xPycharts

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The Team

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Project objective:
To create a powerful, yet simple to use graphing library.

Background

Need for visualizations

General purpose programmers benefit from graphing libraries that are easy to use and handle data in a sensible manner.

Lack of alternatives

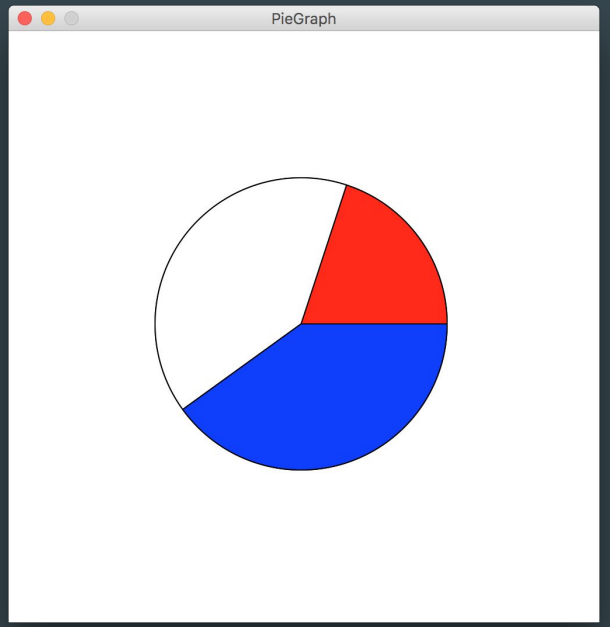
Existing alternatives are often not very easy to incorporate into programs, often relying on outdated libraries or come in packages that are unsuitable for non-power users.

Platform Independent

A solution that is cross-platform and without many dependencies.

Technical Details

- Python Graphing Library
- Version 2.7.*x*
- Dependencies: Tkinter (a standard library)



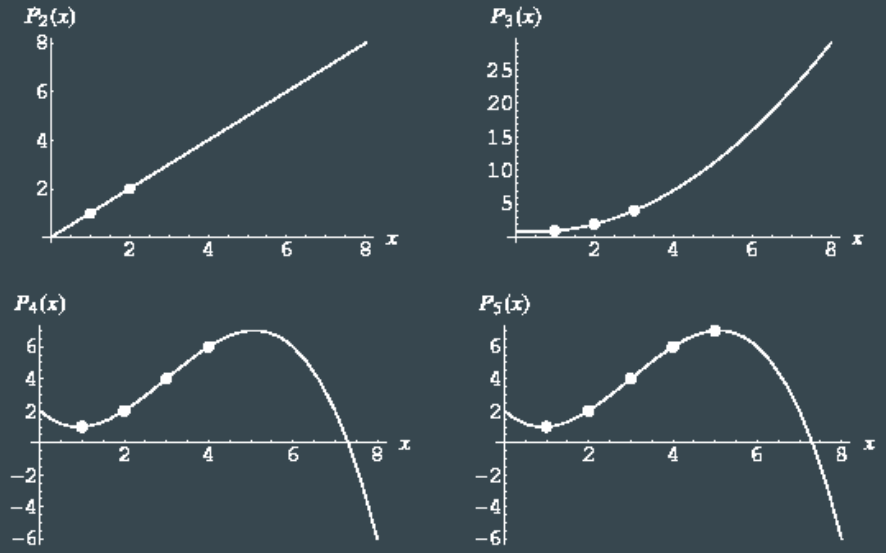
Scope

XY Charts

Scope is limited to graphs relying on the Cartesian Coordinate system.

Functionality:

- Scatter Plots
- Functions
- Interpolation (polynomial) when Y depends on X data



Functional

- Properly parse the data provided by the user
- Raise exceptions
- Construct a scalable coordinate system that fits all data points
- Plot all data points
- Interpolation
- Plot functions

Non-Functional Requirements

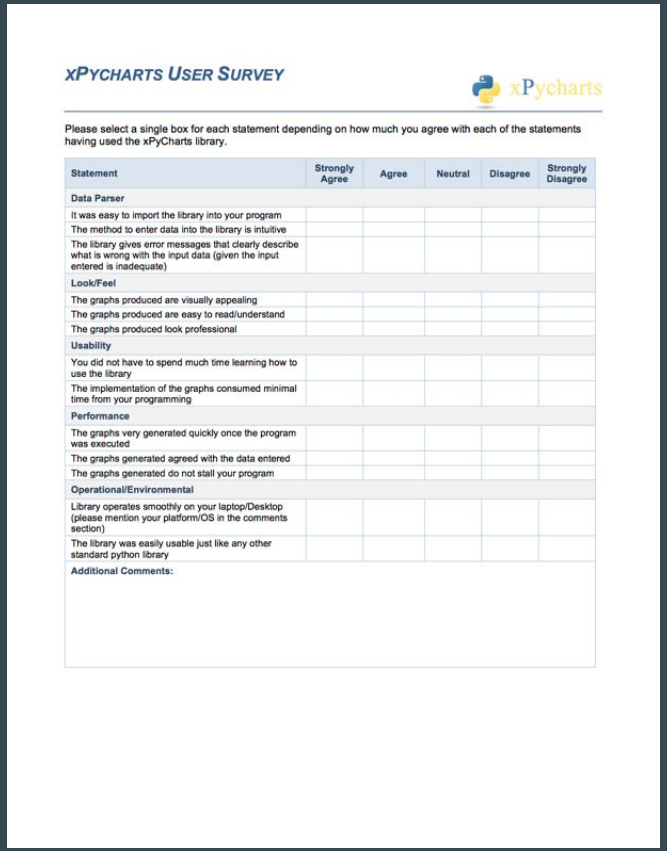
- Easy to use for novice Python programmers
  - Programmers should be able to focus more on their program than the use of library
- Generate easy to understand error messages
  - Conduct surveys for understandability and usability
- Produce accurate graphs in a timely manner
- Should be portable given the platform has Python 2.7

