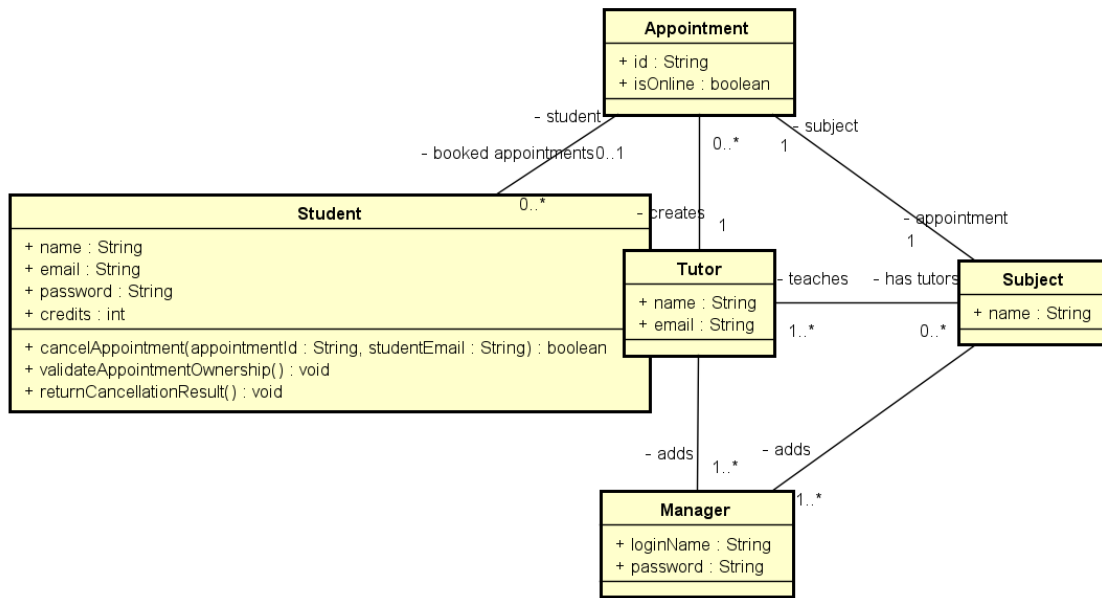


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Part 1: Domain Class Model (DCM)

Class Descriptions

Manager

- Attributes:
 - loginName: String
 - password: String
- Responsibilities:
 - Add new subjects to the system
 - Add new tutors
 - Manage system login

Tutor

- Attributes:
 - name: String
 - email: String
- Responsibilities:
 - Sign up for subjects
 - Create appointments
 - Set new password

Student

- Attributes:
 - name: String
 - email: String
 - password: String
 - credits: int
- Responsibilities:
 - Sign up for the system
 - Buy credits
 - Book and cancel appointments

Subject

- Attributes:
 - name: String
- Responsibilities:
 - Represent teachable subjects in the system

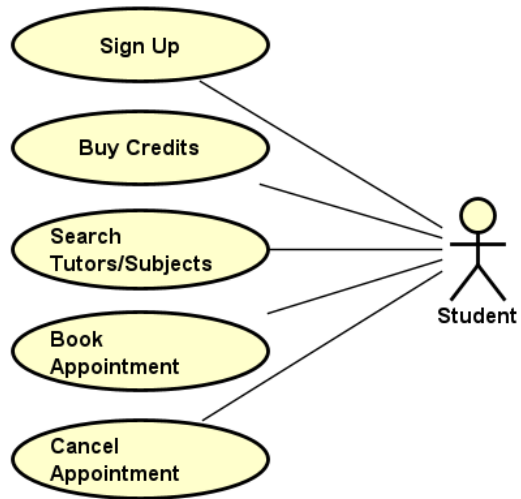
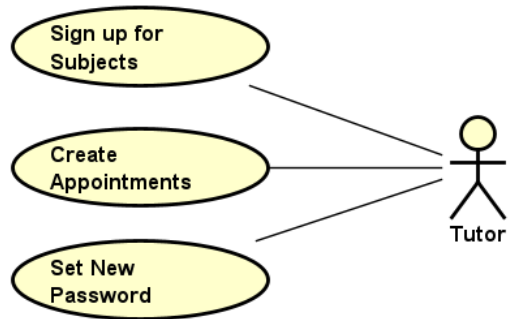
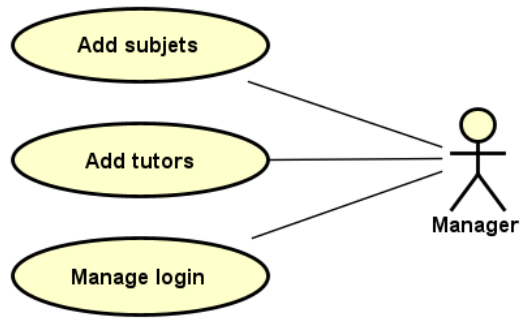
Appointment

- Attributes:
 - id: String
 - time: LocalDateTime
 - isOnline: boolean
- Responsibilities:
 - Represent tutoring sessions
 - Link students, tutors, and subjects

Diagram Explanation

The Domain Class Model shows the key entities in the tutoring system and their relationships. Associations demonstrate how different classes interact, such as a student booking appointments or a tutor creating appointments for specific subjects.

