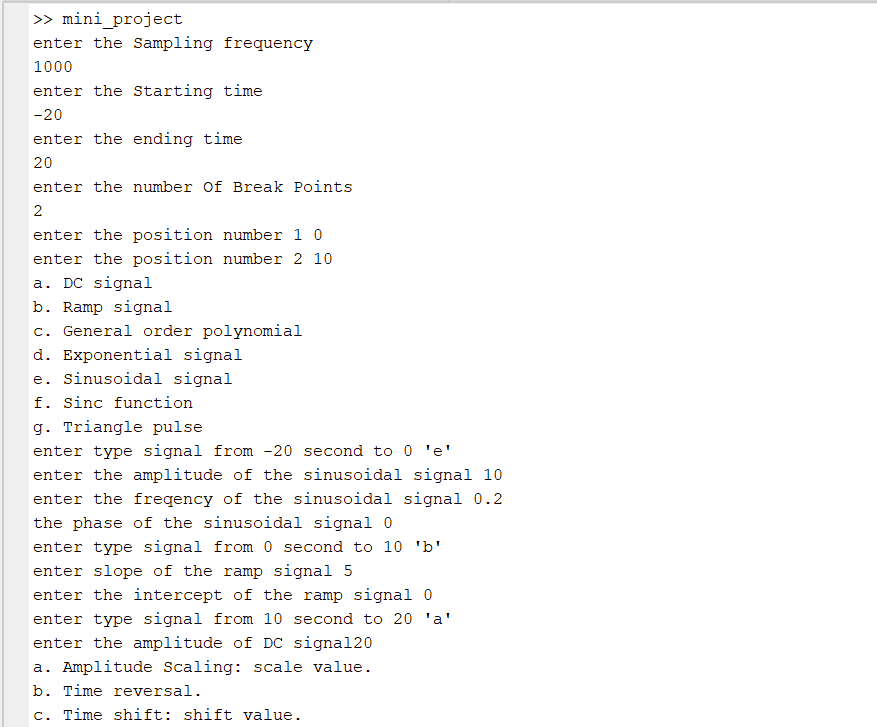
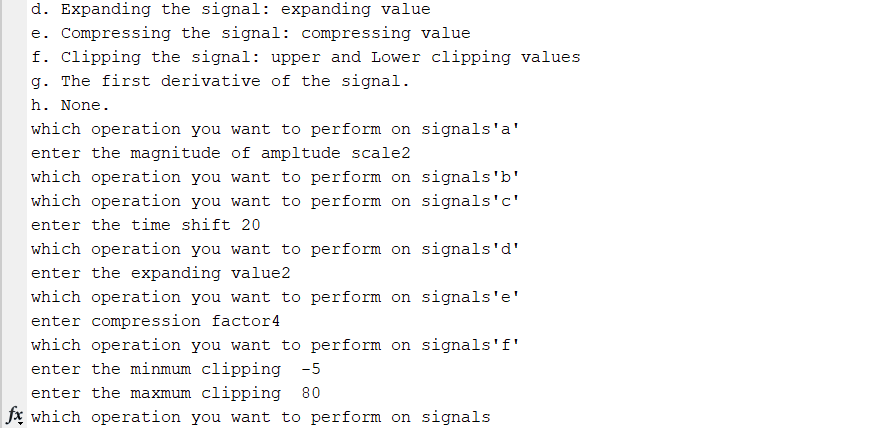
Description automatically generated