Testing (Non Functional)

Findings

User testing showed that non-functional requirements were met

- 86% of programmers surveyed produced graphs in 10 minutes
- 71% able to identify error given improper code
- And more.



xPyCharts User Survey

xPycharts

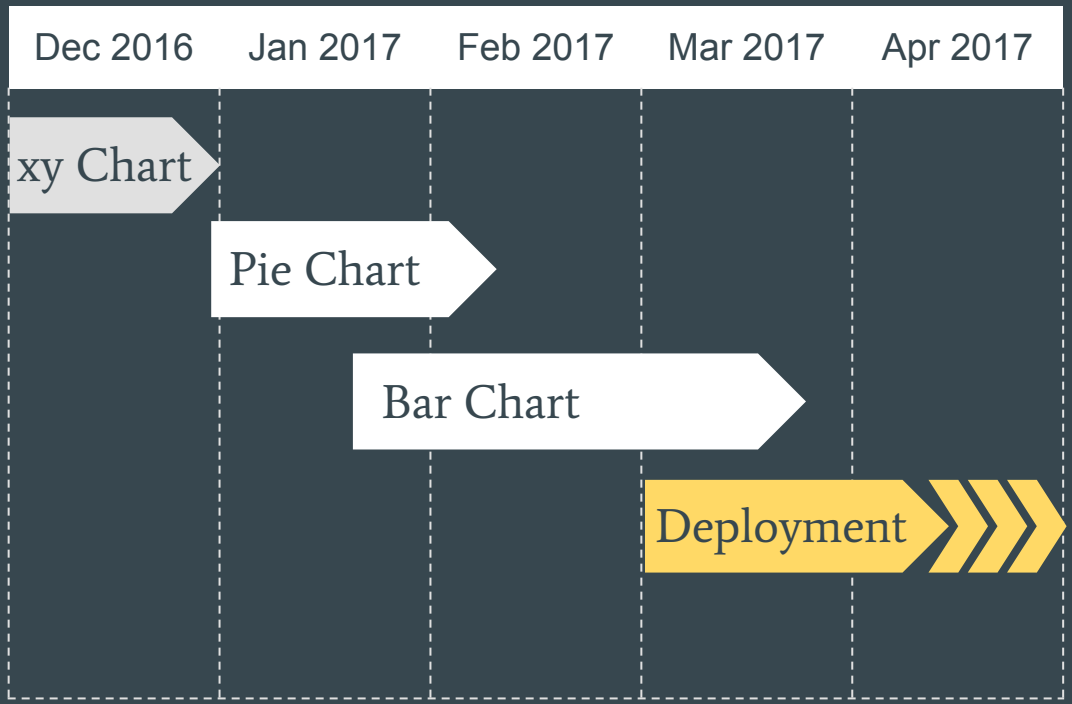
Please select a single box for each statement depending on how much you agree with each of the statements having used the xPyCharts library.

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Data Parser					
It was easy to import the library into your program					
The method to enter data into the library is intuitive					
The library gives error messages that clearly describe what is wrong with the input data (given the input entered is inadequate)					
Look/Feel					
The graphs produced are visually appealing					
The graphs produced are easy to read/understand					
The graphs produced look professional					
Usability					
You did not have to spend much time learning how to use the library					
The implementation of the graphs consumed minimal time from your programming					
Performance					
The graphs very generated quickly once the program was executed					
The graphs generated agreed with the data entered					
The graphs generated do not stall your program					
Operational/Environmental					
Library operates smoothly on your laptop/Desktop (please mention your platform/OS in the comments section)					
The library was easily usable just like any other standard python library					
Additional Comments:					

Testing (Functional)

Manual	• Checking for correctness of graphs, properly scaled axis, etc
Unit Testing	• Testing of internal functions • Testing for error throwing
Automated	• Automate unit testing w/ unittest • Pie Chart/Bar graph: Image comparison w/ existing implementations

Future


Dec 2016
Jan 2017
Feb 2017
Mar 2017
Apr 2017
xy Chart
Pie Chart
Bar Chart
Deployment

Demo