

**TITLE:** PYTHON BASED SIGNALS AND FUNCTIONS ANALYZER USING  
GRAPHICAL USER INTERFACE

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# INTRODUCTION AND PROJECT BACKGROUND

Rwanda and other African countries are advancing in science and technology, due to this reason studying and understanding well the science theories and principles is very critical. Science and technology are very essential in our daily life using them we can solve most of the social issues. Therefore, better understanding of science and engineering principles is the key.

Most of the times people learn theory without getting the knowledge about the system behavior and characteristics of the signal and functions. So our project called python based function analysis will be able to plot most functions (functions with not more than three variables) which will help academic students to know the systems' behavior and also the analysis will be real time so that it becomes more understandable compared to the past years.

# PROJECT OBJECTIVES

The **main objective** of our project is to build a functional and signal analyzer user interface, and to provide executable file for windows computer.

## **Other objectives:**

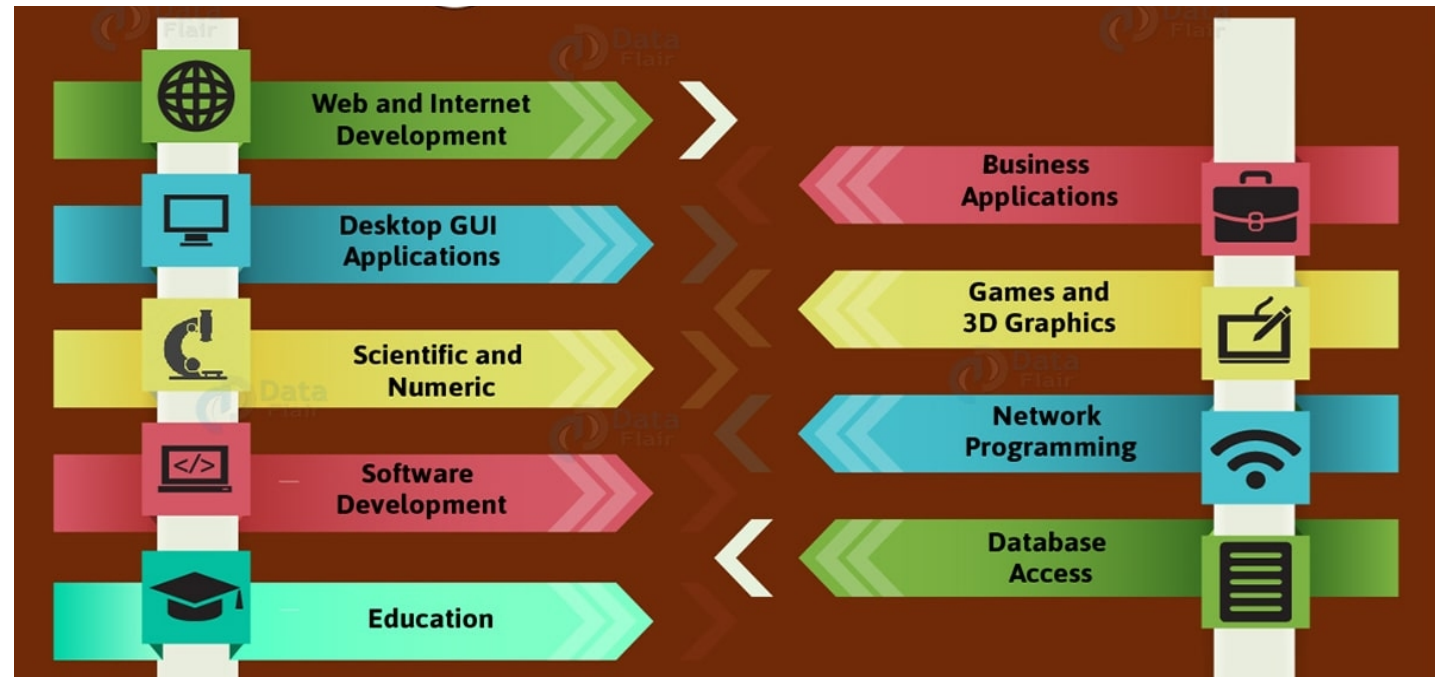
To build an interactive UI

To learn python as a tool of engineering students

# THEORIES REGARDING OUR PROJECT

PYTHON: is a high-level, interpreted and general-purpose dynamic programming language that focuses on code readability, it is;

