FINAL YEAR PROJECT PRESENTATION

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

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18th July 2019

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 widows computer.
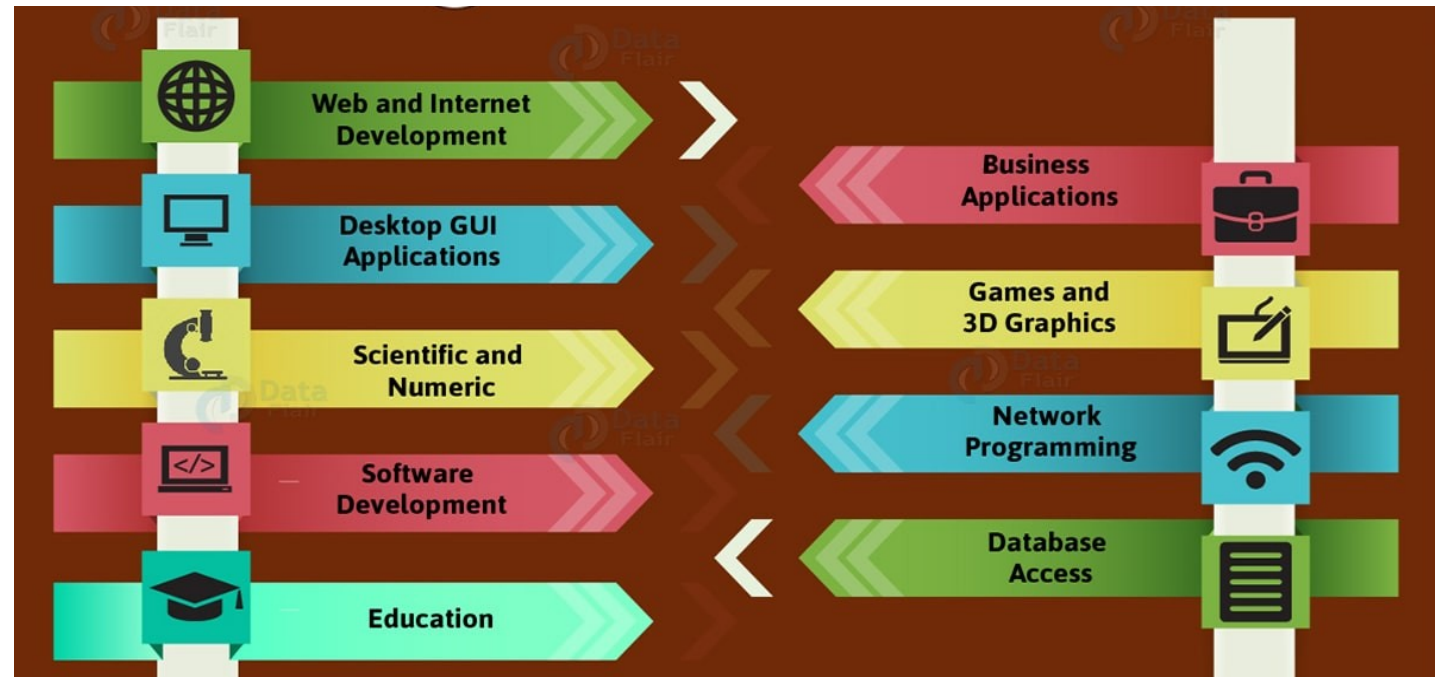
Other objectives:

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
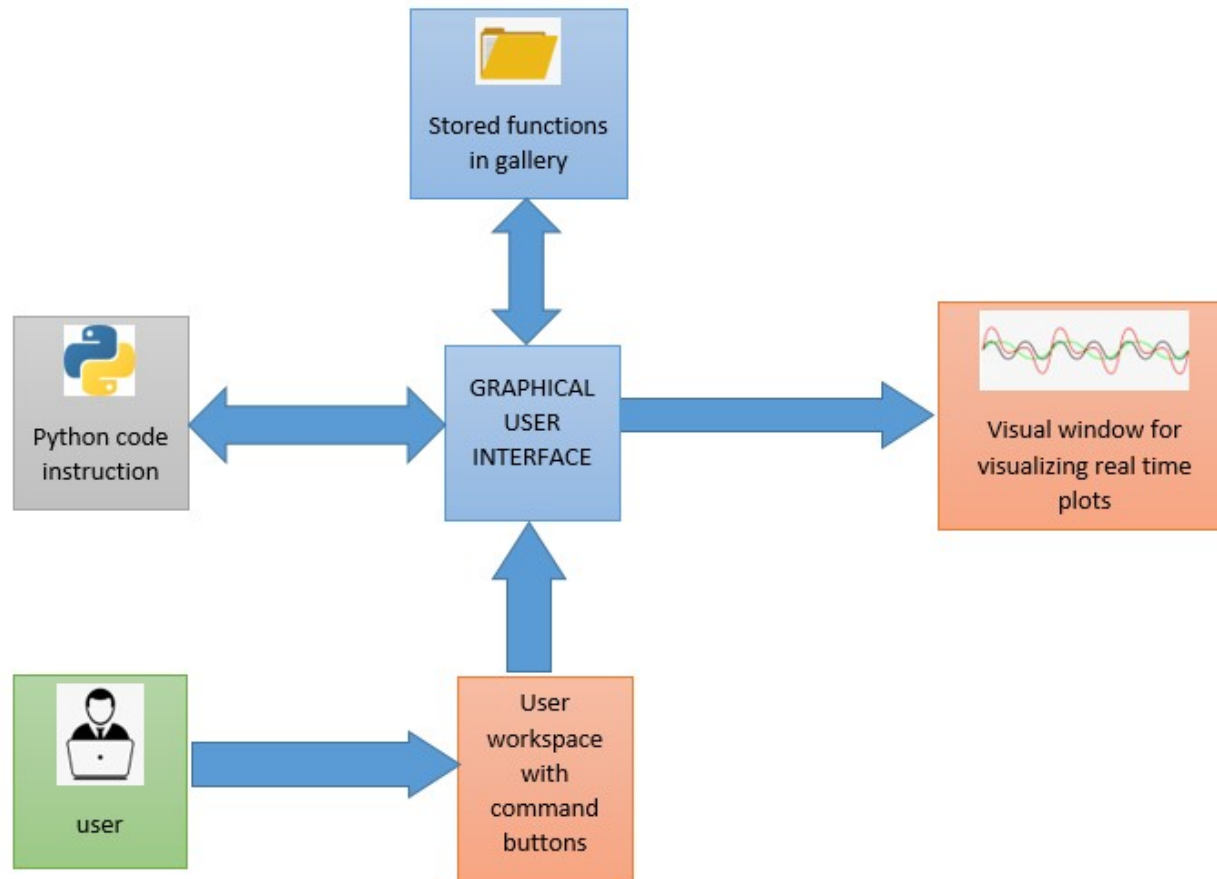- Portable
- High level
- Extensible in C++ & C

