Function Plotter

- This project is for Master Micro Company.
- Language: Python
- Development environment: PyCharm
- Project type: Desktop Application

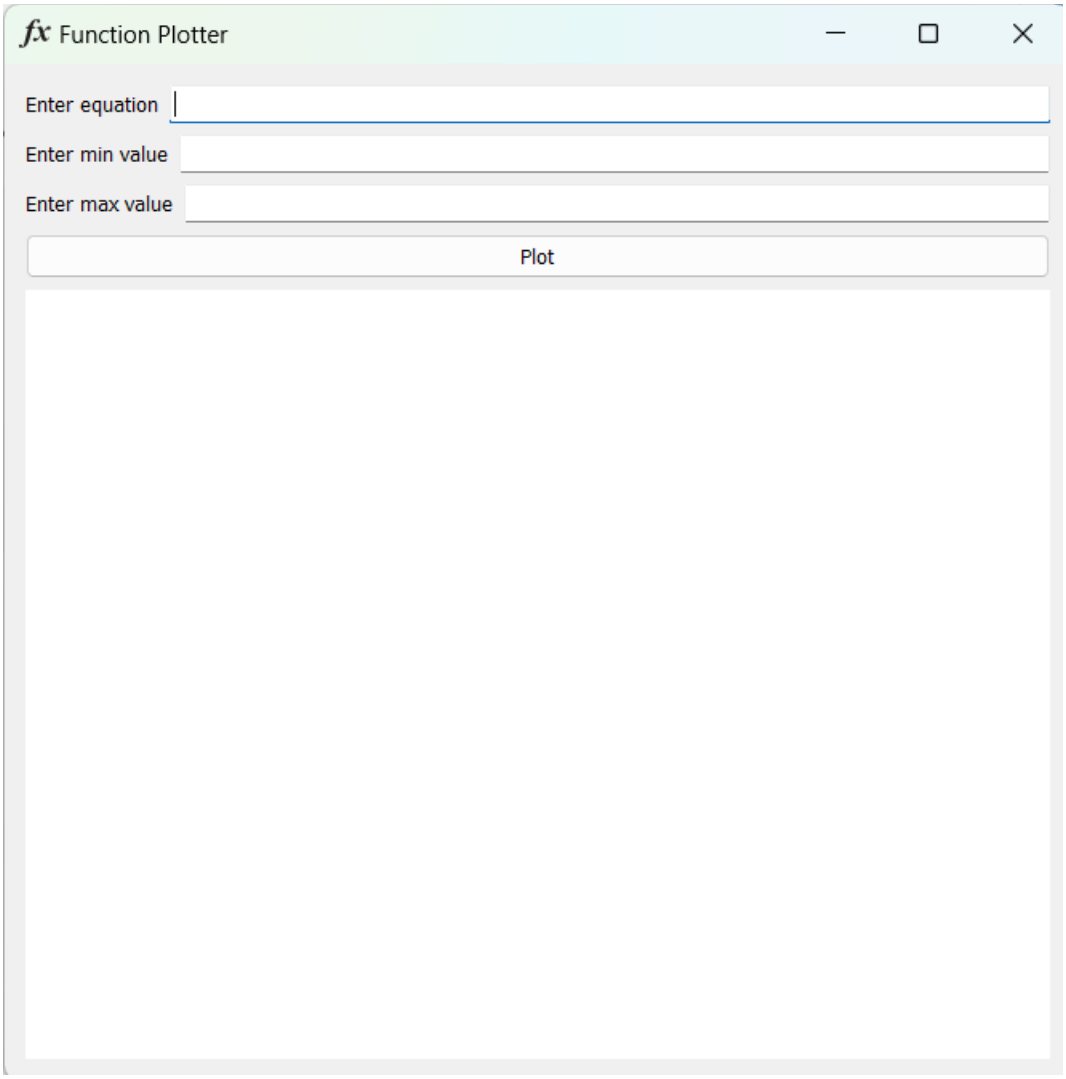
Aim

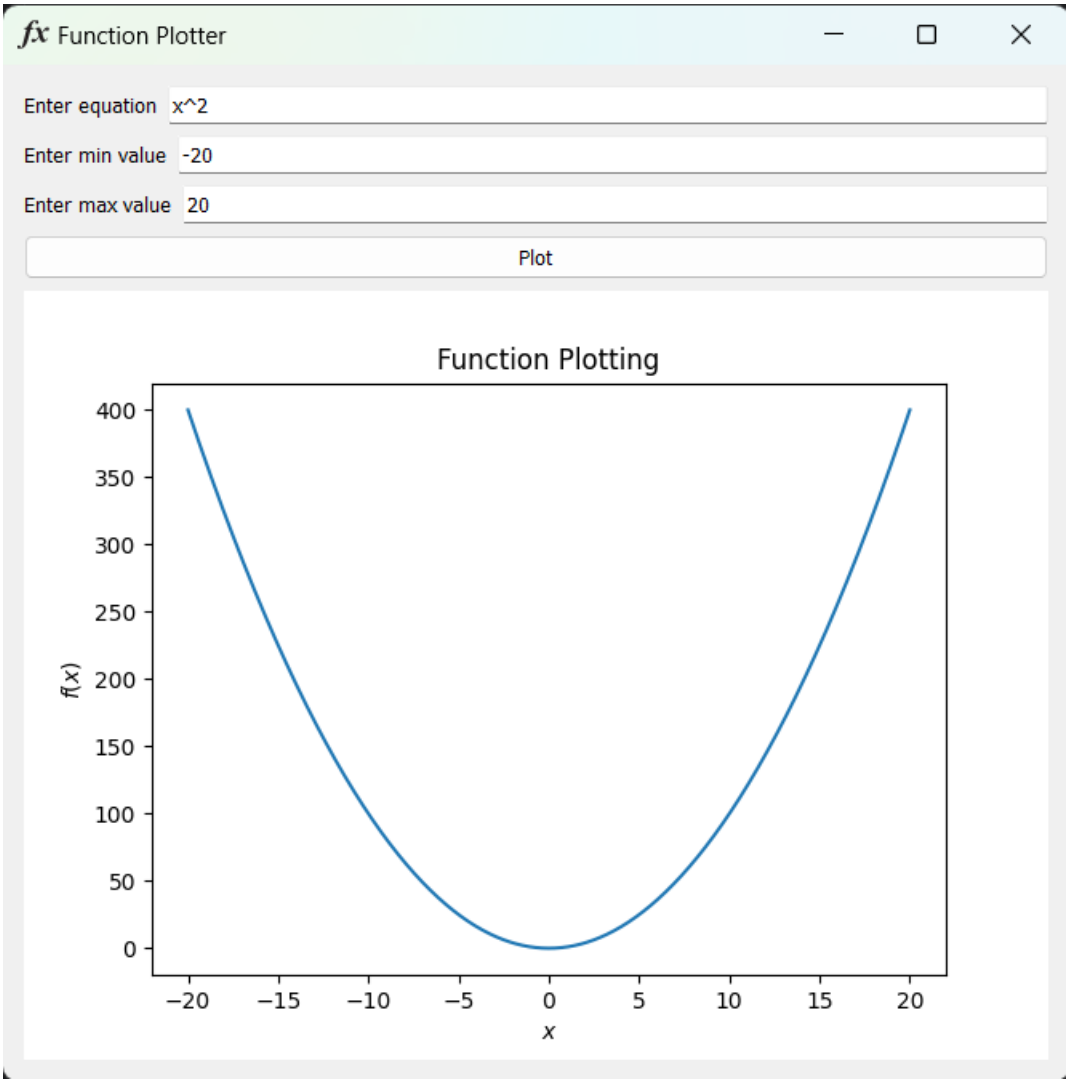
plots arbitrary user-entered function.