- Interactive
- Interpreted
- Modular
- Dynamic
- Object-oriented
- Portable
- High level
- Extensible in C++ & C



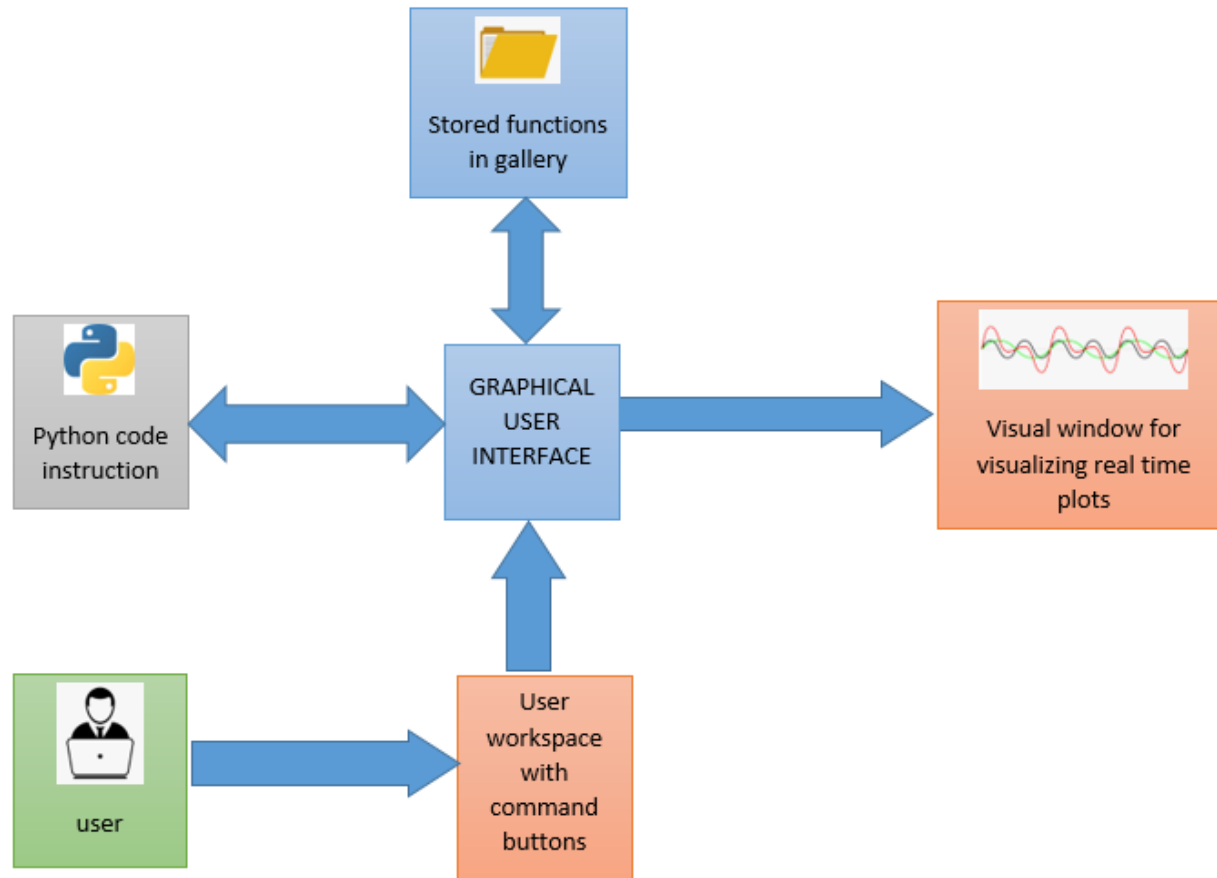
# RESEARCH METHODOLOGY

**Methods