RESEARCH METHODOLOGY

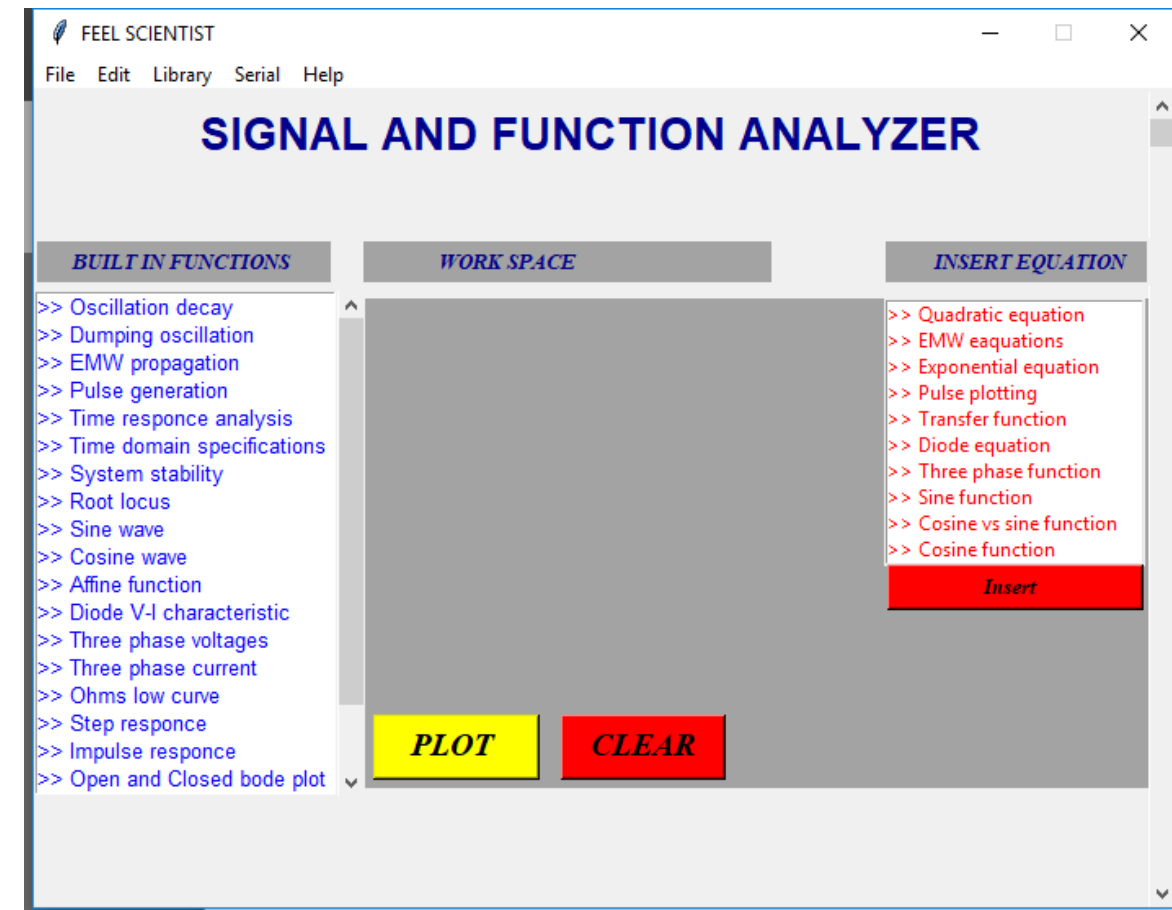**Methods and techniques that are being used to gather information;**

