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# attendance_system.py
"""
Simple Attendance Management System (console-based)

Features:
- Mark attendance for students (Present/Absent)
- View current attendance records
- Save and load attendance to/from a JSON file
- Simple CLI menu

Usage:
- Run this script with Python 3.
- Attendance is stored in "attendance_data.json" in the same folder.
"""

import json
from datetime import datetime

DATA_FILE = "attendance_data.json"

def load_attendance():
    try:
        with open(DATA_FILE, "r") as f:
            return json.load(f)
    except FileNotFoundError:
        return {}

def save_attendance(data):
    with open(DATA_FILE, "w") as f:
        json.dump(data, f, indent=4)

def mark_attendance(data):
    name = input("Enter student name: ").strip()
    status = input("Present or Absent? (P/A): ").strip().upper()
    if status not in ('P', 'A'):
        print("Invalid status. Use 'P' for present or 'A' for absent.")
        return
    date_str = datetime.now().strftime("%Y-%m-%d")
    if date_str not in data:
        data[date_str] = {}
    data[date_str][name] = "Present" if status == 'P' else "Absent"
    save_attendance(data)
    print(f"Marked {name} as {data[date_str][name]} for {date_str}.")

def view_attendance(data):
    date_str = input("Enter date to view (YYYY-MM-DD) or press Enter for today: ").strip()
    if not date_str:
        date_str = datetime.now().strftime("%Y-%m-%d")
    if date_str in data:
        print(f"Attendance for {date_str}:")
        for student, status in data[date_str].items():
            print(f" - {student}: {status}")
    else:
        print(f"No attendance records for {date_str}.")

def list_dates(data):
    if not data:
        print("No attendance data available.")
        return
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    print("Available dates:")
    for d in sorted(data.keys()):
        print(" -", d)

def main():
    data = load_attendance()
    while True:
        print("\n--- Attendance Management System ---")
        print("1. Mark Attendance")
        print("2. View Attendance")
        print("3. List Dates with Records")
        print("4. Exit")
        choice = input("Enter choice: ").strip()
        if choice == '1':
            mark_attendance(data)
        elif choice == '2':
            view_attendance(data)
        elif choice == '3':
            list_dates(data)
        elif choice == '4':
            print("Goodbye!")
            break
        else:
            print("Invalid choice. Please try again.")

if __name__ == '__main__':
    main()
```