and techniques that are being used to gather information;**

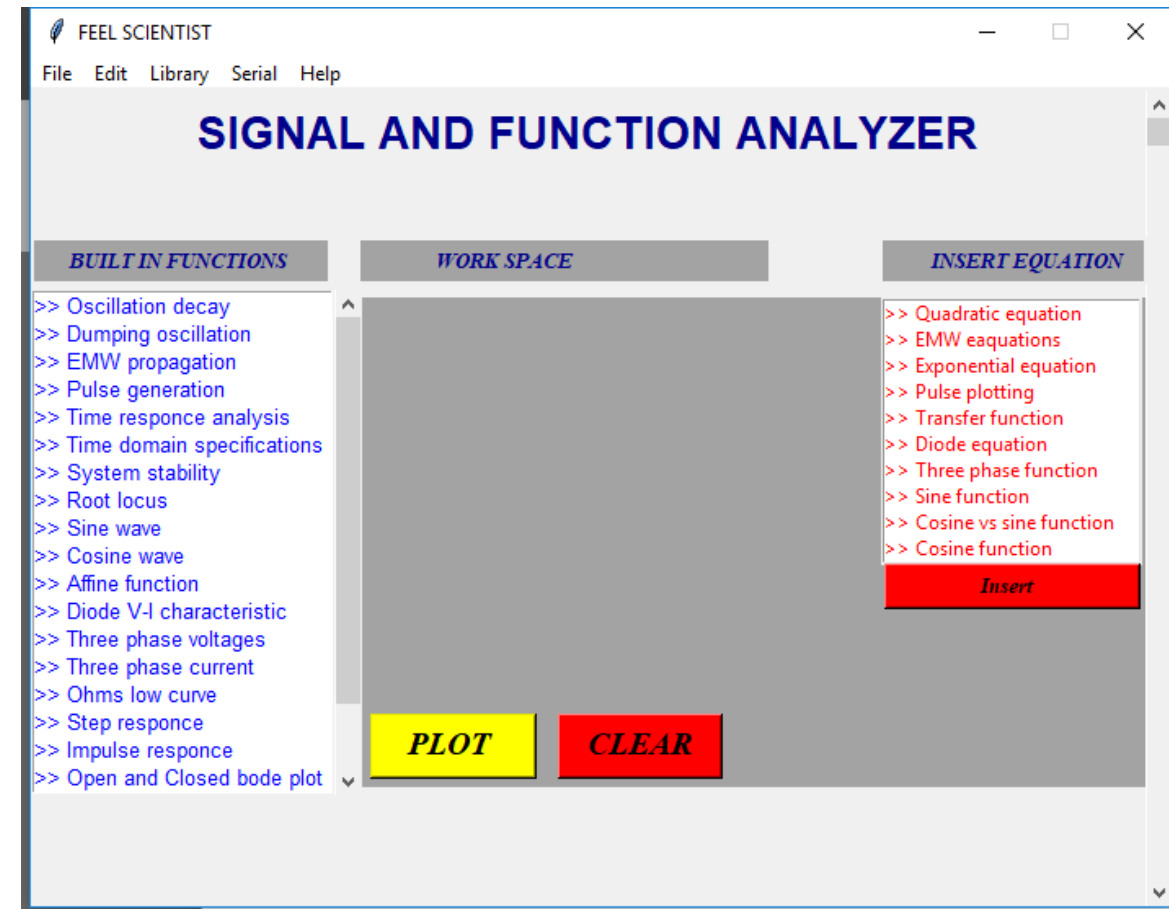
- Library books,
- IEEE journals and
- Exchanging idea with supervisor and colleagues.