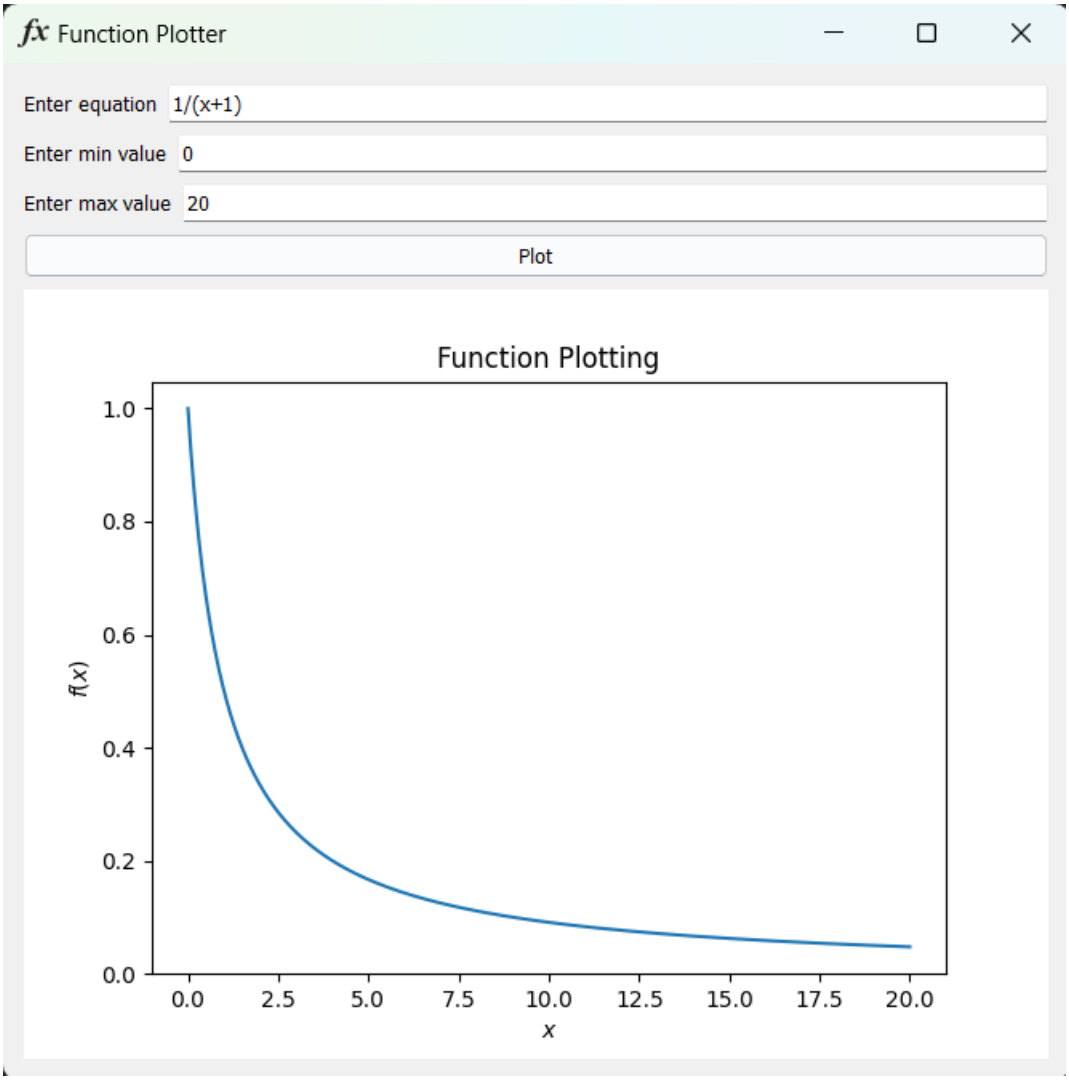
Procedure Details

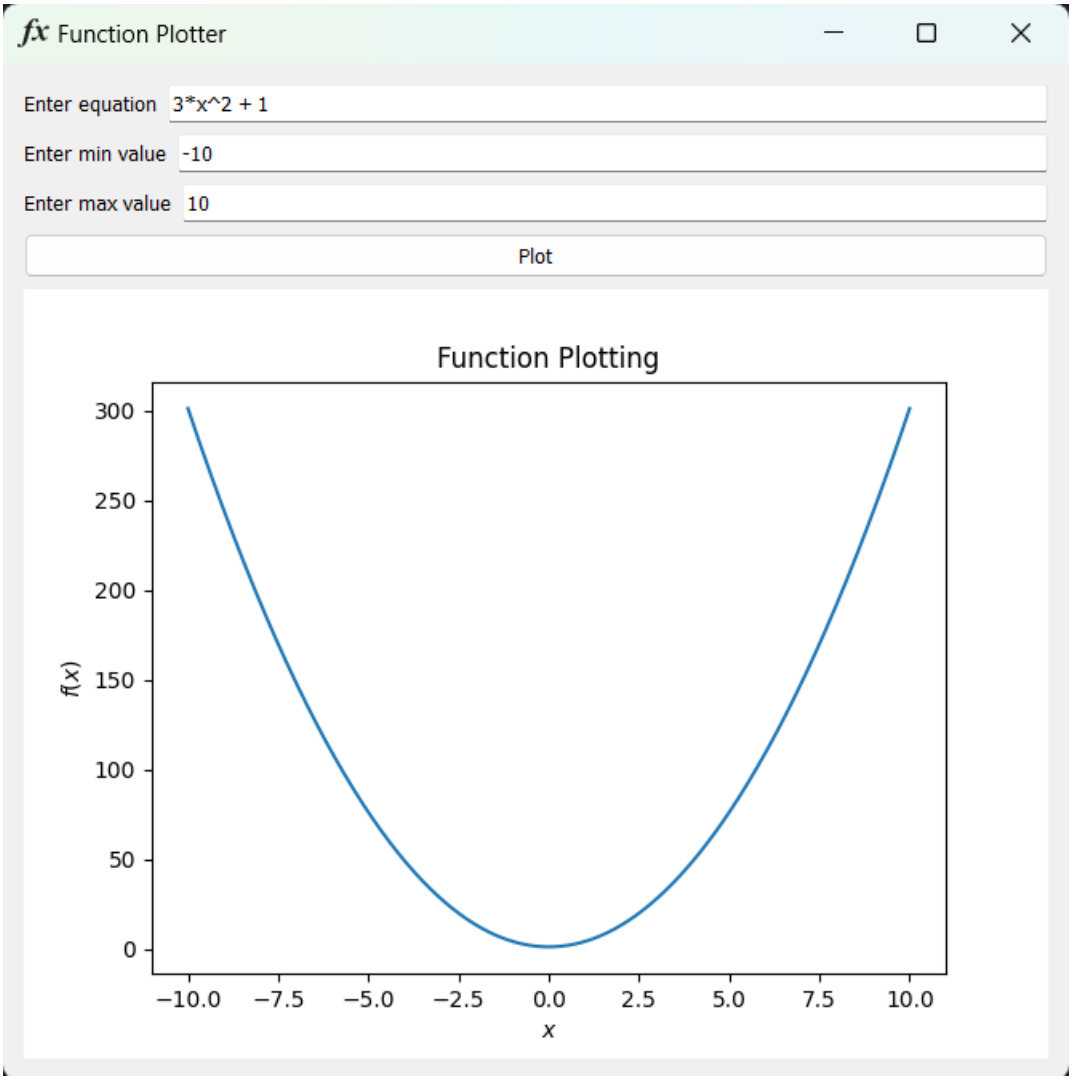
1. Write a Python GUI program that plots an arbitrary user-entered function.
2. Take a function of x from the user, e.g., 5*x^3 + 2*x.
3. Take min and max values of x from the user.
4. The following operators must be supported: + - / * ^ sin cos tan.
5. Apply appropriate input validation to the user input.
6. Display messages to the user to explain any wrong input.

