Федеральное государственное автономное образовательное учреждение высшего образования

«Национальный исследовательский университет ИТМО»

Факультет Информационных технологий и программирования

Работа: Лабораторная работа 6

Тема: Проектирование архитектуры БД

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**Задачи:**

Создать базу данных в MongoDB на примере схемы, сделанной в первой лабораторной работе.

**Требования:**

1. Необходимо взять за основу схему БД из первой лабораторной работы.
2. В основных коллекциях должно быть не менее 10 записей.

**Ход выполнения:**

1. ***Создаем требуемые коллекции:***

*db.createCollection("users");*

*db.createCollection("wallets");*

*db.createCollection("subscriptions");*

*db.createCollection("feedbacks");*

*db.createCollection("clubs");*

*db.createCollection("service\_booking");*

*db.createCollection("service");*

1. ***Заполняем коллекции данными:***

* ***Для users:***

*db.users.insertMany([*

*{ \_id: 1, phone: "+1-202-555-0100", password: "password123", email: "user1@email.com", date: new Date("2023-01-01"), sex: "Male" },*

*{ \_id: 2, phone: "+1-202-555-0101", password: "password456", email: "user2@email.com", date: new Date("2023-02-02"), sex: "Female" },*

*{ \_id: 3, phone: "+1-202-555-0102", password: "password789", email: "user3@email.com", date: new Date("2023-03-03"), sex: "Male" },*

*{ \_id: 4, phone: "+1-202-555-0103", password: "password012", email: "user4@email.com", date: new Date("2023-04-04"), sex: "Female" },*

*{ \_id: 5, phone: "+1-202-555-0104", password: "password345", email: "user5@email.com", date: new Date("2023-05-05"), sex: "Male" },*

*{ \_id: 6, phone: "+1-202-555-0105", password: "password678", email: "user6@email.com", date: new Date("2023-06-06"), sex: "Female" },*

*{ \_id: 7, phone: "+1-202-555-0106", password: "password901", email: "user7@email.com", date: new Date("2023-07-07"), sex: "Male" },*

*{ \_id: 8, phone: "+1-202-555-0107", password: "password234", email: "user8@email.com", date: new Date("2023-08-08"), sex: "Female" },*

*{ \_id: 9, phone: "+1-202-555-0108", password: "password567", email: "user9@email.com", date: new Date("2023-09-09"), sex: "Male" },*

*{ \_id: 10, phone: "+1-202-555-0109", password: "password890", email: "user10@email.com", date: new Date("2023-10-10"), sex: "Female" }*

*]);*

* ***Для wallets:***

*db.wallets.insertMany([*

*{ \_id: 1, user\_id: 1, balance: 100.00 },*

*{ \_id: 2, user\_id: 2, balance: 50.00 },*

*{ \_id: 3, user\_id: 3, balance: 75.00 },*

*{ \_id: 4, user\_id: 4, balance: 25.00 },*

*{ \_id: 5, user\_id: 5, balance: 150.00 },*

*{ \_id: 6, user\_id: 6, balance: 125.00 },*

*{ \_id: 7, user\_id: 7, balance: 80.00 },*

*{ \_id: 8, user\_id: 8, balance: 40.00 },*

*{ \_id: 9, user\_id: 9, balance: 110.00 },*

*{ \_id: 10, user\_id: 10, balance: 60.00 }*

*]);*

* *Для subsciprions:*

*db.subscriptions.insertMany([*

*{ \_id: 11, user\_id: 1, club\_id: 2, registration\_date: new Date("2024-03-03"), starting\_date: new Date("2024-03-04"), ending\_date: new Date("2024-04-03"), freezing\_period\_bonuses: 3 },*

*{ \_id: 12, user\_id: 2, club\_id: 1, registration\_date: new Date("2024-04-04"), starting\_date: new Date("2024-04-05"), ending\_date: new Date("2024-05-04"), freezing\_period\_bonuses: 5 },*

