

**Министерство науки и высшего образования Российской Федерации**  
**ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ**  
**"НАЦИОНАЛЬНЫЙ**  
**ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ**  
**ИТМО"**  
**ФАКУЛЬТЕТ СРЕДНЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ**

**ОТЧЕТ**  
**ПО ЛАБОРАТОРНОЙ РАБОТЕ № 7**  
**"Знакомство с MongoDB"**

Специальность 09.02.07 "Информационные системы и программирование"

Дисциплина "Основы проектирования баз данных"

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# 1 ИНДИВИДУАЛЬНОЕ ЗАДАНИЕ

Цель работы: овладеть практическими навыками и умениями реализации баз данных в MongoDB.

Задание:

- 1) Попытайтесь уменьшить размер модели реляционной базы данных, с которой Вы работали.
- 2) Реализовать модель в MongoDB.
- 3) Заполнить модель данными, чтобы все запросы пункта 4) выдавали непустые строки.
- 4) Реализовать минимум 40% запросов, сделанных в работе по реляционным базам данных в MongoDB.

Выполнение задания:

Новая модель данных:

Library\_Case:{

  \_ID:

  Address:

  Halls:[{

    \_ID:

    Name:

    Capacity:

    Readers:[{

      \_ID:

      Readers\_name:

      Readers\_address:

      phone\_number:

      Copies:[{

        \_ID:

        State:

Info:

Book:{

  \_ID:

  Name:

Author:

Published\_house:

}}

## 1. Логи процесса реализации модели в MongoDB:

Заполнение коллекции Library\_Case:

```
db.Library_Case.insert({ _ID: 1, Address: "Sotnikovskaya-Kolotushkino d.5 kv.12", Halls:[{ _ID: 1, Name: "Sci-Fi", Capacity: 50, Readers:[{ _ID: 1, Readers_name: "Vorotinsky MAX", Readers_address: "Pushkino d.6 kv.66", phone_number: "+76663879607", Copies:[{ _ID: 1, State: "Good", Info: "Vorotynsky vzyl knigu", Book:{ _ID: 1, Name: "Dnevnik Hacha(Typical mnogonacional)", Author: "Svetov M. P.", Published_house: "Gorin_Book", } }, { _ID: 2, State: "Not Bad", Info: "Kazah", Book:{ _ID: 2, Name: "Nursultan", Author: "Nursultant N.N.", Published_house: "Nursultan", } } ] }, { _ID: 2, Readers_name: "Sotnykov D. B.", Readers_address: "Stalinskaya d.19 kv.17", phone_number: "+79214103305", Copies:[{ _ID: 1, State: "Bad", Info: "Libertarian", Book:{ _ID: 1, Name: "USSR-in my heart", Author: "Jukov K.S.", Published_house: "Tupichok", } }, { _ID: 2, State: "So-So", Info: "Vzyl knigu, i ne vernul", Book:{ _ID: 2, Name: "USA-in my heart", Author: "Navalnyi A.J.", Published_house: "Tupichok", } } ] } ],{ _ID: 2, Name: "Classic", Capacity: 50, Readers:[{ _ID: 1, Readers_name: "Rogulya Kirill", Readers_address: "Bashkinskaya d.7 kv.77", phone_number: "+76263879604", Copies:[{ _ID: 1, State: "New", Info: "Rogulya znart bash", Book:{ _ID: 1, Name: "MnogoConsole", Author: "Torlvald T. W.", Published_house: "Linux", } }, { _ID: 2, State: "Very Bad", Info: "Doljen knigu", Book:{ _ID: 2, Name: "Kolektor", Author: "Davidoff E.Ch.", Published_house: "Potato", } } ] },{ _ID: 2, Readers_name: "Galahov V. T.", Readers_address: "Nikolskaya d.1 kv.1", phone_number: "+79914102305", Copies:[{ _ID: 1, State: "Good", Info: "Valerey dolgo ne prihodil", Book:{ _ID: 1, Name: "Tipoviki", Author: "Smirnov S.D.", Published_house: "SDS", } }, { _ID: 2, State: "Bad", Info: "Netu knig na rukah", Book:{ _ID: 2, Name: "Dud", Author: "Rudoy A.A.", Published_house: "Ne tupoy", } } ] } ]})WriteResult({ "nInserted" : 1 })
```

```

"_id" : ObjectId("5f9f5518171c2c9a7712175a"),
"_ID" : 1,
"Address" : "Sotnikovskaya-Kolotushkino d.5 kv.12",
"Halls" : [
  {
    "_ID" : 1,
    "Name" : "Sci-Fi",
    "Capacity" : 50,
    "Readers" : [
      {
        "_ID" : 1,
        "Readers_name" : "Vorotinsky MAX",
        "Readers_address" : "Pushkino d.6 kv.66",
        "phone_number" : "+76663879607",
        "Copies" : [
          {
            "_ID" : 1,
            "State" : "Good",
            "Info" : "Vorotynsky vzyal knigu",
            "Book" : {
              "_ID" : 1,
              "Name" : "Dnevniki Hacha(Typical mnogonacional)",
              "Author" : "Svetov M. P.",
              "Published_house" : "Gorin_Book"
            }
          },
          {
            "_ID" : 2,
            "State" : "Not Bad",
            "Info" : "Kazah",
            "Book" : {
              "_ID" : 2,
              "Name" : "Nursultan",
              "Author" : "Nursualtan N.N.",
              "Published_house" : "Nursultan"
            }
          }
        ]
      },
      {
        "_ID" : 2,
        "Readers_name" : "Sotnykov D. B.",
        "Readers_address" : "Stalinskaya d.19 kv.17",
        "phone_number" : "+79214103305",
        "Copies" : [