- Library books,

- IEEE journals and

- Exchanging idea with supervisor and colleagues.
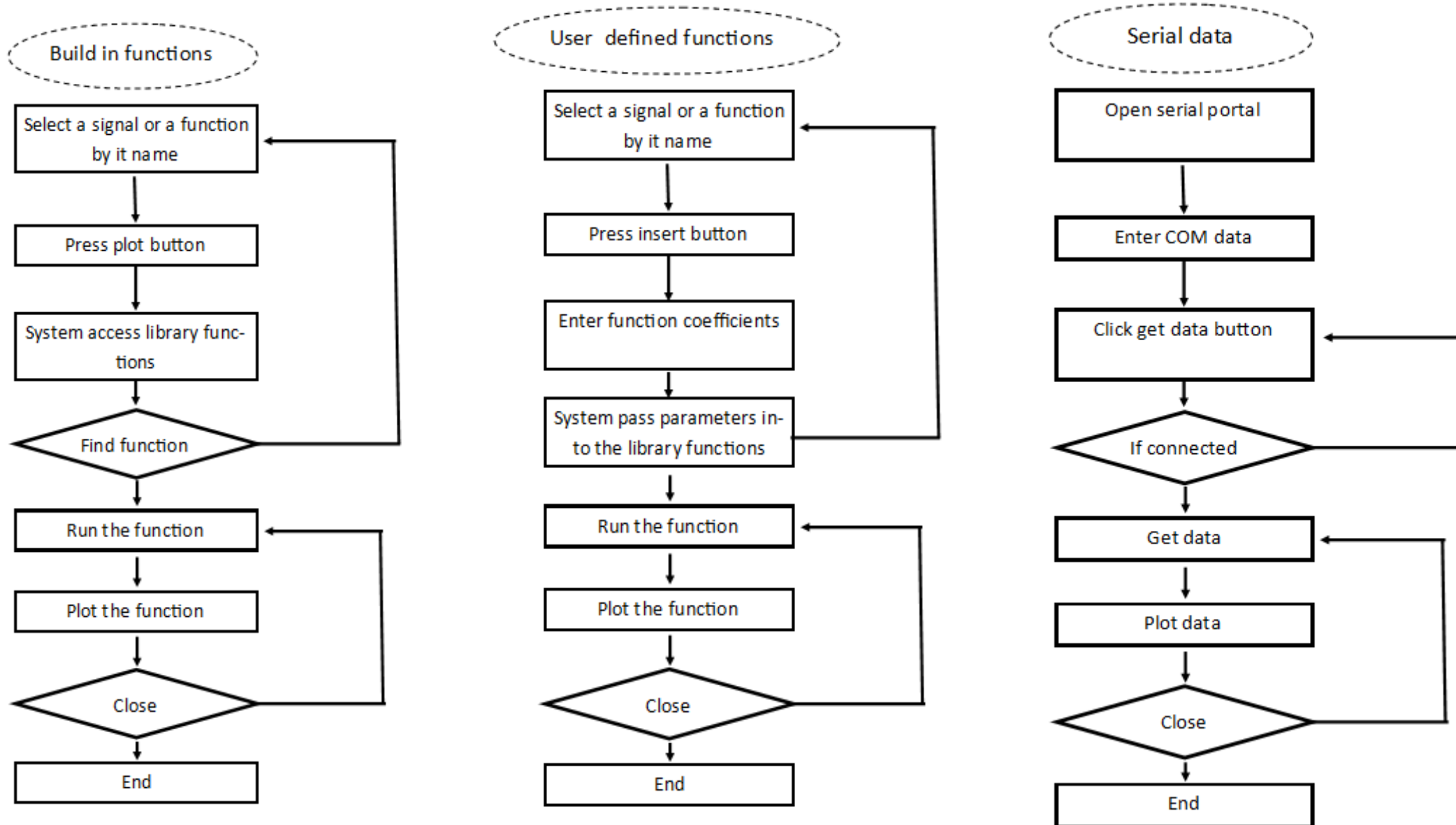
USER INTERFACE DEVELOPMENT
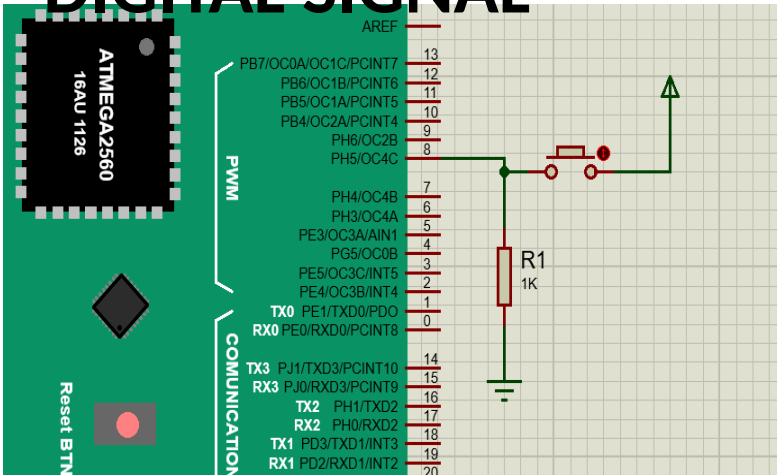
SYSTEM BLOCK DIAGRAM
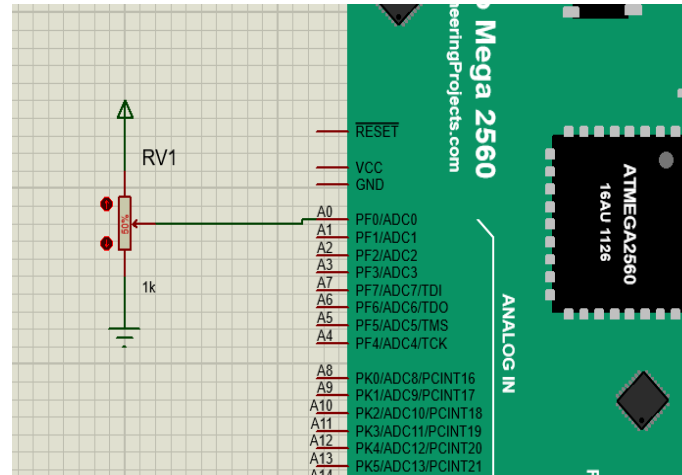