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Part 2: Use Case Diagram

Manager Use Cases

1. Add Subjects
 - Scenario: Manager enters a new subject name
 - Success: Subject added if it doesn't exist
 - Error: System notifies if subject already exists
2. Add Tutors
 - Scenario: Manager provides tutor's name and email
 - Success: Tutor added with temporary password
 - Error: System notifies if tutor already exists
3. Manage Login
 - Scenario: Manager logs into the system
 - Success: Access to system functions
 - Error: Access denied if credentials are incorrect

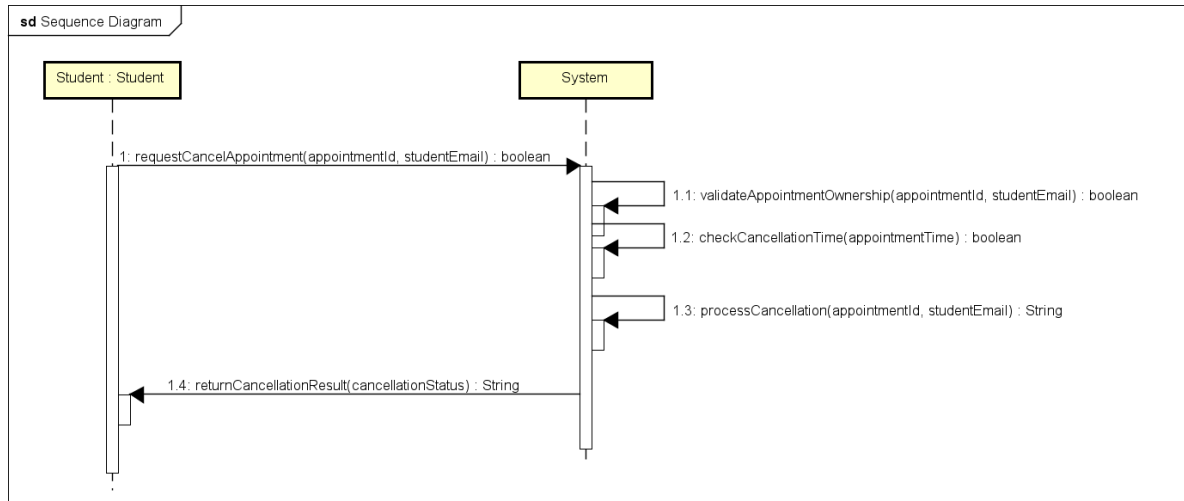
Tutor Use Cases

1. Sign up for Subjects
 - Scenario: Tutor selects subjects to teach
 - Success: Subjects linked to tutor's profile
 - Error: Cannot add non-existent subjects
2. Create Appointments
 - Scenario: Tutor sets available time and session type
 - Success: Appointment created
 - Error: Conflicting appointments or exceeding in-person limits
3. Set New Password
 - Scenario: Tutor changes account password
 - Success: Password updated
 - Error: Incorrect old password or invalid new password

Student Use Cases

1. Sign Up
 - Scenario: Student creates a new account
 - Success: Account created with provided details
 - Error: Email already in use
2. Buy Credits
 - Scenario: Student purchases tutoring credits
 - Success: Credits added to account
 - Error: Payment issues
3. Search Tutors/Subjects
 - Scenario: Student searches for tutoring options
 - Success: List of available appointments
 - Error: No matching tutors or subjects found
4. Book Appointment
 - Scenario: Student selects and books an appointment
 - Success: Appointment booked, credits deducted
 - Error: Insufficient credits or already booked appointment
5. Cancel Appointment
 - Scenario: Student cancels a booked appointment
 - Success: Appointment cancelled
 - 24 hours: Credit returned
 - <24 hours: No credit returned
 - Error: Appointment not found or already cancelled

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Part 3: Sequence Diagram

Student Cancels Appointment Workflow

The Sequence Diagram illustrates the process of a student cancelling an appointment:

1. Student requests appointment cancellation
2. System validates appointment ownership
3. System checks cancellation time
4. System processes cancellation
 - If >24 hours: Credit returned
 - If <24 hours: No credit returned
5. System returns cancellation result to student

Implementation Details

Key Design Considerations

- Implemented high-level abstraction of tutoring system
- Focused on core functionality
- Demonstrated basic object interactions
- Implemented appointment cancellation logic

Constraints and Assumptions

- Campus appointments limited to 8am-6pm
- Online appointments can be scheduled anytime
- Credit system for appointment booking
- Unique email addresses for users

Conclusion

The design provides a flexible and extensible framework for a tutoring appointment system, capturing key interactions between managers, tutors, and students.