*{ \_id: 13, user\_id: 3, club\_id: 2, registration\_date: new Date("2024-05-05"), starting\_date: new Date("2024-05-06"), ending\_date: new Date("2024-06-05"), freezing\_period\_bonuses: 2 },*

*{ \_id: 14, user\_id: 4, club\_id: 1, registration\_date: new Date("2024-06-06"), starting\_date: new Date("2024-06-07"), ending\_date: new Date("2024-07-06"), freezing\_period\_bonuses: 4 },*

*{ \_id: 15, user\_id: 5, club\_id: 2, registration\_date: new Date("2024-07-07"), starting\_date: new Date("2024-07-08"), ending\_date: new Date("2024-08-07"), freezing\_period\_bonuses: 1 },*

*{ \_id: 16, user\_id: 6, club\_id: 1, registration\_date: new Date("2024-08-08"), starting\_date: new Date("2024-08-09"), ending\_date: new Date("2024-09-08"), freezing\_period\_bonuses: 6 },*

*{ \_id: 17, user\_id: 7, club\_id: 2, registration\_date: new Date("2024-09-09"), starting\_date: new Date("2024-09-10"), ending\_date: new Date("2024-10-09"), freezing\_period\_bonuses: 3 },*

*{ \_id: 18, user\_id: 8, club\_id: 1, registration\_date: new Date("2024-10-10"), starting\_date: new Date("2024-10-11"), ending\_date: new Date("2024-11-10"), freezing\_period\_bonuses: 5 },*

*{ \_id: 19, user\_id: 9, club\_id: 2, registration\_date: new Date("2024-11-11"), starting\_date: new Date("2024-11-12"), ending\_date: new Date("2024-12-11"), freezing\_period\_bonuses: 2 },*

*{ \_id: 20, user\_id: 10, club\_id: 1, registration\_date: new Date("2024-12-12"), starting\_date: new Date("2024-12-13"), ending\_date: new Date("2025-01-12"), freezing\_period\_bonuses: 4 }*

*]);*

* ***Для clubs:***

*db.clubs.insertMany([*

*{ \_id: 1, legal\_address: "123 Main St", telephone: "+1-202-555-1212", physical\_address: "456 Elm St" },*

*{ \_id: 2, legal\_address: "789 Oak Ave", telephone: "+1-202-555-1313", physical\_address: "1011 Pine St" },*

*{ \_id: 3, legal\_address: "456 Maple St", telephone: "+1-202-555-1414", physical\_address: "1234 Willow St" },*

*{ \_id: 4, legal\_address: "1011 Birch Ave", telephone: "+1-202-555-1515", physical\_address: "5678 Oak St" },*

*{ \_id: 5, legal\_address: "789 Cedar St", telephone: "+1-202-555-1616", physical\_address: "2345 Pine St" },*

*{ \_id: 6, legal\_address: "456 Spruce St", telephone: "+1-202-555-1717", physical\_address: "6789 Willow St" },*

*{ \_id: 7, legal\_address: "1011 Elm St", telephone: "+1-202-555-1818", physical\_address: "3456 Oak St" },*

*{ \_id: 8, legal\_address: "789 Pine St", telephone: "+1-202-555-1919", physical\_address: "7890 Birch Ave" },*

*{ \_id: 9, legal\_address: "456 Willow St", telephone: "+1-202-555-2020", physical\_address: "4567 Cedar St" },*

*{ \_id: 10, legal\_address: "1011 Oak St", telephone: "+1-202-555-2121", physical\_address: "1011 Spruce St" }*

*]);*

* ***Для feedbacks:***

*db.feedbacks.insertMany([*

*{ \_id: 1, user\_id: 1, club\_id: 1, message: "Great gym! Friendly staff and clean facilities.", date\_of\_publishing: new Date("2023-05-05") },*

*{ \_id: 2, user\_id: 2, club\_id: 2, message: "The equipment is a bit outdated, but overall a good experience.", date\_of\_publishing: new Date("2023-06-06") },*