```

Рисунок 1. Вывод заполненной коллекции «Library\_Case».

```

        "phone_number" : "+75214103303",
        "Copies" : [
            {
                "_ID" : 1,
                "State" : "Bad",
                "Info" : "Libertarian",
                "Book" : {
                    "_ID" : 1,
                    "Name" : "USSR-in my heart",
                    "Author" : "Jukov K.S.",
                    "Published_house" : "Tupichok"
                }
            },
            {
                "_ID" : 2,
                "State" : "So-So",
                "Info" : "Vzyl knigu, i ne vernul",
                "Book" : {
                    "_ID" : 2,
                    "Name" : "USA-in my heart",
                    "Author" : "Navalnyi A.J.",
                    "Published_house" : "Tupichok"
                }
            }
        ]
    },
    {
        "_ID" : 2,
        "Name" : "Classic",
        "Capacity" : 50,
        "Readers" : [
            {
                "_ID" : 1,
                "Readers_name" : "Rogulya Kirill",
                "Readers_address" : "Bashkinskaya d.7 kv.77",
                "phone_number" : "+76263879604",
                "Copies" : [
                    {
                        "_ID" : 1,
                        "State" : "New",
                        "Info" : "Rogulya znart bash",
                        "Book" : {
                            "_ID" : 1,
                            "Name" : "MnogoConsole",
                            "Author" : "Torlvald T. W.",
                            "Published_house" : "Linux"
                        }
                    },
                    {
                        "_ID" : 2,
                        "State" : "Very Bad",
                        "Info" : "Doljen knigu",
                        "Book" : {
                            "_ID" : 2,
                            "Name" : "Kolektor",
                            "Author" : "Davidoff E.Ch.",
                            "Published_house" : "Potato"
                        }
                    }
                ]
            }
        ]
    }
]

