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import json

class Student:
    def __init__(self, roll_number, name, password, class_name):
        self.roll_number = roll_number
        self.name = name
        self.password = password
        self.class_name = class_name

class GatePass:
    def __init__(self, roll_number, name, class_name, reason):
        self.roll_number = roll_number
        self.name = name
        self.class_name = class_name
        self.reason = reason
        self.status = "Pending"

class Admin:
    def __init__(self, username, password):
        self.username = username
        self.password = password

class GatePassManager:
    def __init__(self):
        self.students = {}
        self.gate_pass_requests = []
        self.admins = {}
        self.load_data()

    def load_data(self):
        try:
            with open('students.json', 'r') as file:
                content = file.read().strip()
                self.students = json.loads(content) if content else {}
        except (FileNotFoundError, json.JSONDecodeError):
            self.students = {}

        try:
            with open('gate_pass_requests.json', 'r') as file:
                content = file.read().strip()
                self.gate_pass_requests = json.loads(content) if
content else []
        except (FileNotFoundError, json.JSONDecodeError):
            self.gate_pass_requests = []

        try:
            with open('admins.json', 'r') as file:
                content = file.read().strip()
                self.admins = json.loads(content) if content else {}
        except (FileNotFoundError, json.JSONDecodeError):

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        self.admins = {}

    def save_data(self):
        with open('students.json', 'w') as file:
            json.dump(self.students, file)
        with open('gate_pass_requests.json', 'w') as file:
            json.dump(self.gate_pass_requests, file)
        with open('admins.json', 'w') as file:
            json.dump(self.admins, file)

    def register_student(self, roll_number, name, password,
class_name):
        if roll_number in self.students:
            return False
        self.students[roll_number] = {
            'name': name,
            'password': password,
            'class': class_name,
            'email': email,
        }
        self.save_data()
        return True

    def login_student(self, roll_number, password):
        student = self.students.get(roll_number)
        if student and student['password'] == password:
            return student['name'], student['class']
        return None, None

    def apply_gate_pass(self, roll_number, name, class_name, reason):
        gate_pass = GatePass(roll_number, name, class_name, reason)
        self.gate_pass_requests.append(gate_pass.__dict__)
        self.save_data()

    def check_gate_pass_status(self, roll_number):
        return [gp for gp in self.gate_pass_requests if
gp['roll_number'] == roll_number]
    def withdraw_gate_pass(self, roll_number):
        for request in self.gate_pass_requests:
            if request['roll_number'] == roll_number:
                self.gate_pass_requests.remove(request)
                self.save_data()
                return True
        return False

    def approve_gate_pass(self, roll_number):
        for request in self.gate_pass_requests:
            if request['roll_number'] == roll_number:

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        request['status'] = 'Approved'
    self.save_data()

def reject_gate_pass(self, roll_number):
    for request in self.gate_pass_requests:
        if request['roll_number'] == roll_number:
            request['status'] = 'Rejected'
    self.save_data()

def register_admin(self, username, password):
    if username in self.admins:
        return False
    self.admins[username] = password
    self.save_data()
    return True

def login_admin(self, username, password):
    return self.admins.get(username) == password

def main():
    manager = GatePassManager()

    while True:
        print("\nOptions:")
        print("1. Register Student")
        print("2. Login Student")
        print("3. Search for gate pass with roll number")
        print("4. Register Admin")
        print("5. Login Admin")
        print("6. Exit")
        choice = input("Choose an option: ")

        if choice == '1':
            roll_number = input("Enter roll number: ")
            name = input("Enter name: ")
            password = input("Enter password: ")
            class_name = input("Enter class: ")
            if manager.register_student(roll_number, name, password,
class_name):
                print("Registration successful!")
            else:
                print("Roll number already exists.")

        elif choice == '2':
            roll_number = input("Enter roll number: ")
            password = input("Enter password: ")
            name, class_name = manager.login_student(roll_number,
password)
            if name:

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        print(f"Welcome {name}! You are in class
{class_name}.")
        while True:
            print("\nOptions:")
            print("1. Apply for gate pass")
            print("2. Check status of gate pass")
            print("3. Withdraw gate pass")
            print("4. Logout")
            sub_choice = input("Choose an option: ")

            if sub_choice == '1':
                reason = input("Enter reason for gate pass: ")
                manager.apply_gate_pass(roll_number, name,
class_name, reason)
                print("Gate pass request submitted.")

            elif sub_choice == '2':
                statuses =
manager.check_gate_pass_status(roll_number)
                if statuses:
                    for status in statuses:
                        print(f"Gate Pass for
{status['reason']}: {status['status']}")
                else:
                    print("No gate pass requests found.")

            elif sub_choice == '3':
                manager.withdraw_gate_pass(roll_number)
                print("Gate pass withdrawn.")

            elif sub_choice == '4':
                print("Logged out.")
                break

            else:
                print("Invalid option.")

        else:
            print("Invalid roll number or password.")

    elif choice == '3':
        roll_number = input("Enter roll number to search: ")
        statuses = manager.check_gate_pass_status(roll_number)
        if statuses:
            for status in statuses:
                print(f"Gate Pass for {status['reason']}:
{status['status']}")
        else:
            print("No gate pass requests found.")