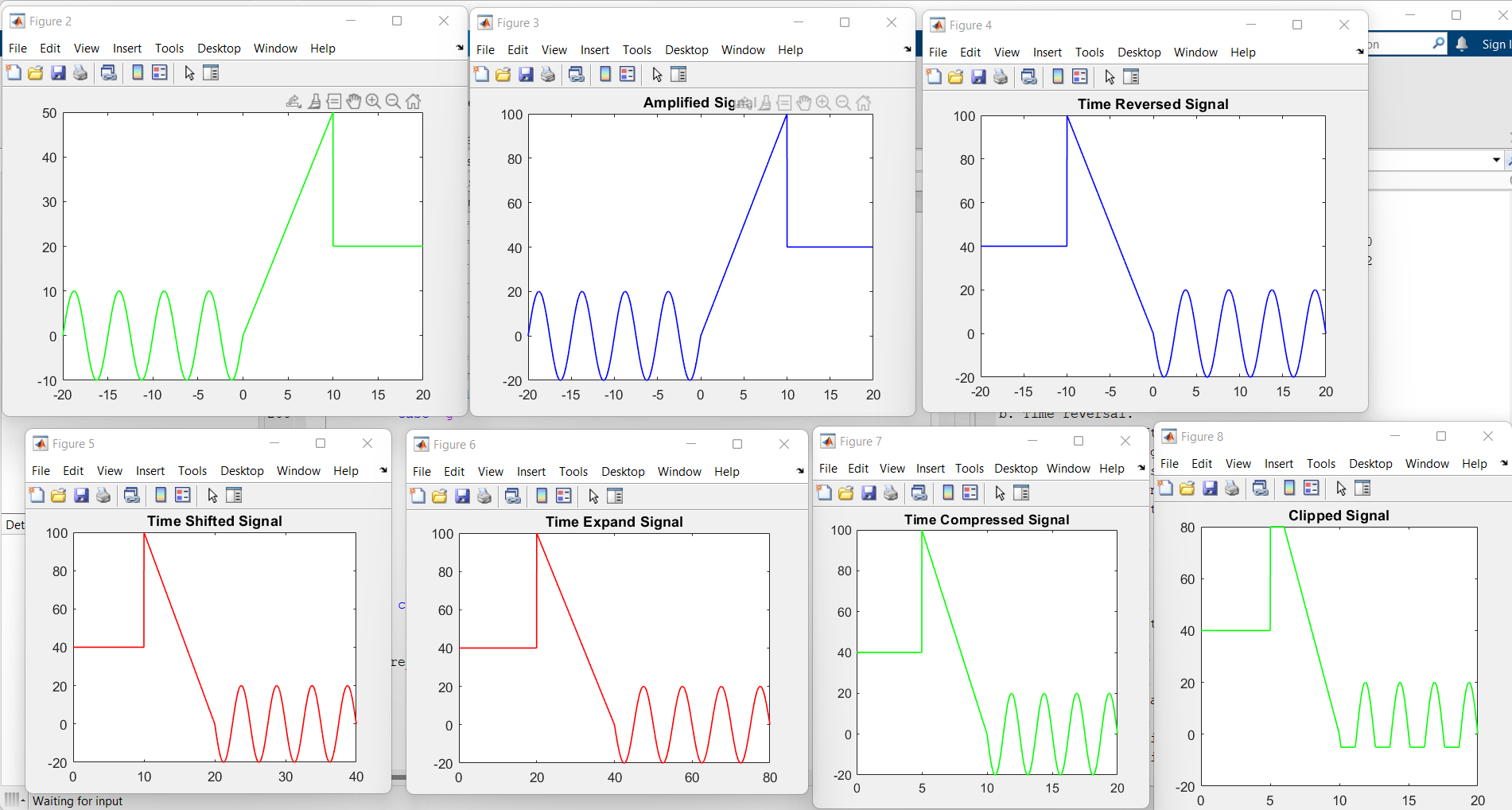
Text

Description automatically generated

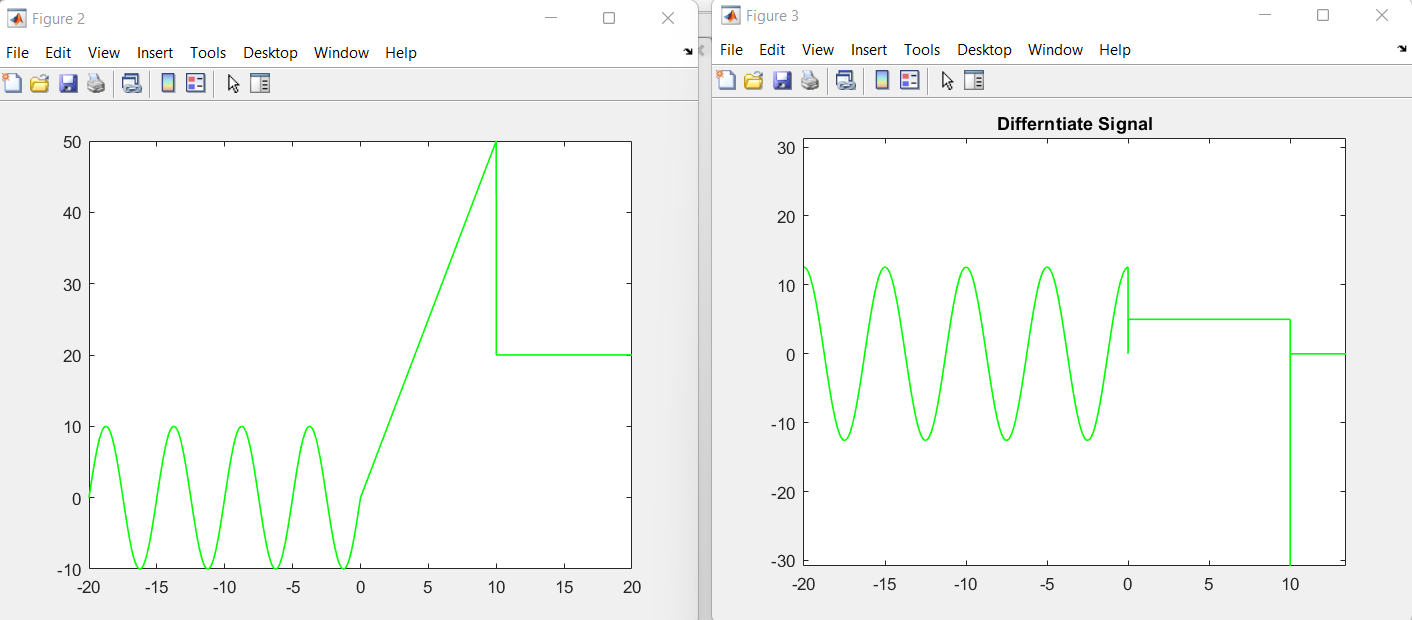
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**Screenshots of output:**



-differentiate signal:



Note that the function is Dirichlet at t=10