```

Рисунок 1.1. Вывод заполненной коллекции «Library\_Case».



```
db.Library_Case.insert({ _ID: 2, Address: "Sotnikovskaya d/7 kv.7", Halls:[{ _ID: 1,
Name: "Sci-Fi", Capacity: 50, Readers:[{ _ID: 1, Readers_name: "Maxonovskiy
MAX", Readers_address: "Kolotushkino d.2 kv.1", phone_number: "+79663579607",
Copies:[{ _ID: 1, State: "Good", Info: "Good man", Book:{ _ID: 1, Name:
"Lostream", Author: "Postgre K. Q.", Published_house: "Keks", }}, { _ID: 2, State:
"Not Bad", Info: "Post", Book:{ _ID: 2, Name: "Kinza", Author: "Kinza-dza T.E.",
Published_house: "lex",} }} ], { _ID: 2, Readers_name: "Vyaznikov K.V.",
Readers_address: "Stanislavskiy d.5 kv.1", phone_number: "+79914113325",
Copies:[{ _ID: 1, State: "Bad", Info: "Very Limb", Book:{ _ID: 1, Name: "UFC-in
my heart", Author: "Dude U.G.", Published_house: "Dut", }}, { _ID: 2, State: "So-
So",Info: "Numb very nice", Book:{ _ID: 2, Name: "USA-in my heart: 2", Author:
"Navalnaya L.J.", Published_house: "Stars",}}} ]}}, { _ID: 2, Name: "Classic",
Capacity: 50, Readers:[{ _ID: 1, Readers_name: "Keksik Kirill", Readers_address:
"Intersnaya d.7 kv.77", phone_number: "+76263879604", Copies:[{ _ID: 1,State:
"New", Info: "Nice, very nice", Book:{ _ID: 1, Name: "KelsPost",Author: "Norwald
N. W.", Published_house: "Lost",}}, { _ID: 2, State: "Very Bad",Info: "Sdal
knigu",Book:{ _ID: 2, Name: "Bird", Author: "Birdman B.C.",Published_house:
"Bird",}}} ], { _ID: 2, Readers_name: "Koprosof V. T.",Readers_address:
"Koprosofskaya d.1 kv.1", phone_number: "+79954112305",Copies:[{ _ID: 1, State:
"Good", Info: "Koprosof molodec", Book:{ _ID: 1, Name: "Kunt",Author: "Liga
S.D.",Published_house: "LLi",} }, { _ID: 2, State: "Bad",Info: "Net Knigi na
rukah",Book:{ _ID: 2, Name: "Rebyat", Author: "Ruby A.A.",Published_house: "Ne
Ruby", } }]]]]])
```



```

{
  "_id" : ObjectId("5f9f57a4171c2c9a7712175b"),
  "_ID" : 2,
  "Address" : "Sotnikovskaya d/7 kv.7",
  "Halls" : [
    {
      "_ID" : 1,
      "Name" : "Sci-Fi",
      "Capacity" : 50,
      "Readers" : [
        {
          "_ID" : 1,
          "Readers_name" : "Maxonovskiy MAX",
          "Readers_address" : "Kolotushkino d.2 kv.1",
          "phone_number" : "+79663579607",
          "Copies" : [
            {
              "_ID" : 1,
              "State" : "Good",
              "Info" : "Good man",
              "Book" : {
                "_ID" : 1,
                "Name" : "Lostream",
                "Author" : "Postgre K. Q.",
                "Published_house" : "Keks"
              }
            },
            {
              "_ID" : 2,
              "State" : "Not Bad",
              "Info" : "Post",
              "Book" : {
                "_ID" : 2,
                "Name" : "Kinza",
                "Author" : "Kinza-dza T.E.",
                "Published_house" : "lex"
              }
            }
          ]
        },
        {
          "_ID" : 2,
          "Readers_name" : "Vyaznikov K.V.",
          "Readers_address" : "Stanislavskiy d.5 kv.1",
          "phone_number" : "+79914113325",
          "Copies" : [
            {
              "_ID" : 1,
              "State" : "Bad",
              "Info" : "Very Limb",
              "Book" : {
                "_ID" : 1,
                "Name" : "UFC-in my heart",
                "Author" : "Dude U.G.",
                "Published_house" : "Dut"
              }
            },
            {
              "_ID" : 2,
              "State" : "So-So",
              "Info" : "Numb very nice",

