Final Project Requirements for PPY

1. Project Overview:

The final project aims to assess your understanding and practical application of the concepts covered throughout the Basics of Python course. You are required to design and implement a Python program that demonstrates your mastery of fundamental programming techniques and utilizes various Python libraries and concepts covered in the course. The project should be both functional and creatively challenging, showcasing your problem-solving skills and ability to think critically.

52	3
60	3.5
70	4
90	4.5
100	5

2. Project Requirements:

Your final project should meet the following criteria *(TOTAL 100):*

a) Functional Program*(10 points)*:
Create a Python program that is functional, properly structured, and well-documented. Your code should be readable, modular, and adhere to the principles of good programming practices.

b) Implementation of Core Concepts*(30 points)*:
Demonstrate your understanding of the fundamental Python concepts covered in the course, including sequences, conditional statements, loops, functions, classes, modules, exception handling, file manipulation, and documentation.

c) Utilization of Libraries*(30 points)*:
Incorporate relevant Python libraries such as numpy, pandas, Matplotlib, seaborn, tkinter, or any other library that enhances the functionality of your project. Clearly explain why you chose to use each library and how it contributes to your project's objectives.

d) Creative Problem Solving*(10 points)*:
Address a challenging problem or implement a unique feature that requires creative thinking and goes beyond the basics covered in the course. This could include advanced data manipulation, complex algorithms, user-friendly interfaces, or innovative ways to present information.

e) Documentation and Presentation*(20 points)*:
Provide clear documentation that describes the purpose and functionality of your program. Include instructions on how to run the program, any dependencies required, and examples of program usage. Prepare a concise presentation to explain your project's key features, challenges faced, and lessons learned during development.

3. Project Theme Ideas:

Choose one of the following theme ideas or propose your own with instructor approval:

a) Data Analysis and Visualization:
Create a program that reads data from a CSV or Excel file using the pandas library. Perform data cleaning, manipulation, and analysis using numpy and pandas. Implement data visualization using Matplotlib or seaborn to generate meaningful plots and charts. Choose a real-world dataset (e.g., weather data, stock prices, social media trends) and derive useful insights from the data.

b) GUI Application with tkinter:
Design and build a graphical user interface (GUI) application using the tkinter library. The application should solve a practical problem or provide a useful utility. Consider developing a calculator, task manager, contact book, or any other application that interests you. Implement functionality such as user input validation, file handling, and integration of different widgets.

c) Web Scraping and Data Extraction:
Develop a program that scrapes data from a website using the requests library and BeautifulSoup. Choose a website with publicly available data (e.g., news articles, product listings, sports scores) and extract relevant information. Apply data cleaning techniques to preprocess the extracted data and store it in a suitable format (e.g., CSV, JSON, or a database). Optionally, perform data analysis or visualization on the extracted data.

d) Database Management System:
Create a database management system using either SQLite or any ORM (Object-Relational Mapping) library such as SQLAlchemy. Design a schema for a specific domain (e.g., bookstore, student management, inventory system) and implement CRUD (Create, Read, Update, Delete) operations. Provide a command-line interface or GUI for interacting with the database and performing operations on the data.

4. Evaluation Criteria:

Your final project will be evaluated based on the following criteria:

a) Functionality and Correctness: Does the program fulfill the specified requirements?(2.a,2.b … etc.) Does it produce the expected results? Are the core concepts implemented correctly?

b) Creativity and Innovation: Does the project demonstrate creative problem-solving skills? Are there unique features or functionalities that set it