DEVELOPED USER INTERFACE

LOGIC BEHIND THE SYSTEM

Build in functions

- Select a signal or a function by it name
- Press plot button
- System access library functions
- Find function
- Run the function
- Plot the function
- Close
- End

User defined functions

- Select a signal or a function by it name
- Press insert button
- Enter function coefficients
- System pass parameters into the library functions
- Run the function
- Plot the function
- Close
- End

Serial data

- Open serial portal
- Enter COM data
- Click get data button
- If connected
- Get data
- Plot data
- Close
- End
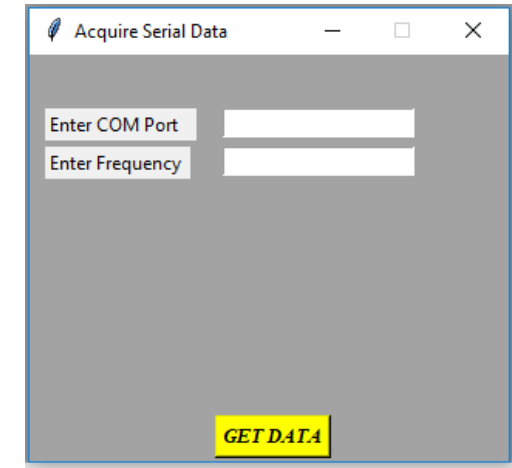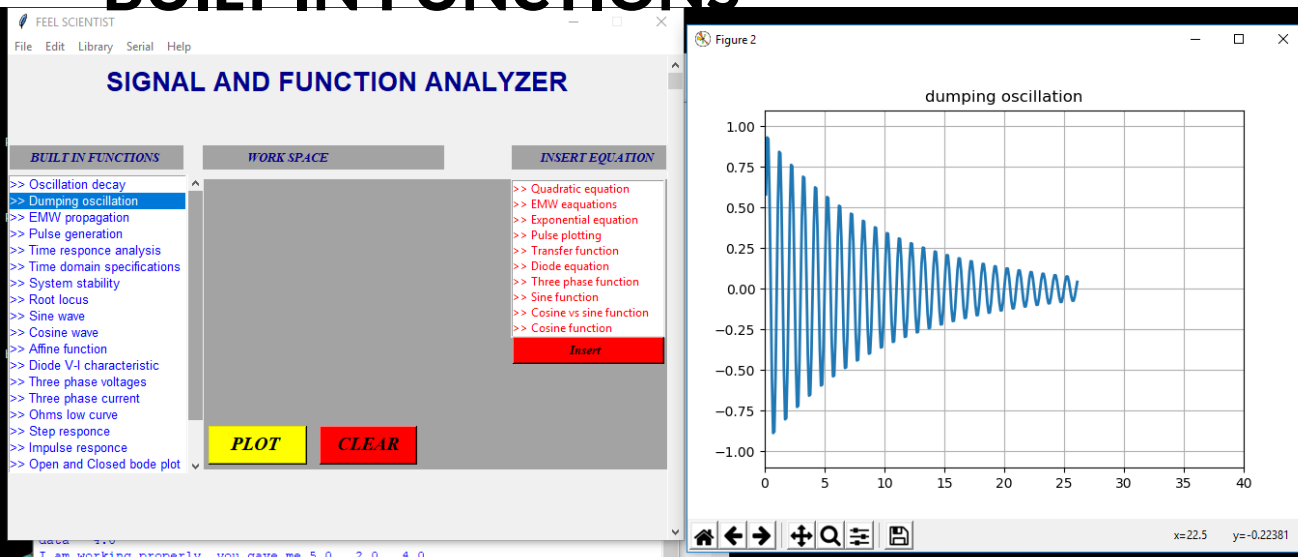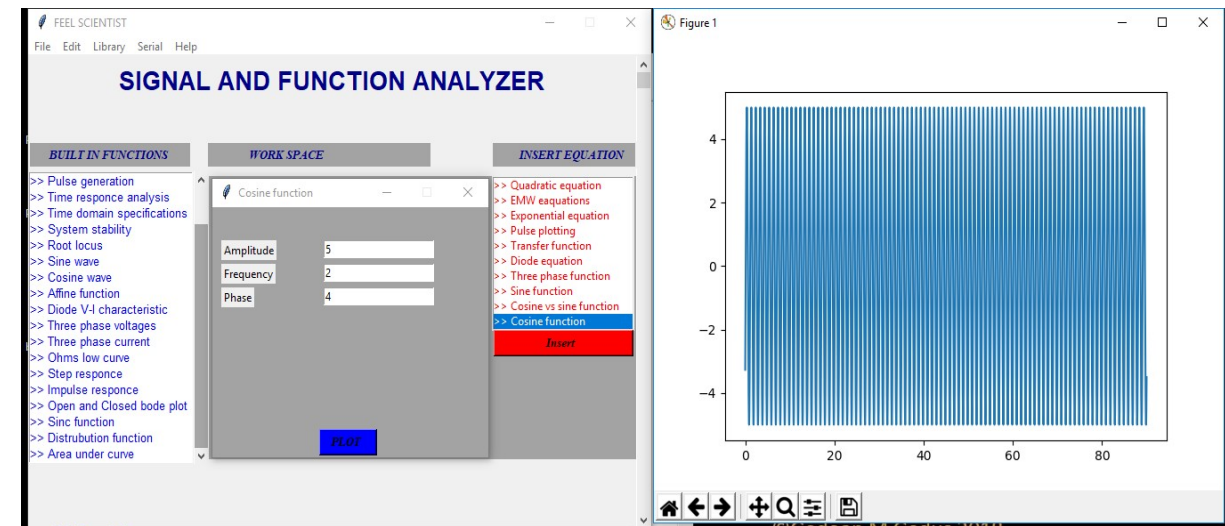
FUTURE SCOPE OF THE PROJECT

- 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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14. K. P. Moran, C. Bernal-Cárdenas, M. Curcio, R. Bonett and D. Poshyvanyk, "Machine Learning-Based Prototyping of Graphical User Interfaces for Mobile Apps," in *IEEE Transactions on Software Engineering*.

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