Operation Contracts

1- Contract: create_instructor

Operation Name: create_instructor(name, phoneNumber, specialization)

Description: Registers a new instructor with their details in the **database** (name, phone and specialization).

- **Preconditions**:
    - The instructor's details (name, phone, specialization) must be provided.
    - The instructor does not already exist in the **Database**.
- **Postconditions**:
    - A new Instructor entry is created in the **Database** with the provided details.
    - The system confirms successful registration to the instructor.

2- Contract: create_offering

Operation Name: create_offering(type, location, start_date, end_date, day, start_time, end_time, status)

Description: Adds a new lesson offering to the system for a specified location, schedule, and lesson type.

- **Preconditions**:
    - Logged into the system as an administrator.
    - The location, schedule and status must be valid.
    - No other offering is scheduled at the specified location and time.
- **Postconditions**:
    - A new Offering entry is created in the **Database** with the specified location, schedule, and type.
    - The system updates the status of the offering to "available."
    - Confirmation is sent to the administrator that the offering has been added successfully.

3- Contract: book_offering

Operation Name: book_offering(client_id, offering_id)

Description: Books an available lesson offering for a client.

- **Preconditions**:
  - The client is logged into the system.
  - The selected offering is marked as "available" in the **Database**.
  - If the client is underage, they must have a guardian associated with their account.
- **Postconditions**:
  - A new Booking entry is created in the **Database** for the client and the selected offering.
  - The offering's status is updated to "booked" in the **Database**.
  - Confirmation is sent to the client that the booking was successful.

4- Contract: cancelBooking

Operation Name: cancelBooking(client_id)

Description: Cancels an existing booking for a client.

- **Preconditions**:
  - The client is logged into the system.
  - The booking exists in the **Database**.
  - The booking has not yet occurred (i.e., the booking date/time is in the future).
- **Postconditions**:
  - The Booking entry is removed or marked as "canceled" in the **Database**.
  - The associated offering's status is updated to "available" in the **Database**.
  - Confirmation is sent to the client that the cancellation was successful.

5- Contract: view_client_bookings

Operation Name: view_client_bookings(client_id)

Description: Allows a client to view a list of all available lessons.

- **Preconditions**:
  - The client is logged into the system.
- **Postconditions**:
  - The system retrieves all offerings marked as "available" from the **Database**.
  - The list of available lessons is displayed to the client.

6- Contract: delete_client_record

Operation Name: delete_client_record(client_id)

Description: Deletes a client account from the system.

- **Preconditions**:
  - The client is logged into the system.
  - The account to be deleted exists in the **Database**.
- **Postconditions**:
  - The Account entry is removed from the **Database**.
  - All associated data (e.g., bookings for clients, offerings for instructors) are removed or marked as "inactive" in the databases.
  - Confirmation is sent to the client that the account was deleted.

7- Contract: take_offering

Operation Name: take_offering(instructor_id, instructor_name)

Description: Assigns an instructor to a specific lesson offering, making it available to the public.

- **Preconditions**:
  - The instructor is registered and available in the chosen location.
  - The offering exists in the **Database** and is currently unassigned.
- **Postconditions**:
  - The selected offering is updated with the instructor's ID in the **Database**.
  - The offering is marked as "available" for clients to book.
  - Confirmation is sent to the instructor that they have been assigned to the offering.

8- Contract: create_client

Operation Name: create_client(name, age, guardian)

Description: Registers a new client with their details in the **database** (name, age and guardian status (true or false)).

- **Preconditions**:
  - The client's details (name, age, guardian) must be provided.
  - The client does not already exist in the **Database**.
- **Postconditions**:
  - A new client entry is created in the **Database** with the provided details.
  - The system confirms successful registration to the client.

9- Contract: view_available_offerings

Operation Name: view_available_offerings(instructor_id)

Description: Allows an instructor to view a list of all available lessons.

- **Preconditions**:
  - The instructor is logged into the system.
- **Postconditions**:
  - The system retrieves all offerings marked as "available" from the **Database**.
  - The list of available lessons is displayed to the instructor.