```

Рисунок 2. Вывод второй заполненной коллекции «Library\_Case».

```

        "Copies" : [
            {
                "_ID" : 1,
                "State" : "Bad",
                "Info" : "Very Limb",
                "Book" : {
                    "_ID" : 1,
                    "Name" : "UFC-in my heart",
                    "Author" : "Dude U.G.",
                    "Published_house" : "Dut"
                }
            },
            {
                "_ID" : 2,
                "State" : "So-So",
                "Info" : "Numb very nice",
                "Book" : {
                    "_ID" : 2,
                    "Name" : "USA-in my heart: 2",
                    "Author" : "Navalnaya L.J.",
                    "Published_house" : "Stars"
                }
            }
        ]
    },
    {
        "_ID" : 2,
        "Name" : "Classic",
        "Capacity" : 50,
        "Readers" : [
            {
                "_ID" : 1,
                "Readers_name" : "Keksik Kirill",
                "Readers_address" : "Intersnaya d.7 kv.77",
                "phone_number" : "+76263879604",
                "Copies" : [
                    {
                        "_ID" : 1,
                        "State" : "New",
                        "Info" : "Nice, very nice",
                        "Book" : {
                            "_ID" : 1,
                            "Name" : "KelsPost",
                            "Author" : "Norwald N. W.",
                            "Published_house" : "Lost"
                        }
                    },
                    {
                        "_ID" : 2,
                        "State" : "Very Bad",
                        "Info" : "Sdal knigu",
                        "Book" : {
                            "_ID" : 2,
                            "Name" : "Bird",
                            "Author" : "Birdman B.C.",
                            "Published_house" : "Bird"
                        }
                    }
                ]
            }
        ]
    }
]

```

Рисунок 2.1. Вывод второй заполненной коллекции «Library\_Case».



1. Текст запросов со скриншотами запроса и результата:

Запрос 1: Вывести имя читателя и зала, в котором он закреплён, используя сортировку по имени читателя

```
db.Library_Case.find({}, {"Halls.Name":1,"Halls.Readers.Readers_name":1}).  
sort({"Readers.Readers_name":1})
```

```
"_id" : ObjectId("5f9f5518171c2c9a7712175a"),  
"Halls" : [  
  {  
    "Name" : "Sci-Fi",  
    "Readers" : [  
      {  
        "Readers_name" : "Vorotinsky MAX"  
      },  
      {  
        "Readers_name" : "Sotnykov D. B."  
      }  
    ]  
  },  
  {  
    "Name" : "Classic",  
    "Readers" : [  
      {  
        "Readers_name" : "Rogulya Kirill"  
      },  
      {  
        "Readers_name" : "Galahov V. T."  
      }  
    ]  
  }  
]  
}  
{  
  "_id" : ObjectId("5f9f57a4171c2c9a7712175b"),  
  "Halls" : [  
    {  
      "Name" : "Sci-Fi",  
      "Readers" : [  
        {  
          "Readers_name" : "Maxonovskiy MAX"  
        },  
        {  
          "Readers_name" : "Vyaznikov K.V."  
        }  
      ]  
    },  
    {  
      "Name" : "Classic",  
      "Readers" : [  
        {  
          "Readers_name" : "Keksik Kirill"  
        },  
        {  
          "Readers_name" : "Koprosof V. T."  
        }  
      ]  
    }  
  ]  
}
```

Запрос 2: Вывести информацию о Залах , у которых ID находится в промежутке между 1 и 4.