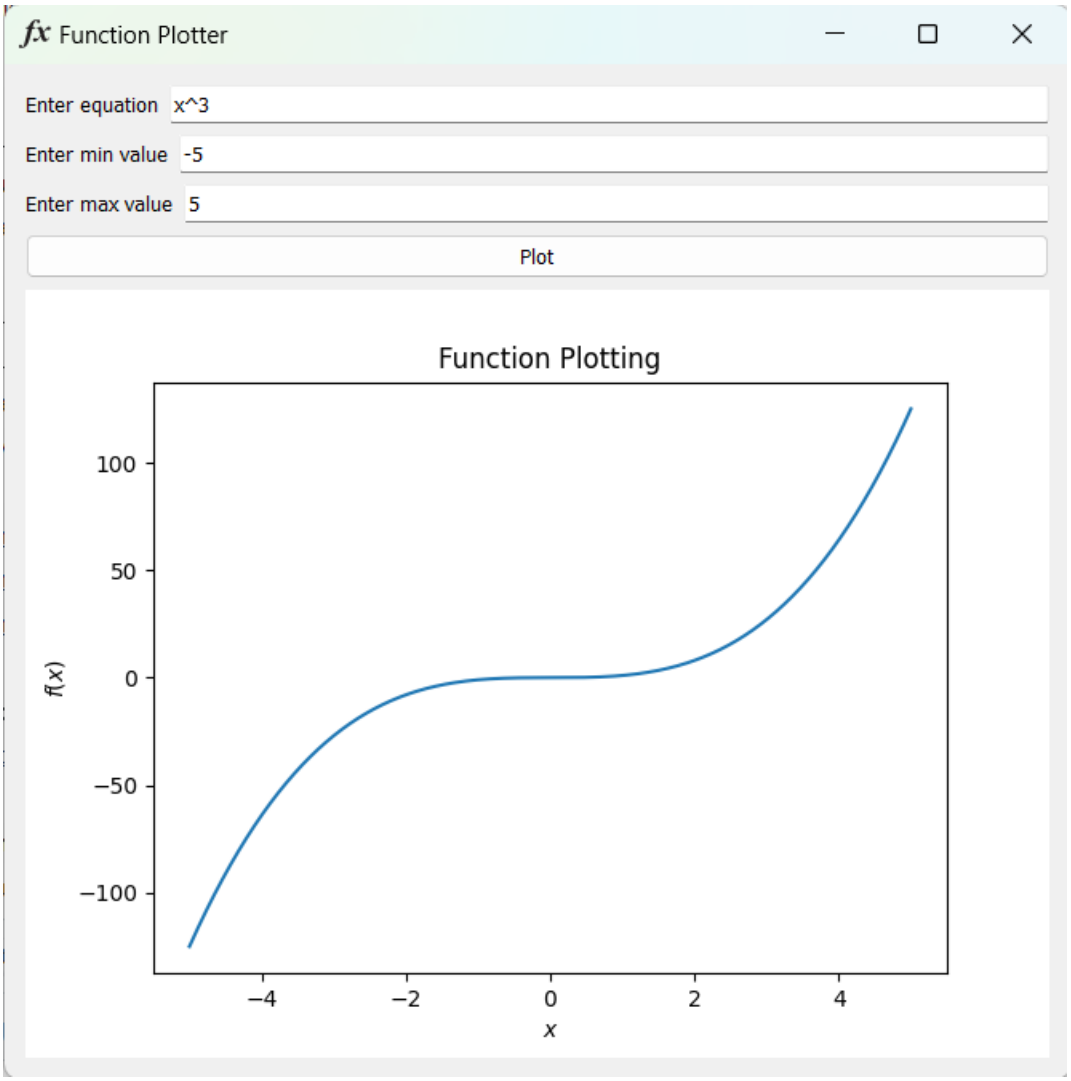
Output

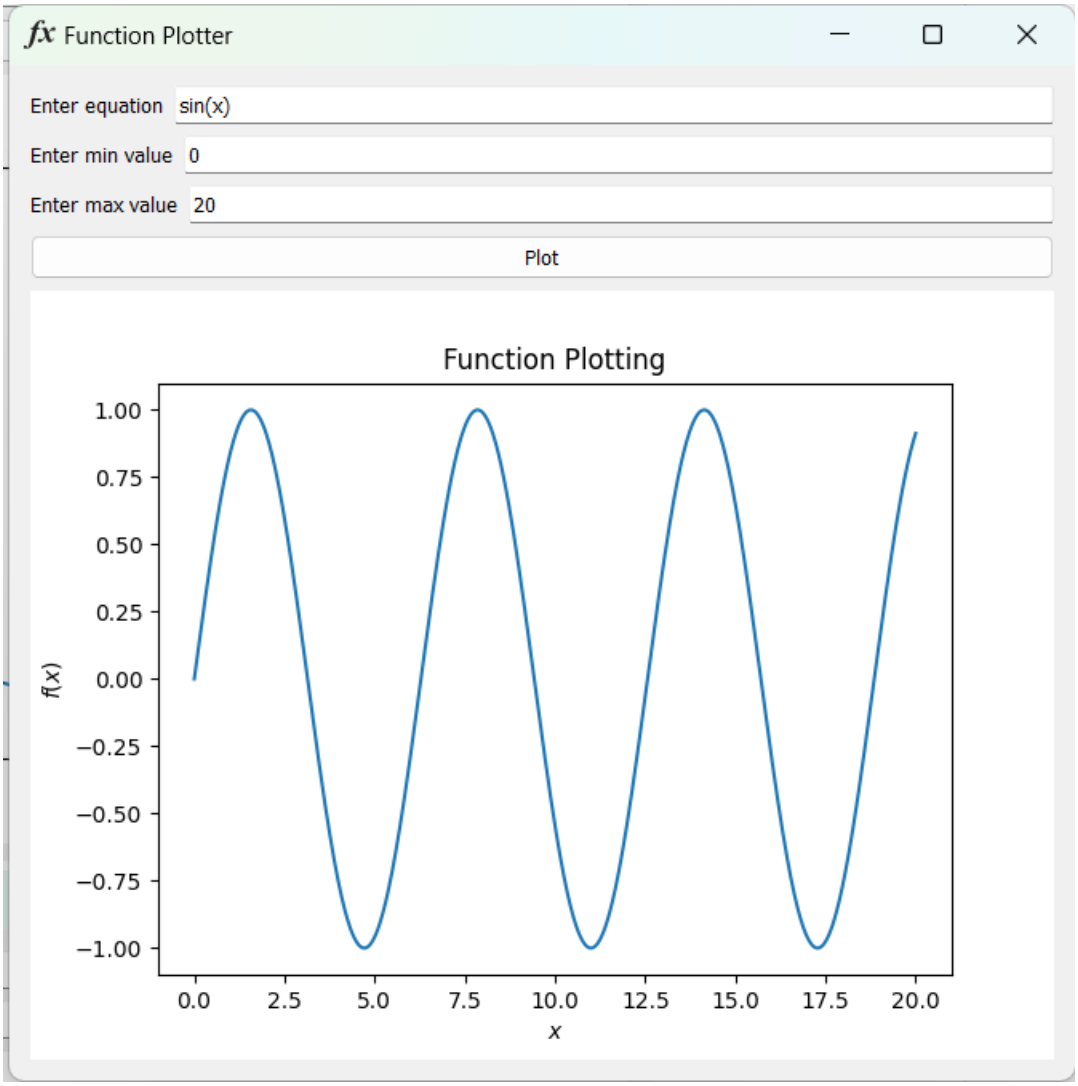

Function Plotter
Enter equation
Enter min value
Enter max value
Plot

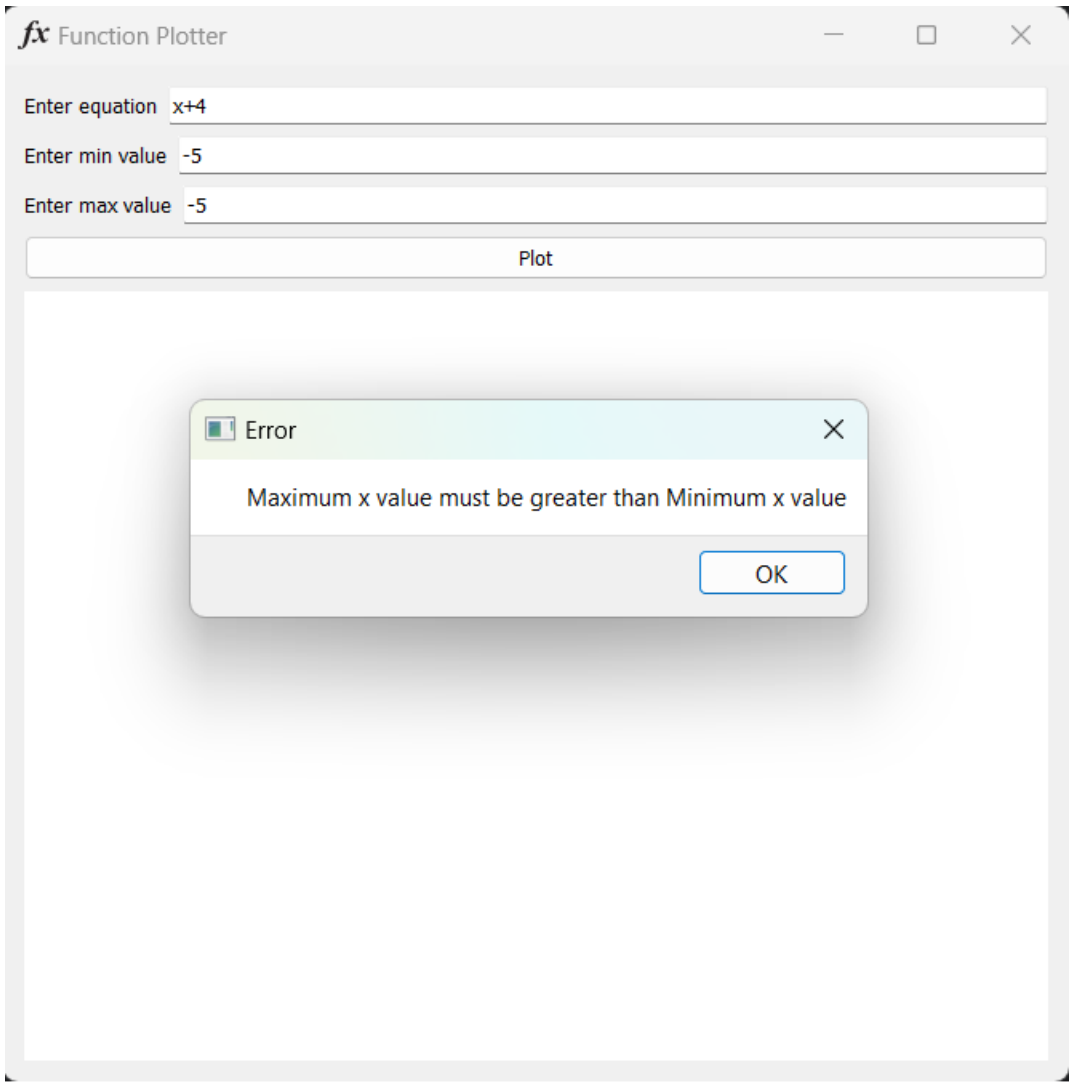

Function Plotter
Enter equation
x^2
Enter min value
-20
Enter max value
20
Plot
Function Plotting
400
350
300
250
200
150
100
50
0
f(x)
−20
−15
−10
−5
0
5
10
15
20
x

