DIGITAL SIGNAL PROCESSING LAB MANUAL 2

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MATLAB

- Open MATLAB
- Select Help> Documentation> Signal Processing Toolbox

Signal Processing Toolbox

Signal Processing Toolbox™ provides

- functions
- apps

Purpose:

- analyze signals
- pre-process signals
- extract features from signals
- tools for filter design and analysis, resampling, smoothing, detrending, and power spectrum estimation
- provides functionality for extracting features like changepoints and envelopes, finding peaks and signal patterns, quantifying signal similarities, and performing measurements such as SNR and distortion
- can also perform modal and order analysis of vibration signals

Signal Analyzer App

- can preprocess and analyze multiple signals simultaneously in time, frequency, and time-frequency domains without writing code
- explore long signals
- extract regions of interest

Filter Designer App

- can design and analyze digital filters by choosing from a variety of algorithms and responses.

  Both apps generate MATLAB code.

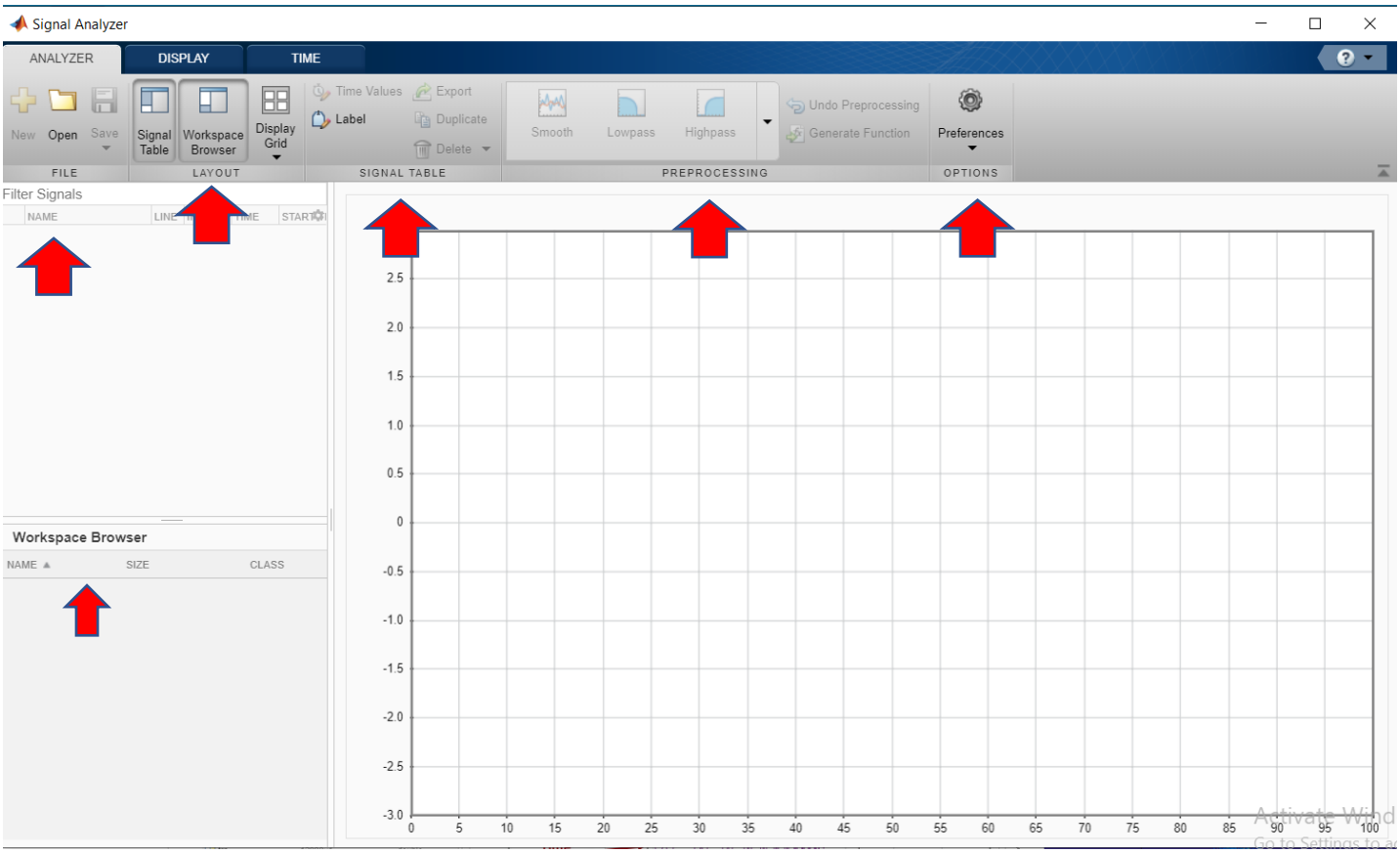
How to use Signal Analyzer App

- The **Signal Analyzer** app is an interactive tool for visualizing, measuring, analyzing, and comparing signals in the time domain, in the frequency domain, and in the time-frequency domain.
- The app provides a way to work with many signals of varying durations at the same time and in the same view.

Steps:

- Start the app by choosing it from the **Apps** tab on the MATLAB® toolstrip.
- You can also start the app by typing signalAnalyzer at the MATLAB command prompt.

Components:

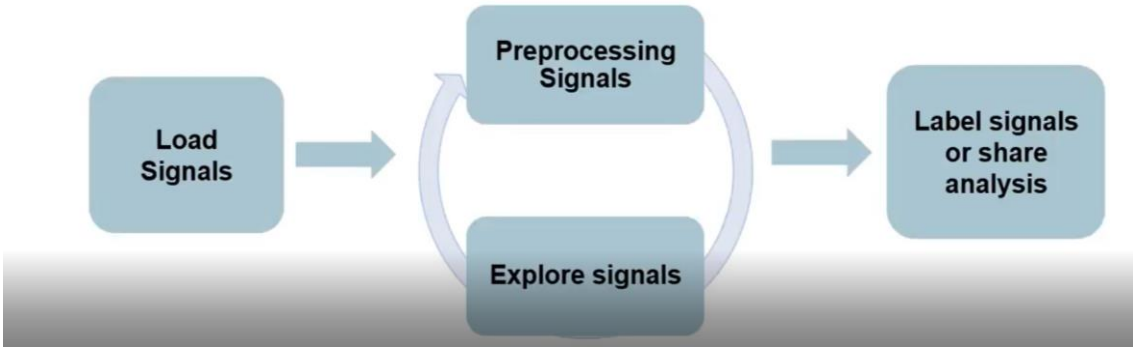


Tutorial:

https://www.youtube.com/watch?v=E8diAzd2-cM

Workflow of Signal Processing:

1. Select Signals to Analyze
2. Preprocess Signals
3. Explore Signals
4. Label Signals
5. Share Analysis



Exercise:

Time: 45 minutes

Marks: 10

Group: 2-3 person

Analyze and Pre-process ECG Signal using MATLAB- Signal Analyzer App.

Follow the steps taught in class and show its output.