db.Library\_Case.find({"Halls.\_ID":{\$gt : 1, \$lt:4}},{ "Halls":1})

```
> db.Library_Case.find({"Halls._ID":{$gt : 1, $lt:4}},{ "Halls":1})
{ "_id" : ObjectId("5f9f5518171c2c9a7712175a"), "Halls" : [ { "_ID" : 1, "Name" : "Sci-Fi", "Capacity" : 50, "Readers" : [ { "_ID" : 1, "Readers_name" : "Vorotinsky MAX", "Readers_address" : "Pushkino d.6 kv.66", "phone_number" : "+76663879607", "Copies" : [ { "_ID" : 1, "State" : "Good", "Info" : "Vorotynsky vzyal knigu", "Book" : { "_ID" : 1, "Name" : "Dnevniky Hacha(Typical mnogonacional)", "Author" : "Svetov M. P.", "Published_house" : "Gorin_Book" } } ], { "_ID" : 2, "State" : "Not Bad", "Info" : "Kazah", "Book" : { "_ID" : 2, "Name" : "Nursultan", "Author" : "Nursultant N.N.", "Published_house" : "Nursultan" } } ] }, { "_ID" : 2, "Readers_name" : "Sotnykov D. B.", "Readers_address" : "Stalinskaya d.19 kv.17", "phone_number" : "+79214103305", "Copies" : [ { "_ID" : 1, "State" : "Bad", "Info" : "Libertarian", "Book" : { "_ID" : 1, "Name" : "USSR-in my heart", "Author" : "Jukov K.S.", "Published_house" : "Tupichok" } }, { "_ID" : 2, "State" : "So-So", "Info" : "Vzval knigu, i ne vernul", "Book" : { "_ID" : 2, "Name" : "USA-in my heart", "Author" : "Navalnyi A.J.", "Published_house" : "Tupichok" } } ] } ], { "_ID" : 2, "Name" : "Classic", "Capacity" : 50, "Readers" : [ { "_ID" : 1, "Readers_name" : "Rogulya Kirill", "Readers_address" : "Bashkirskaya d.7 kv.77", "phone_number" : "+76263879604", "Copies" : [ { "_ID" : 1, "State" : "New", "Info" : "Rogulya znart bash", "Book" : { "_ID" : 1, "Name" : "MnogoConsole", "Author" : "Torlvald T. W.", "Published_house" : "Linux" } }, { "_ID" : 2, "State" : "Very Bad", "Info" : "Doljen knigu", "Book" : { "_ID" : 2, "Name" : "Kolektor", "Author" : "Davidoff E.Ch.", "Published_house" : "Potato" } } ] }, { "_ID" : 2, "Readers_name" : "Galahov V. T.", "Readers_address" : "Nikolskaya d.1 kv.1", "phone_number" : "+79914102305", "Copies" : [ { "_ID" : 1, "State" : "Good", "Info" : "Valerey dolgo ne prihodil", "Book" : { "_ID" : 1, "Name" : "Tipoviki", "Author" : "Smirnov S.D.", "Published_house" : "SDS" } }, { "_ID" : 2, "State" : "Bad", "Info" : "Netu knig na rukah", "Book" : { "_ID" : 2, "Name" : "Dud", "Author" : "Rudoy A.A.", "Published_house" : "Ne tupoy" } } ] } ] } ] }
{ "_id" : ObjectId("5f9f57a4171c2c9a7712175b"), "Halls" : [ { "_ID" : 1, "Name" : "Sci-Fi", "Capacity" : 50, "Readers" : [ { "_ID" : 1, "Readers_name" : "Maxonovskiy MAX", "Readers_address" : "Kolotushkino d.2 kv.1", "phone_number" : "+79663579607", "Copies" : [ { "_ID" : 1, "State" : "Good", "Info" : "Good man", "Book" : { "_ID" : 1, "Name" : "Lostream", "Author" : "Postgre K. Q.", "Published_house" : "Keks" } }, { "_ID" : 2, "State" : "Not Bad", "Info" : "Post", "Book" : { "_ID" : 2, "Name" : "Kinza", "Author" : "Kinza-dza T.E.", "Published_house" : "lex" } } ] }, { "_ID" : 2, "Readers_name" : "Vyaznikov K.V.", "Readers_address" : "Stanislavskiy d.5 kv.1", "phone_number" : "+79914113325", "Copies" : [ { "_ID" : 1, "State" : "Bad", "Info" : "Very Limb", "Book" : { "_ID" : 1, "Name" : "UFC-in my heart", "Author" : "Dude U.G.", "Published_house" : "Dut" } }, { "_ID" : 2, "State" : "So-So", "Info" : "Numb very nice", "Book" : { "_ID" : 2, "Name" : "USA-in my heart: 2", "Author" : "Navalnaya L.J.", "Published_house" : "Stars" } } ] } ], { "_ID" : 2, "Name" : "Classic", "Capacity" : 50, "Readers" : [ { "_ID" : 1, "Readers_name" : "Keksik Kirill", "Readers_address" : "Intersnaya d.7 kv.77", "phone_number" : "+76263879604", "Copies" : [ { "_ID" : 1, "State" : "New", "Info" : "Nice, very nice", "Book" : { "_ID" : 1, "Name" : "KelsPost", "Author" : "Norwald N. W.", "Published_house" : "Lost" } }, { "_ID" : 2, "State" : "Very Bad", "Info" : "Sdal knigu", "Book" : { "_ID" : 2, "Name" : "Bird", "Author" : "Birdman B.C.", "Published_house" : "Bird" } } ] }, { "_ID" : 2, "Readers_name" : "Koprososof V. T.", "Readers_address" : "Koprososofskaya d.1 kv.1", "phone_number" : "+79954112305", "Copies" : [ { "_ID" : 1, "State" : "Good", "Info" : "Koprososof molodec", "Book" : { "_ID" : 1, "Name" : "Kunt", "Author" : "Liga S.D.", "Published_house" : "LLi" } }, { "_ID" : 2, "State" : "Bad", "Info" : "Net Knigi na rukah", "Book" : { "_ID" : 2, "Name" : "Rebyat", "Author" : "Ruby A.A.", "Published_house" : "Ne Ruby" } } ] } ] } ] }
```