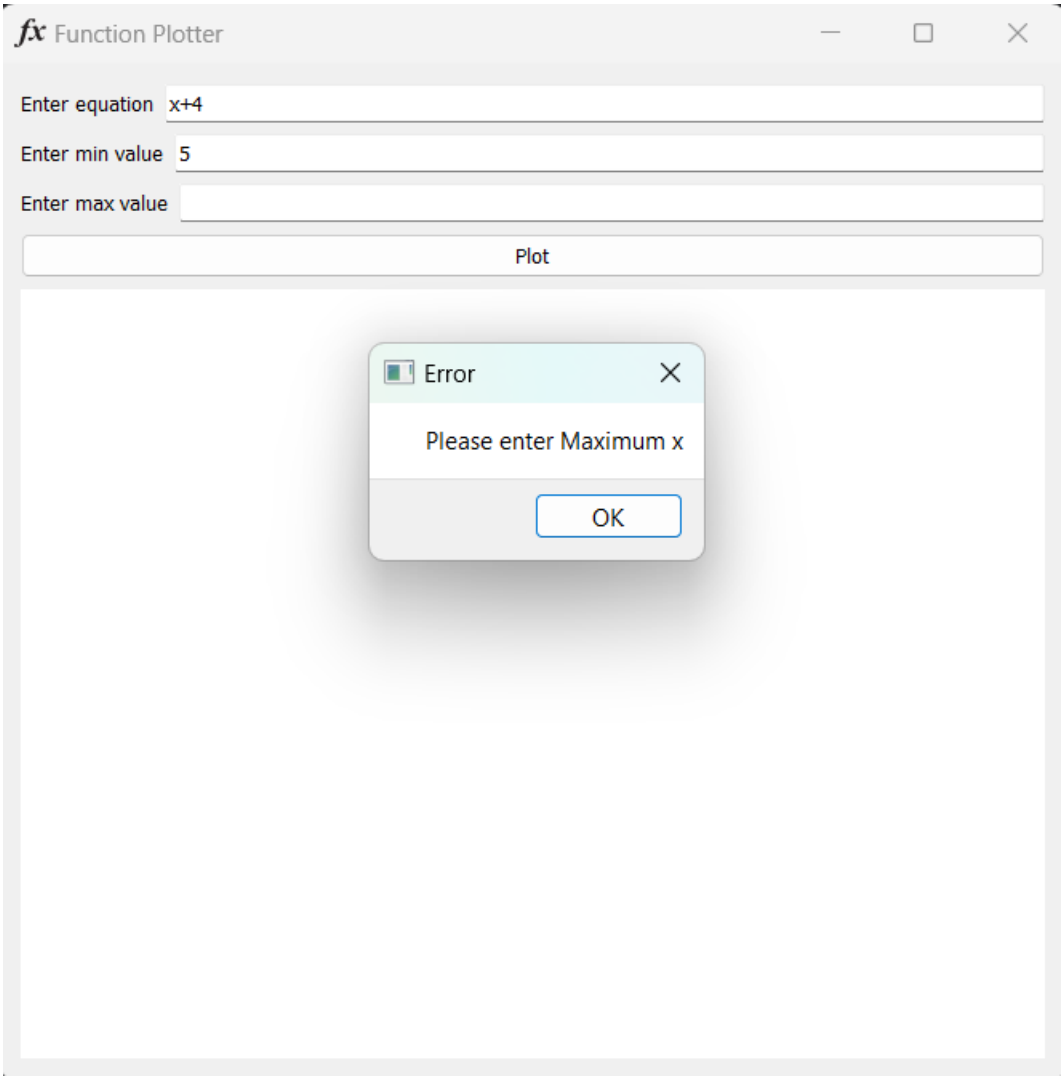

Function Plotter
Enter equation
1/(x+1)
Enter min value
0
Enter max value
20
Plot
Function Plotting
1.0
0.8
0.6
0.4
0.2
0.0
f(x)
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
x

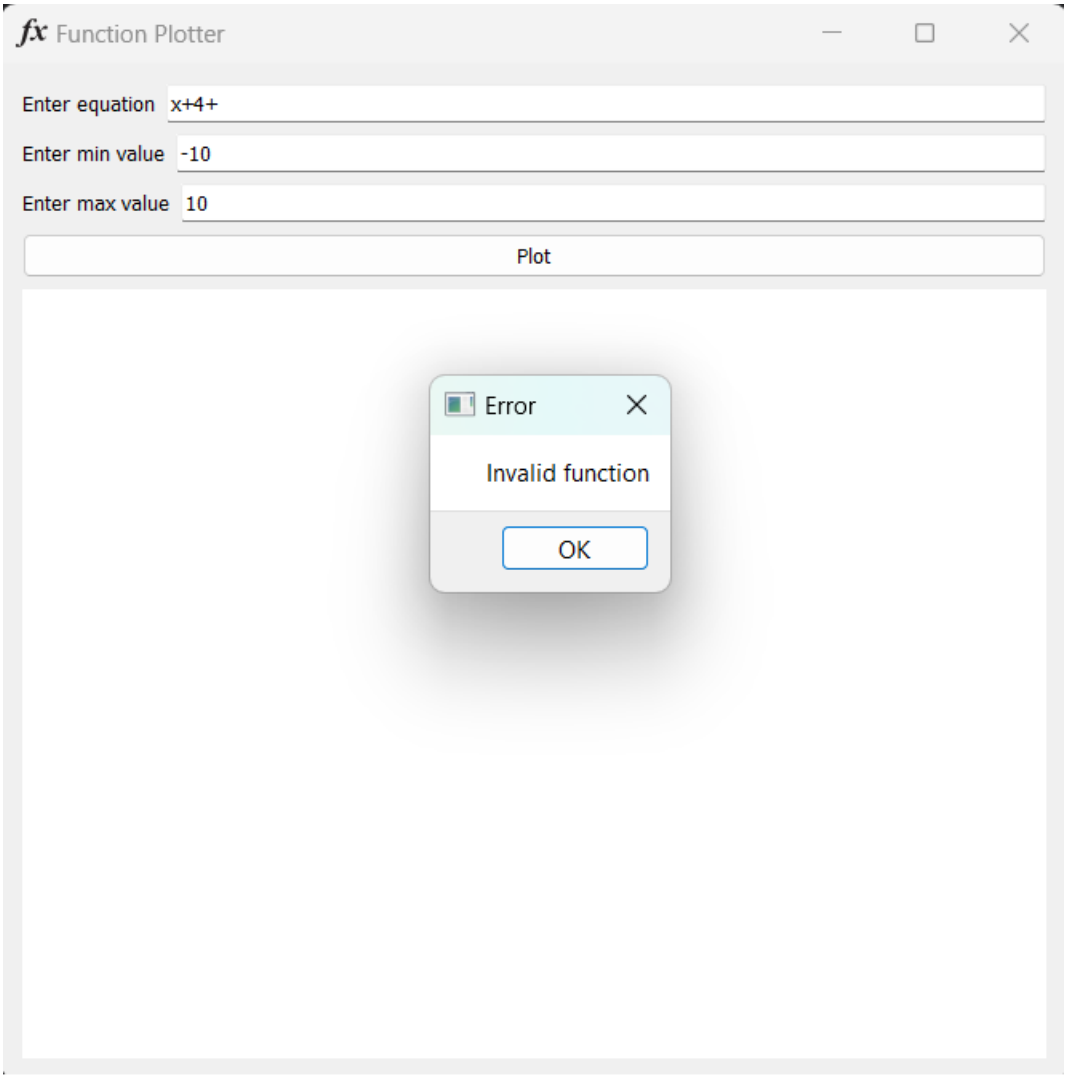

Function Plotter
Enter equation
3*x^2 + 1
Enter min value
-10
Enter max value
10
Plot
Function Plotting
300
250
200
150
100
50
0
f(x)
−10.0
−7.5
−5.0
−2.5
0.0
2.5
5.0
7.5
10.0
x