*{ \_id: 3, user\_id: 3, club\_id: 1, message: "I love the variety of classes offered.", date\_of\_publishing: new Date("2023-07-07") },*

*{ \_id: 4, user\_id: 4, club\_id: 2, message: "The pool is always clean and refreshing.", date\_of\_publishing: new Date("2023-08-08") },*

*{ \_id: 5, user\_id: 5, club\_id: 1, message: "The personal trainers are knowledgeable and helpful.", date\_of\_publishing: new Date("2023-09-09") },*

*{ \_id: 6, user\_id: 6, club\_id: 2, message: "The sauna is a great way to relax after a workout.", date\_of\_publishing: new Date("2023-10-10") },*

*{ \_id: 7, user\_id: 7, club\_id: 1, message: "The gym is always crowded, but it's worth it.", date\_of\_publishing: new Date("2023-11-11") },*

*{ \_id: 8, user\_id: 8, club\_id: 2, message: "The staff is always friendly and welcoming.", date\_of\_publishing: new Date("2023-12-12") },*

*{ \_id: 9, user\_id: 9, club\_id: 1, message: "The gym is a great value for the price.", date\_of\_publishing: new Date("2024-01-01") },*

*{ \_id: 10, user\_id: 10, club\_id: 2, message: "I would highly recommend this gym to anyone.", date\_of\_publishing: new Date("2024-02-02") }*

*]);*

* ***Для service\_booking:***

*db.service\_booking.insertMany([*

*{ \_id: 1, user\_id: 1, service\_id: 1, registration\_date: new Date("2023-07-07") },*

*{ \_id: 2, user\_id: 2, service\_id: 2, registration\_date: new Date("2023-08-08") },*

*{ \_id: 3, user\_id: 3, service\_id: 3, registration\_date: new Date("2023-09-09") },*

*{ \_id: 4, user\_id: 4, service\_id: 4, registration\_date: new Date("2023-10-10") },*

*{ \_id: 5, user\_id: 5, service\_id: 1, registration\_date: new Date("2023-11-11") },*

*{ \_id: 6, user\_id: 6, service\_id: 2, registration\_date: new Date("2023-12-12") },*

*{ \_id: 7, user\_id: 7, service\_id: 3, registration\_date: new Date("2024-01-01") },*

*{ \_id: 8, user\_id: 8, service\_id: 4, registration\_date: new Date("2024-02-02") },*

*{ \_id: 9, user\_id: 9, service\_id: 1, registration\_date: new Date("2024-03-03") },*

*{ \_id: 10, user\_id: 10, service\_id: 2, registration\_date: new Date("2024-04-04") }*

*]);*

* ***Для service:***

*db.service.insertMany([*

*{ \_id: 1, service\_type: "Personal Training", naming: "Basic Training Package", description: "30-minute sessions with a certified trainer", cost: 50.00 },*

*{ \_id: 2, service\_type: "Massage Therapy", naming: "Relaxation Massage", description: "60-minute full body massage", cost: 80.00 },*

*{ \_id: 3, service\_type: "Nutrition Counseling", naming: "Personalized Meal Plan", description: "One-on-one consultation with a registered dietitian", cost: 75.00 },*

*{ \_id: 4, service\_type: "Group Fitness Class", naming: "Zumba", description: "High-energy dance fitness class", cost: 15.00 }*

*]);*

1. ***Создаем индекс:*** *db.subscriptions.createIndex({ user\_id: 1, club\_id: 1 });*
2. ***Создаем представление:***

*db.createView(*

*"user\_subscription\_info",*

*"users",*

*[*

*{ $lookup: { from: "subscriptions", localField: "\_id", foreignField: "user\_id", as: "subscriptions" } },*

*{ $unwind: "$subscriptions" },*

*{ $project: { \_id: 0, phone: 1, email: 1, club\_id: "$subscriptions.club\_id", starting\_date: "$subscriptions.starting\_date", ending\_date: "$subscriptions.ending\_date" } }*

*]*

*);*