Запрос 3: Вывести информацию о Библиотеке, в которой вместительность зала больше 20, а ID зала меньше или равно двум. Не выводить информацию о читателях.

```
db.Library_Case.find({$and :[{ "Halls.Capacity":{$gt
:20}},{ "Halls._ID":{$lte:2} }]}},{ "Halls.Readers":0}).pretty()
```

```
> db.Library_Case.find({$and : [{ "Halls.Capacity":{$gt : 20}},{ "Halls._ID":{$lte:2} }]}},{ "Halls.Readers":0}).pretty()
{
  "_id" : ObjectId("5f9f5518171c2c9a7712175a"),
  "_ID" : 1,
  "Address" : "Sotnikovskaya-Kolotushkino d.5 kv.12",
  "Halls" : [
    {
      "_ID" : 1,
      "Name" : "Sci-Fi",
      "Capacity" : 50
    },
    {
      "_ID" : 2,
      "Name" : "Classic",
      "Capacity" : 50
    }
  ]
}
{
  "_id" : ObjectId("5f9f57a4171c2c9a7712175b"),
  "_ID" : 2,
  "Address" : "Sotnikovskaya d/7 kv.7",
  "Halls" : [
    {
      "_ID" : 1,
      "Name" : "Sci-Fi",
      "Capacity" : 50
    },
    {
      "_ID" : 2,
      "Name" : "Classic",
      "Capacity" : 50
    }
  ]
}
> db.Library_Case.find({$and : [{ "payout_summ":{$lt :
```

Запрос 4:

Вывести все зады, где вместительность меньше либо равна 50 или ID читателей больше 1

```
db.Library_Case.find({$or : [{ "Halss.Capasity":{$lt : 50}}, {"Halls.Readers._ID":{$gt:1}}]}).pretty()
```

```
> db.Library_Case.find({$or : [{ "Halss.Capasity":{$lt : 50}}, {"Halls.Readers._ID":{$gt:1}}]}).pretty()
{
  "_id" : ObjectId("5f9f5518171c2c9a7712175a"),
  "_ID" : 1,
  "Address" : "Sotnikovskaya-Kolotushkino d.5 kv.12",
  "Halls" : [
    {
      "_ID" : 1,
      "Name" : "Sci-Fi",
      "Capacity" : 50,
      "Readers" : [
        {
          "_ID" : 1,
          "Readers_name" : "Vorotinsky MAX",
          "Readers_address" : "Pushkino d.6 kv.66",
          "phone_number" : "+76663879607",
          "Copies" : [
            {
              "_ID" : 1,
              "State" : "Good",
              "Info" : "Vorotynsky vzyal knigu",
              "Book" : {
                "_ID" : 1,
                "Name" : "Dnevniki Hacha(Typical mnogonacional)",
                "Author" : "Svetov M. P.",
                "Published_house" : "Gorin_Book"
              }
            },
            {
              "_ID" : 2,
              "State" : "Not Bad",
              "Info" : "Kazah",
              "Book" : {
                "_ID" : 2,
                "Name" : "Nursultan",
                "Author" : "Nursualtan N.N.",
                "Published_house" : "Nursultan"
              }
            }
          ]
        }
      ]
    },
    {
      "_ID" : 2,
      "Readers_name" : "Sotnykov D. B.",
      "Readers_address" : "Stalinskaya d.19 kv.17",
      "phone_number" : "+79214103305",
      "Copies" : [
        {
          "_ID" : 1,
          "State" : "Bad",
          "Info" : "Libertarian",
          "Book" : {
            "_ID" : 1,
            "Name" : "USSR-in my heart",

```

```

        "Name" : "USSR-in my heart",
        "Author" : "Jukov K.S.",
        "Published_house" : "Tupichok"
    },
    {
        "_ID" : 2,
        "State" : "So-So",
        "Info" : "Vzyl knigu, i ne vernul",
        "Book" : {
            "_ID" : 2,
            "Name" : "USA-in my heart",
            "Author" : "Navalnyi A.J.",
            "Published_house" : "Tupichok"
        }
    }
]
}
]
},
{
    "_ID" : 2,
    "Name" : "Classic",
    "Capacity" : 50,
    "Readers" : [
        {
            "_ID" : 1,
            "Readers_name" : "Rogulya Kirill",
            "Readers_address" : "Bashkinskaya d.7 kv.77",
            "phone_number" : "+76263879604",
            "Copies" : [
                {
                    "_ID" : 1,
                    "State" : "New",
                    "Info" : "Rogulya znart bash",
                    "Book" : {
                        "_ID" : 1,
                        "Name" : "MnogoConsole",
                        "Author" : "Torlvald T. W.",
                        "Published_house" : "Linux"
                    }
                }
            ],
            {
                "_ID" : 2,
                "State" : "Very Bad",
                "Info" : "Doljen knigu",
                "Book" : {
                    "_ID" : 2,
                    "Name" : "Kolektor",
                    "Author" : "Davidoff E.Ch.",
                    "Published_house" : "Potato"
                }
            }
        ]
    }
}

```



```

        "Published_house" : "Potato"
    }
}

    ]
},
{
    "_ID" : 2,
    "Readers_name" : "Galahov V. T.",
    "Readers_address" : "Nikolskaya d.1 kv.1",
    "phone_number" : "+79914102305",
    "Copies" : [
        {
            "_ID" : 1,
            "State" : "Good",
            "Info" : "Valerey dolgo ne prihodil",
            "Book" : {
                "_ID" : 1,
                "Name" : "Tipoviki",
                "Author" : "Smirnov S.D.",
                "Published_house" : "SDS"
            }
        },
        {
            "_ID" : 2,
            "State" : "Bad",
            "Info" : "Netu knig na rukah",
            "Book" : {
                "_ID" : 2,
                "Name" : "Dud",
                "Author" : "Rudoy A.A.",
                "Published_house" : "Ne tupoy"
            }
        }
    ]
}
]
}
]
}
{
    "_id" : ObjectId("5f9f57a4171c2c9a7712175b"),
    "_ID" : 2,
    "Address" : "Sotnikovskaya d/7 kv.7",
    "Halls" : [
        {
            "_ID" : 1,
            "Name" : "Sci-Fi",
            "Capacity" : 50,
            "Readers" : [
                {
                    "_ID" : 1,
                    "Readers_name" : "Maxonovskiy MAX",
                    "Readers_address" : "Kolotushkino d.2 kv.1",
                    "phone_number" : "+79663579607",
                    "Copies" : [