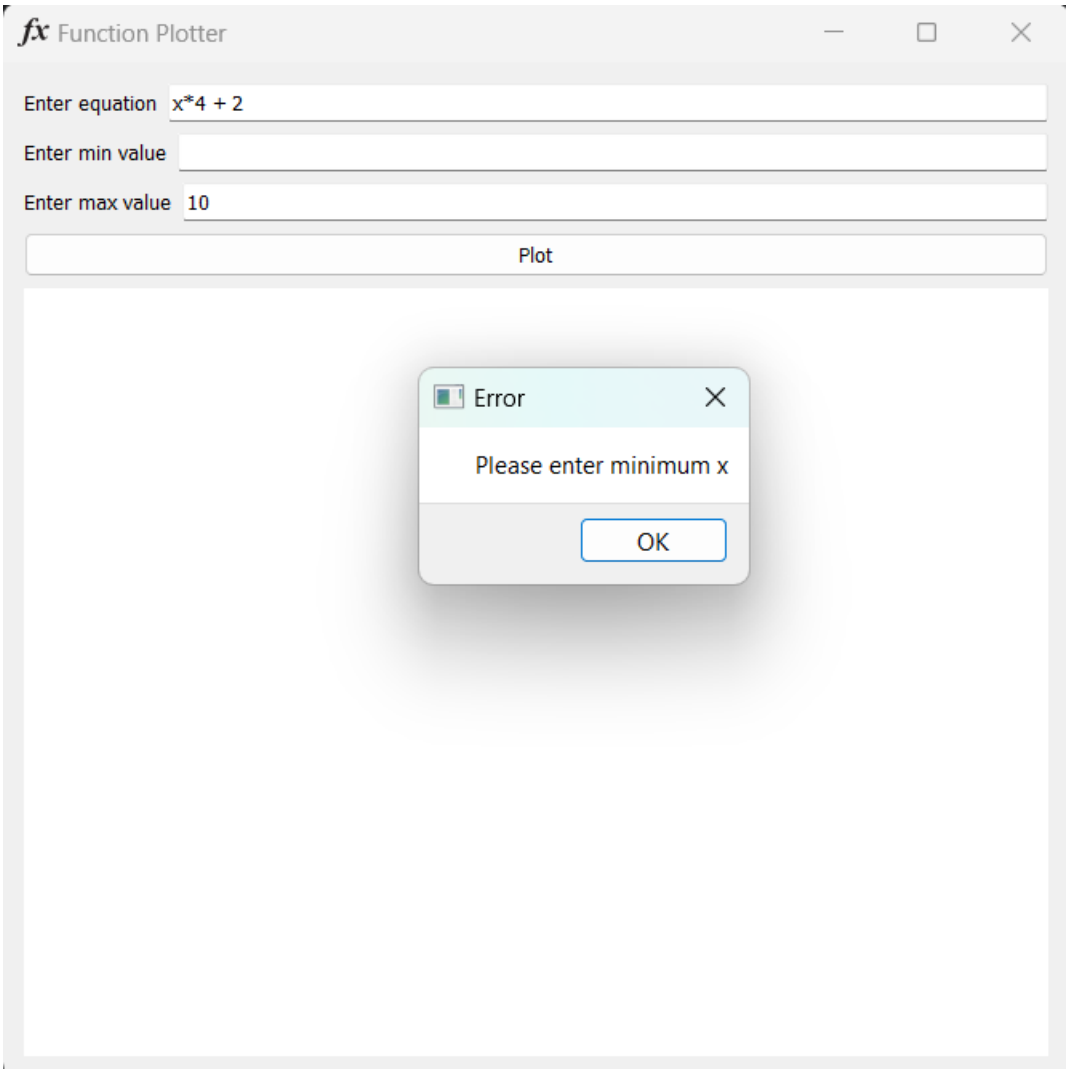

Function Plotter
Enter equation
x^3
Enter min value
-5
Enter max value
5
Plot
Function Plotting
100
50
0
−50
−100
f(x)
−4
−2
0
2
4
x

