

This code is a Python program that creates a simple graphical user interface (GUI) using the `tkinter` library for protecting PDF files with a password. Below is a description of the key components and functionalities of the code:

1. **Importing Libraries**:

- The code imports necessary libraries, including `tkinter` for creating the GUI, `filedialog` for file selection dialogs, `messagebox` for displaying messages, and `PdfWriter` and `PdfReader` from the `PyPDF2` library for working with PDF files.
- It also imports the `os` library for some file-related operations.

2. **Creating the GUI**:

- The code initializes a Tkinter window (`root`) with the title "PDF Guard" and sets its initial dimensions.

3. **Browse Function** (`browse`):

- This function is responsible for opening a file dialog for selecting a PDF file.
- It clears the entry field and inserts the selected file's path into the field.

4. **Protect PDF Function** (`protect\_pdf`):

- This function is called when the "Protect PDF File" button is clicked.
- It retrieves the values entered in the source PDF file, target PDF file, and password entry fields.
- It performs validation checks to ensure that all fields are filled and that the source PDF file exists.
- If the validation checks pass, it opens the source PDF file, copies its pages to a new PDF, encrypts the new PDF with the provided password, and saves it as the target PDF file.
- Success or error messages are displayed using message boxes.

5. **Icons and Images**:

- The code loads and sets icons and images for the GUI window and buttons.

6. **GUI Layout**:

- It defines the layout of the GUI, including labels, entry fields, buttons, and frames for organizing the elements.

7. **Main Loop** (`root.mainloop()`):

- The main loop keeps the GUI application running and responsive to user interactions.

Overall, this code creates a user-friendly GUI application for protecting PDF files with a password. Users can select a source PDF file, specify a target PDF file, set a password, and click the "Protect PDF File" button to create a password-protected PDF file. The code provides feedback to the user through message boxes for success or error messages during the process.