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import tkinter as tk
from tkinter import messagebox, simpledialog

class Inode:
    def __init__(self, name, is_dir=False):
        self.name = name
        self.is_dir = is_dir
        self.contents = {}
        self.permissions = {'user': 'rwx', 'group': 'r-x', 'others': 'r--'}

class FileSystemGUI:
    def __init__(self, root):
        self.fs = Inode('/')
        self.current_dir = self.fs

        self.root = root
        self.root.title("File System GUI")

        self.label = tk.Label(root, text="File System GUI", font=("Helvetica",
16))
        self.label.pack(pady=10)

        self.create_button = tk.Button(root, text="Create", command=self.create)
        self.create_button.pack(pady=5)

        self.delete_button = tk.Button(root, text="Delete", command=self.delete)
        self.delete_button.pack(pady=5)

        self.list_button = tk.Button(root, text="List", command=self.list)
        self.list_button.pack(pady=5)

        self.change_dir_button = tk.Button(root, text="Change Dir",
command=self.change_dir)
        self.change_dir_button.pack(pady=5)

        self.read_button = tk.Button(root, text="Read", command=self.read)
        self.read_button.pack(pady=5)

        self.write_button = tk.Button(root, text="Write", command=self.write)
        self.write_button.pack(pady=5)

        self.text_area = tk.Text(root, width=40, height=10, wrap=tk.WORD)
        self.text_area.pack(pady=10)

    def create(self):

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        name = simplifiedialog.askstring("Create", "Enter name:")
        if name is not None:
            is_dir = messagebox.askyesno("Create", "Is it a directory?")
            new_inode = Inode(name, is_dir)
            self.current_dir.contents[name] = new_inode
            messagebox.showinfo("Result", f"'Directory' if is_dir else 'File' '{name}' created.")

    def delete(self):
        name = simplifiedialog.askstring("Delete", "Enter name:")
        if name in self.current_dir.contents:
            del self.current_dir.contents[name]
            messagebox.showinfo("Result", f"Deleted '{name}'.")
        else:
            messagebox.showerror("Error", f"'{name}' not found.")

    def list(self):
        contents = ', '.join(self.current_dir.contents.keys())
        self.text_area.delete('1.0', tk.END)
        self.text_area.insert(tk.END, contents)

    def change_dir(self):
        name = simplifiedialog.askstring("Change Dir", "Enter directory name:")
        if name in self.current_dir.contents and
self.current_dir.contents[name].is_dir:
            self.current_dir = self.current_dir.contents[name]
            messagebox.showinfo("Result", f"Changed directory to '{name}'.")
        else:
            messagebox.showerror("Error", f"'{name}' is not a valid directory.")

    def read(self):
        name = simplifiedialog.askstring("Read", "Enter name:")
        if name in self.current_dir.contents:
            contents = self.current_dir.contents[name].contents
            self.text_area.delete('1.0', tk.END)
            self.text_area.insert(tk.END, contents)
        else:
            messagebox.showerror("Error", f"'{name}' not found.")

    def write(self):
        name = simplifiedialog.askstring("Write", "Enter name:")
        if name in self.current_dir.contents:
            content = simplifiedialog.askstring("Write", f"Enter content for '{name}':")
            if content is not None:

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        self.current_dir.contents[name].contents = content
        messagebox.showinfo("Result", f"Content written to '{name}'.")
    else:
        messagebox.showerror("Error", f"'{name}' not found.")

if __name__ == "__main__":
    root = tk.Tk()
    app = FileSystemGUI(root)
    root.mainloop()
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