# USER INTERFACE DEVELOPMENT

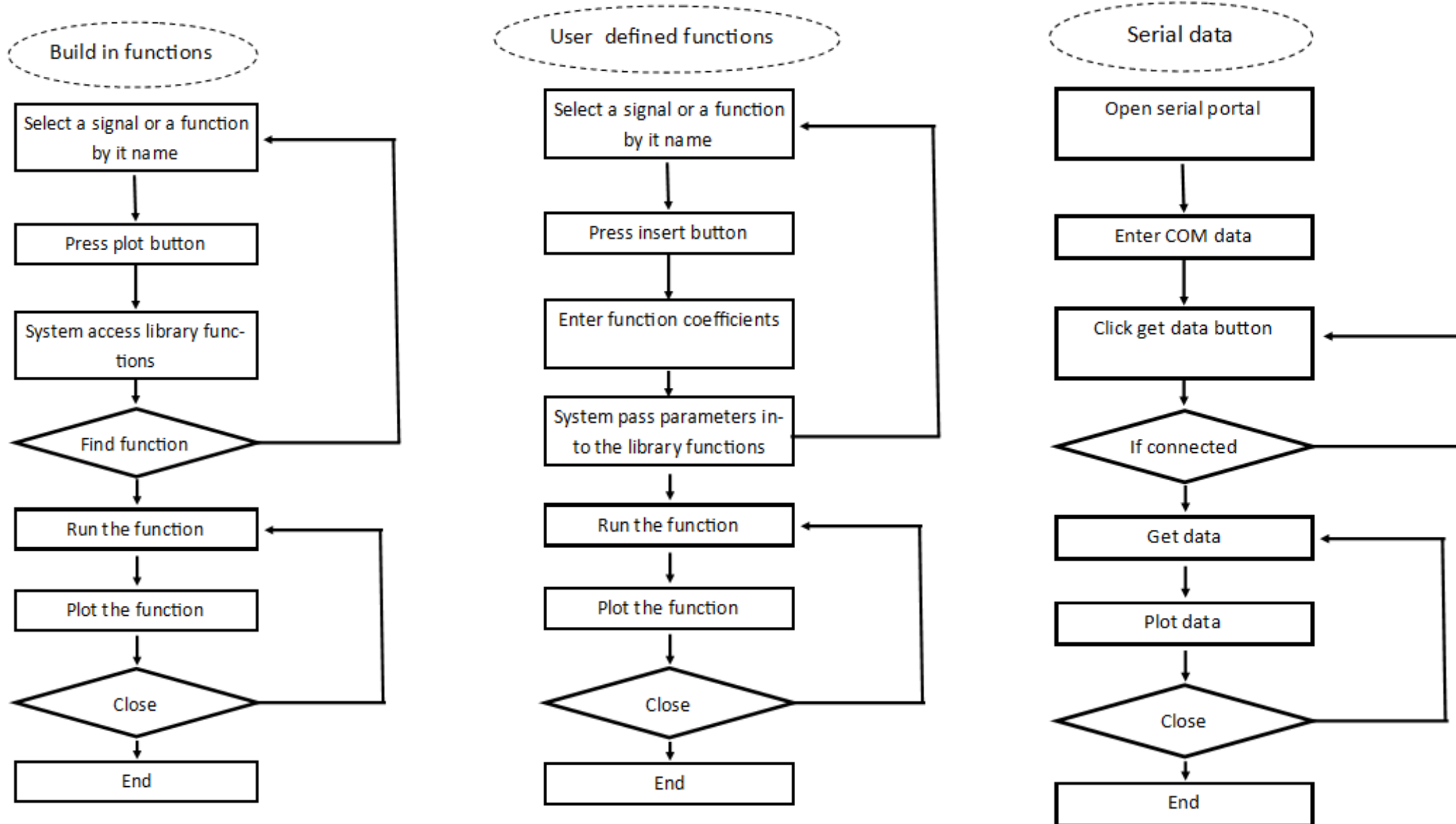
## SYSTEM BLOCK DIAGRAM



## DEVELOPED USER INTERFACE

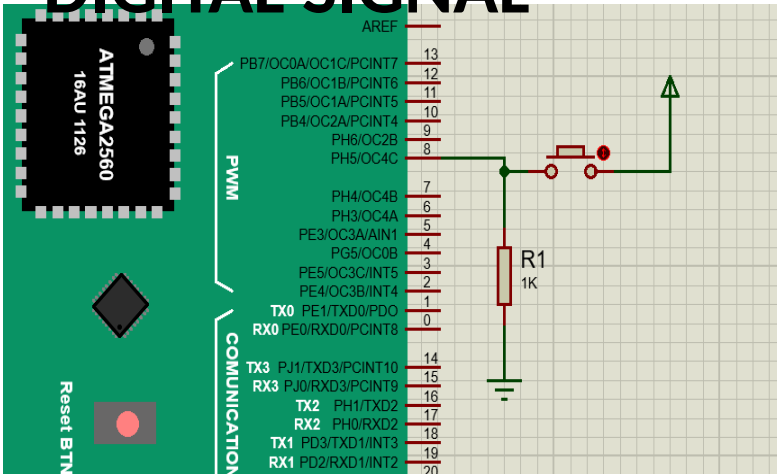


# LOGIC BEHIND THE SYSTEM

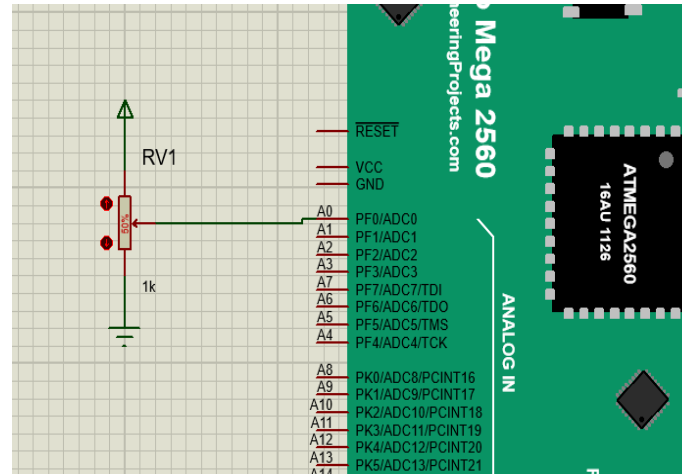


# SYSTEM DEMONSTRATION

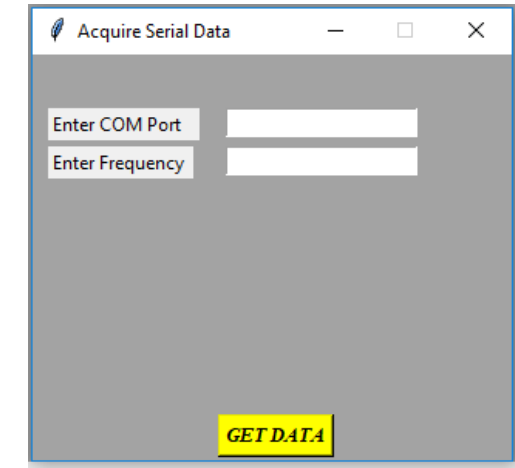
## DIGITAL SIGNAL



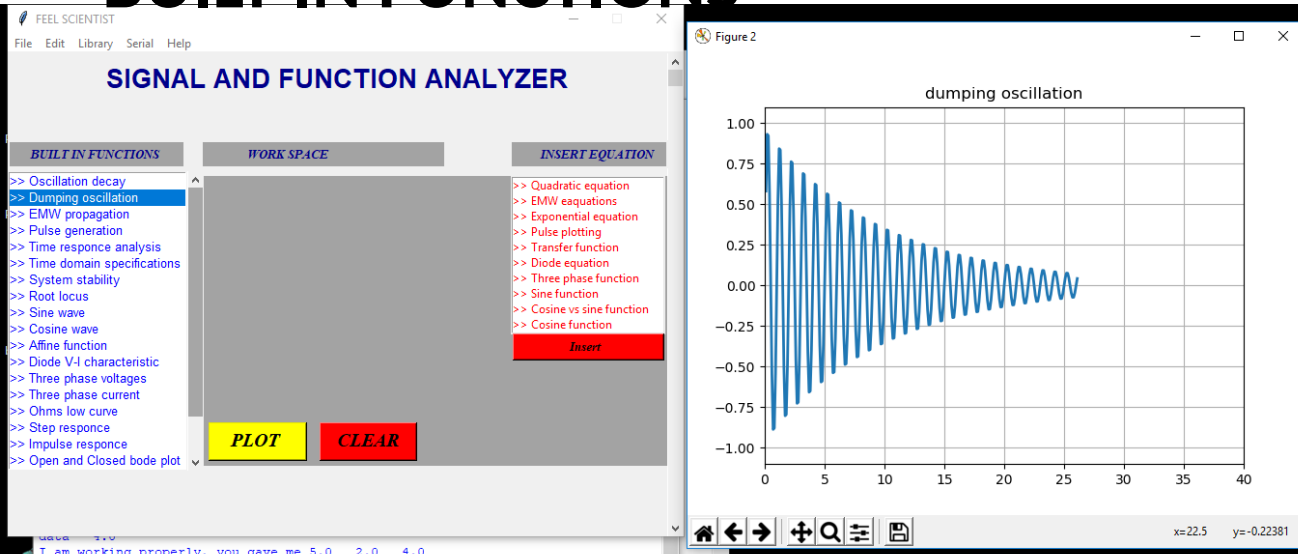