```

```

        "phone_number" : "+79663579607",
        "Copies" : [
            {
                "_ID" : 1,
                "State" : "Good",
                "Info" : "Good man",
                "Book" : {
                    "_ID" : 1,
                    "Name" : "Lostream",
                    "Author" : "Postgre K. Q.",
                    "Published_house" : "Keks"
                }
            },
            {
                "_ID" : 2,
                "State" : "Not Bad",
                "Info" : "Post",
                "Book" : {
                    "_ID" : 2,
                    "Name" : "Kinza",
                    "Author" : "Kinza-dza T.E.",
                    "Published_house" : "lex"
                }
            }
        ]
    },
    {
        "_ID" : 2,
        "Readers_name" : "Vyaznikov K.V.",
        "Readers_address" : "Stanislavskiy d.5 kv.1",
        "phone_number" : "+79914113325",
        "Copies" : [
            {
                "_ID" : 1,
                "State" : "Bad",
                "Info" : "Very Limb",
                "Book" : {
                    "_ID" : 1,
                    "Name" : "UFC-in my heart",
                    "Author" : "Dude U.G.",
                    "Published_house" : "Dut"
                }
            },
            {
                "_ID" : 2,
                "State" : "So-So",
                "Info" : "Numb very nice",
                "Book" : {
                    "_ID" : 2,
                    "Name" : "USA-in my heart: 2",
                    "Author" : "Navalnaya L.J.",
                    "Published_house" : "Stars"
                }
            }
        ]
    }
]

```

```

        "Published_house" : "Stars"
    }
}
]
}
],
{
    "_ID" : 2,
    "Name" : "Classic",
    "Capacity" : 50,
    "Readers" : [
        {
            "_ID" : 1,
            "Readers_name" : "Keksik Kirill",
            "Readers_address" : "Intersnaya d.7 kv.77",
            "phone_number" : "+76263879604",
            "Copies" : [
                {
                    "_ID" : 1,
                    "State" : "New",
                    "Info" : "Nice, very nice",
                    "Book" : {
                        "_ID" : 1,
                        "Name" : "KelsPost",
                        "Author" : "Norwald N. W.",
                        "Published_house" : "Lost"
                    }
                },
                {
                    "_ID" : 2,
                    "State" : "Very Bad",
                    "Info" : "Sdal knigu",
                    "Book" : {
                        "_ID" : 2,
                        "Name" : "Bird",
                        "Author" : "Birdman B.C.",
                        "Published_house" : "Bird"
                    }
                }
            ]
        },
        {
            "_ID" : 2,
            "Readers_name" : "Koprosof V. T.",
            "Readers_address" : "Koprosofskaya d.1 kv.1",
            "phone_number" : "+79954112305",
            "Copies" : [
                {
                    "_ID" : 1,
                    "State" : "Good",
                    "Info" : "Koprosof molodec",
                    "Book" : {
                        "_ID" : 1,

```

```

    "_ID" : 1,
    "State" : "Good",
    "Info" : "Kopros of molodec",
    "Book" : {
      "_ID" : 1,
      "Name" : "Kunt",
      "Author" : "Liga S.D.",
      "Published_house" : "LLi"
    }
  },
  {
    "_ID" : 2,
    "State" : "Bad",
    "Info" : "Net Knigi na rukah",
    "Book" : {
      "_ID" : 2,
      "Name" : "Rebyat",
      "Author" : "Ruby A.A.",
      "Published_house" : "Ne Ruby"
    }
  }
]
}
> c

```

## ВЫВОД

В ходе выполнения работы были получены практические навыки и умения реализации баз данных в MongoDB.