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elif choice == '4':
    username = input("Enter admin username: ")
    password = input("Enter admin password: ")
    if manager.register_admin(username, password):
        print("Admin registration successful!")
    else:
        print("Admin username already exists.")

elif choice == '5':
    username = input("Enter admin username: ")
    password = input("Enter admin password: ")
    if manager.login_admin(username, password):
        print(f"Welcome Admin {username}!")
        while True:
            print("\nOptions:")
            print("1. View all gate passes")
            print("2. Approve gate pass")
            print("3. Reject gate pass")
            print("4. Logout")
            admin_choice = input("Choose an option: ")

            if admin_choice == '1':
                for request in manager.gate_pass_requests:
                    print(f"{request['name']}
({request['roll_number']}): {request['reason']} -
{request['status']}")

            elif admin_choice == '2':
                roll_number = input("Enter roll number to
approve: ")
                manager.approve_gate_pass(roll_number)
                print("Gate pass approved.")

            elif admin_choice == '3':
                roll_number = input("Enter roll number to
reject: ")
                manager.reject_gate_pass(roll_number)
                print("Gate pass rejected.")

            elif admin_choice == '4':
                print("Logged out.")
                break

            else:
                print("Invalid option.")

        else:
            print("Invalid admin username or password.")

elif choice == '6':

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        print("Exiting the program.")
        break

    else:
        print("Invalid option.")

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

Options:

1. Register Student
2. Login Student
3. Search for gate pass with roll number
4. Register Admin
5. Login Admin
6. Exit

Choose an option: 3

Enter roll number to search: 160121733005

Gate Pass for Dental Appointment: Approved

Options:

1. Register Student
2. Login Student
3. Search for gate pass with roll number
4. Register Admin
5. Login Admin
6. Exit

Choose an option: 2

Enter roll number: 16012173301

Enter password: jw

Invalid roll number or password.

Options:

1. Register Student
2. Login Student
3. Search for gate pass with roll number
4. Register Admin
5. Login Admin
6. Exit

Choose an option: 160121733016

Invalid option.

Options:

1. Register Student

2. Login Student
3. Search for gate pass with roll number
4. Register Admin
5. Login Admin
6. Exit

Choose an option: 2

Enter roll number: 160121733016

Enter password: Triveni@123

Welcome Pilla Triveni! You are in class CSE-1.

Options:

1. Apply for gate pass
2. Check status of gate pass
3. Withdraw gate pass
4. Logout

Choose an option: 2

Gate Pass for Cognizant online exam at 2pm on 19-10-2024: Rejected

Gate Pass for Cognizant exam: Rejected

Options:

1. Apply for gate pass
2. Check status of gate pass
3. Withdraw gate pass
4. Logout

Choose an option: 3

Gate pass withdrawn.

Options:

1. Apply for gate pass
2. Check status of gate pass
3. Withdraw gate pass
4. Logout

Choose an option: 2

Gate Pass for Cognizant exam: Rejected

Options:

1. Apply for gate pass
2. Check status of gate pass
3. Withdraw gate pass
4. Logout

Choose an option: 3

Gate pass withdrawn.

Options:

1. Apply for gate pass
2. Check status of gate pass
3. Withdraw gate pass
4. Logout

Choose an option: 2

No gate pass requests found.

Options:

1. Apply for gate pass
2. Check status of gate pass
3. Withdraw gate pass
4. Logout

Choose an option: 4

Logged out.

Options:

1. Register Student
2. Login Student
3. Search for gate pass with roll number
4. Register Admin
5. Login Admin
6. Exit

Choose an option: 3

Enter roll number to search: 160121733016

No gate pass requests found.

Options:

1. Register Student
2. Login Student
3. Search for gate pass with roll number
4. Register Admin
5. Login Admin
6. Exit

Choose an option: 5

Enter admin username: Kumar Varma

Enter admin password: Kumar@123

Welcome Admin Kumar Varma!

Options:

1. View all gate passes
2. Approve gate pass

3. Reject gate pass
4. Logout

Choose an option: 1

Kousalya (160121733005): Dental Appointment - Approved

Options:

1. View all gate passes
2. Approve gate pass
3. Reject gate pass
4. Logout

Choose an option: 4

Logged out.

Options:

1. Register Student
2. Login Student
3. Search for gate pass with roll number
4. Register Admin
5. Login Admin
6. Exit

Choose an option: 6

Exiting the program.

```
import json
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```
def read_students_data():  
    try:  
        with open('students.json', 'r') as file:  
            students = json.load(file)  
            print("Students Data:")  
            print(json.dumps(students, indent=4))  
    except FileNotFoundError:  
        print("students.json file not found.")  
    except json.JSONDecodeError:  
        print("Error decoding JSON from students.json.")
```

```
# Call the function  
read_students_data()
```

Students Data:

```
{  
    "160121733016": {  
        "name": "Pilla Triveni",  
        "password": "Triveni@123",  
        "class": "CSE-1"
```

```

    },
    "160121733005": {
        "name": "Kousalya",
        "password": "Kousalya@123",
        "class": "CSE-1"
    }
}

import json

def read_admins_data():
    try:
        with open('admins.json', 'r') as file:
            admins = json.load(file)
            print("Admins Data:")
            print(json.dumps(admins, indent=4))
    except FileNotFoundError:
        print("admins.json file not found.")
    except json.JSONDecodeError:
        print("Error decoding JSON from admins.json.")

# Call the function
read_admins_data()

Admins Data:
{
    "Kumar Varma": "Kumar@123"
}

import json

def read_gate_pass_requests_data():
    try:
        with open('gate_pass_requests.json', 'r') as file:
            gate_pass_requests = json.load(file)
            print("Gate Pass Requests Data:")
            print(json.dumps(gate_pass_requests, indent=4))
    except FileNotFoundError:
        print("gate_pass_requests.json file not found.")
    except json.JSONDecodeError:
        print("Error decoding JSON from gate_pass_requests.json.")

# Call the function
read_gate_pass_requests_data()

Gate Pass Requests Data:
[
    {
        "roll_number": "160121733005",
        "name": "Kousalya",
        "class_name": "CSE-1",

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    "reason": "Dental Appointment",  
    "status": "Approved"  
  }  
]
```