## ANALOG SIGNAL



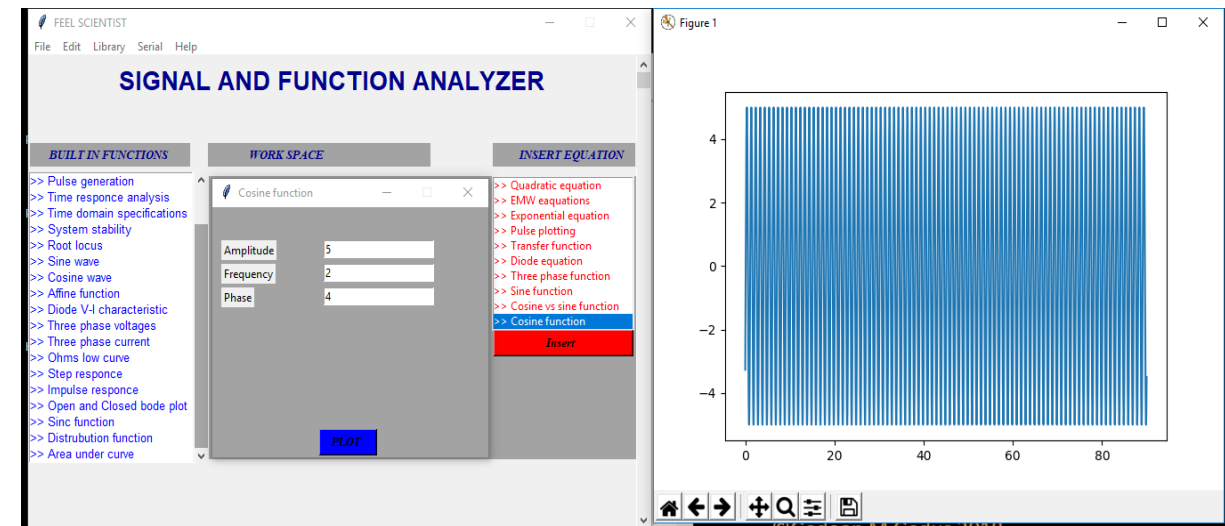
## SERIAL DATA



## BUILT IN FUNCTIONS



## USER DEFINED FUNCTIONS





# FUTURE SCOPE OF THE PROJECT

- Provide functions for all built in and user defined functions
- Make cross platform executable file
- Customize the user interface so that user him self can add a library

# CONCLUSION AND RECOMMENDATION

## CONCLUSION

As conclusion we have successfully developed require UI, hence this project has achieved all its goals and objectives.

## RECOMMENDATIONS

We commend that the system can be implemented everywhere mainly in engineering students to visualize the signals behavior and trends for more understanding we also made the system of acquiring the signal from the output of any circuit.

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