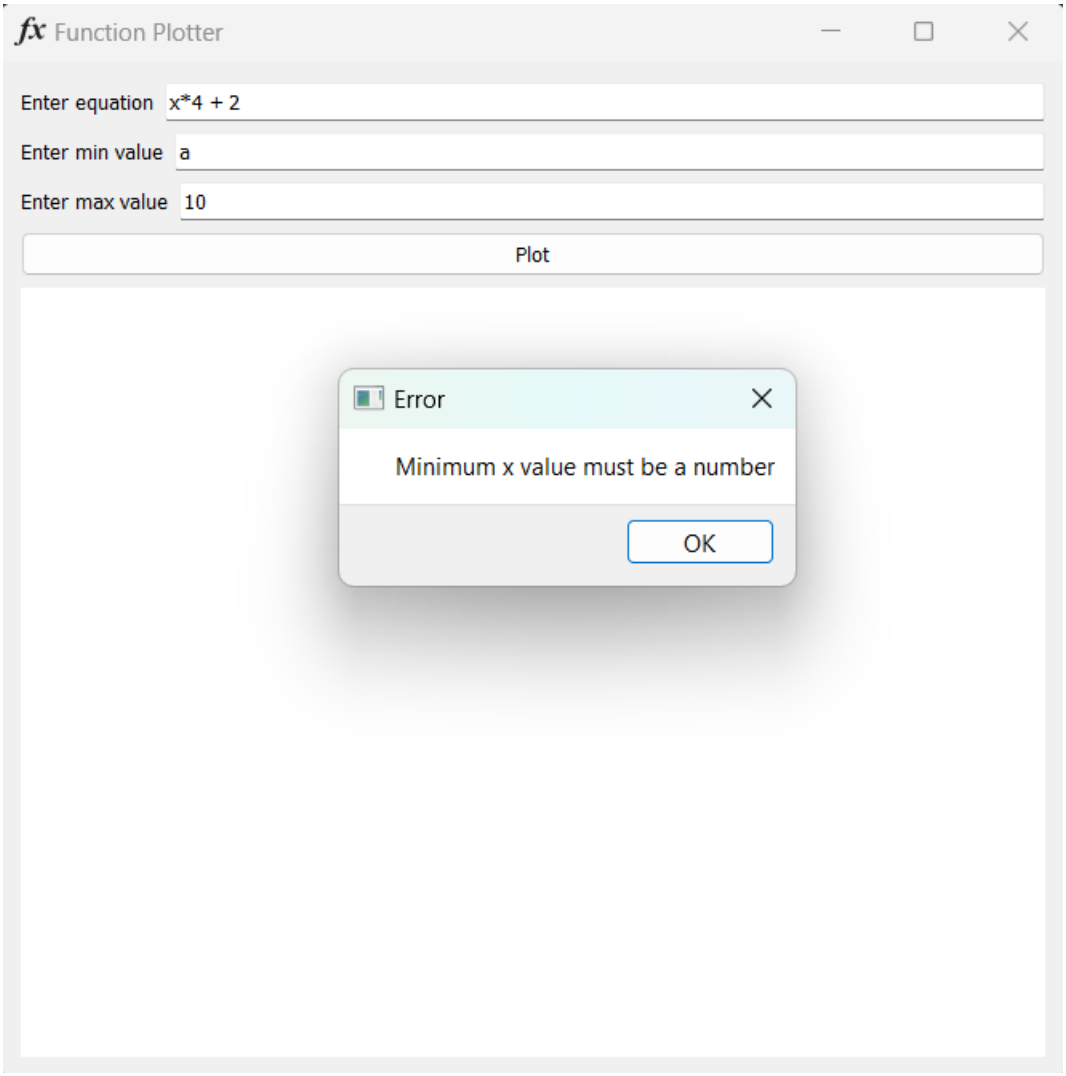

Function Plotter
Enter equation
sin(x)
Enter min value
0
Enter max value
20
Plot
Function Plotting
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00
f(x)
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
x

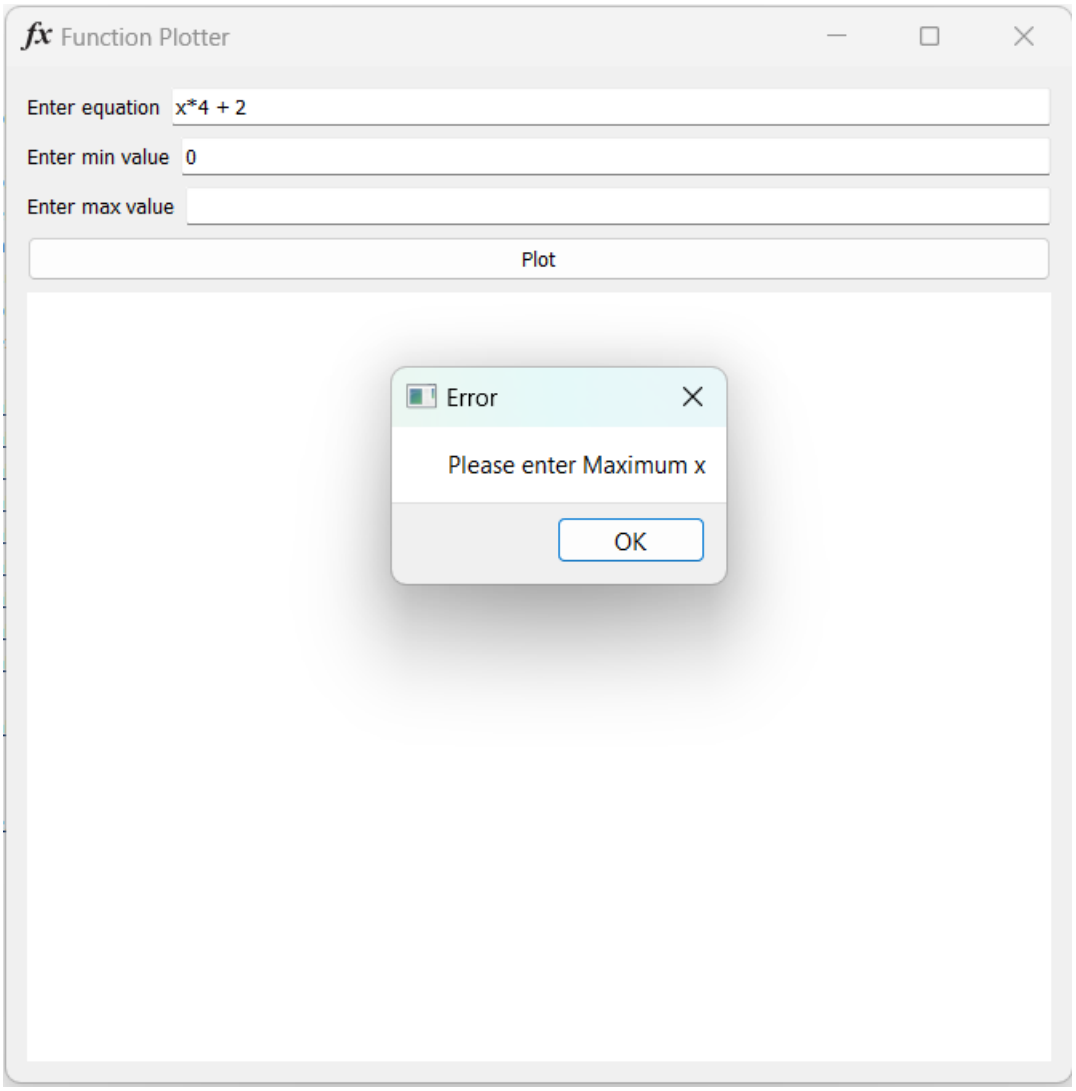

Function Plotter
Enter equation x+4
Enter min value -5
Enter max value -5
Plot
Error
Maximum x value must be greater than Minimum x value
OK


Function Plotter
Enter equation
x+4
Enter min value
5
Enter max value
Plot
Error
Please enter Maximum x
OK


Function Plotter
Enter equation x+4+
Enter min value -10
Enter max value 10
Plot
Error
Invalid function
OK


Function Plotter
Enter equation
x*4 + 2
Enter min value
Enter max value
10
Plot
Error
Please enter minimum x
OK


Function Plotter
Enter equation
x*4 + 2
Enter min value
a
Enter max value
10
Plot
Error
Minimum x value must be a number
OK


Function Plotter
Enter equation
x*4 + 2
Enter min value
0
Enter max value
Plot
Error
Please enter Maximum x
OK

Requirements

- App Requirements

```
pip install PySide2
pip install numpy
pip install matplotlib
```

- Testing Requirements

```
pip install pytest
pip install pytest-qt
```

Usage

- Run app.py file.

```
python app.py
```

- In case of testing, run test_app.py file.

```
pytest test_app.py
```