CAD Laboratory: Module II

PROJECT PROPOSAL

GRAPH PLOTTER

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Objective:

To code and implement an application for plotting the curve corresponding to the expression given by the user during run time using python.

Python Tools Required:

1. Spyder3 IDE for python3 programming.
2. Basic python libraries such as Matplotlib, NumPy and SciPy.
3. Libraries such as ipywidgets and IPython.display for interactive user interface.
4. Basic plot functions from matplotlib.pyplot.
5. scipy.integrate for differential and integral equations.

Overview:

The above proposed program allows us to visualise any function/expression in two (possibly three) variables in a graphical 2D/3D domain. An end user without any programming knowledge can easily utilise this work to plot any arbitrary graph using a user-friendly interface. This can be used for development of a graph plotting application.

Program Logic:

Upon running the code, the user will be prompted to give a function/expression in two (possibly three) variables. The program will then analyse this user inputted function and separate the data part containing of variables (x, y and z) and constants into one array and the rest of the input containing operators, functions and parenthesis into another array. Complex stack operations operated on the operator

array will give an optimised list on the basis of order of precedence of operators. Theses data will then be used to create plot data on a user inputted domain and finally the graph.

Expected Output:

The program will generate the graphical representation of the user inputted expression in a user inputted domain.