МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НАЦІОНАЛЬНОМУ УНІВЕРСИТЕТІ "ЛЬВІВСЬКА ПОЛІТЕХНІКА"

Кафедра систем штучного інтелекту

Лабораторна робота №14
з дисципліни
«Організація баз даних та знань»

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Розробка бази даних типу NoSQL

Варіант 3

Мета роботи: здобуття практичних навичок створення та обробки бази даних типу NoSQL на прикладі СУБД MongoDB.

Хід роботи

1. В командній стрічці введемо *use online_shop,* щоб створити та далі використовувати нашу базу даних.

```
> use online_shop
switched to db online_shop
>
```

2. Заповнимо колекцію та автоматично створимо її за допомогою *insertMany.* Створимо такі колекції:

Products
```
db.products.insertMany([
    {
        "name":"Iphone5",
        "price":200,
        "availability":true,
        "description":"Black colour, 4-inch display"
    },

    {
        "name":"Iphone6",
        "price":400,
        "availability":true,
        "description":"Gold colour, 5.3-inch display"
    },

    {
        "name":"Iphone8",
        "price":700,
        "availability":true,
        "description":"Rose Gold colour, 6-inch display"
    }
])
```

```
> db.products.insertMany([
...     {
...         "name":"Iphone5",
...         "price":200,
...         "availability":true,
...         "description":"Black colour, 4-inch display"
...     },
...
...     {
...         "name":"Iphone6",
...         "price":400,
...         "availability":true,
...         "description":"Gold colour, 5.3-inch display"
...     },
...
...     {
...         "name":"Iphone8",
...         "price":700,
...         "availability":true,
...         "description":"Rose Gold colour, 6-inch display"
...     }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("5cdd74e83699e8ee1b0a84dd"),
                ObjectId("5cdd74e83699e8ee1b0a84de"),
                ObjectId("5cdd74e83699e8ee1b0a84df")
        ]
}
```

Category

```
db.category.insertMany([
     {
         "name":"Laptops and PC's",
         "description":"Category where yo can find laptops an PC's"
     },

     {
         "name":"Books",
         "description":"Category with books"
     },

     {
         "name":"Smartphones",
         "description":"Category with smartphones"
     },

     {
         "name":"Sport and Hobby",
         "description":"Category where you can find some stuff for your hobby or sport
activities"
     }
])
```

```
> db.category.insertMany([
...     {
...         "name":"Laptops and PC's",
...         "description":"Category where yo can find laptops an PC's"
...     },
...
...     {
...         "name":"Books",
...         "description":"Category with books"
...     },
...
...     {
...         "name":"Smartphones",
...         "description":"Category with smartphones"
...     },
...
...     {
...         "name":"Sport and Hobby",
...         "description":"Category where you can find some stuff for your hobby or sport activities"
...     }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("5cdd77133699e8ee1b0a84e0"),
                ObjectId("5cdd77133699e8ee1b0a84e1"),
                ObjectId("5cdd77133699e8ee1b0a84e2"),
                ObjectId("5cdd77133699e8ee1b0a84e3")
        ]
}
```

Manufacture

```
db.manufacture.insertMany([
    {
        "name":"Apple Inc."
    },
    {
        "name":"Amazon"
    },
    {
        "name":"Asos"
    },
    {
        "name":"Asus"
    },
    {
        "name":"Nike"
    },
    {
        "name":"Google"
    },
    {
        "name":"LG"
    }
])
```

```
> db.manufacture.insertMany([
...     {
...         "name":"Apple Inc."
...     },
...     {
...         "name":"Amazon"
...     },
...     {
...         "name":"Asos"
...     },
...     {
...         "name":"Asus"
...     },
...     {
...         "name":"Nike"
...     },
...     {
...         "name":"Google"
...     },
...     {
...         "name":"LG"
...     }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("5cdd780e3699e8ee1b0a84eb"),
                ObjectId("5cdd780e3699e8ee1b0a84ec"),
                ObjectId("5cdd780e3699e8ee1b0a84ed"),
                ObjectId("5cdd780e3699e8ee1b0a84ee"),
                ObjectId("5cdd780e3699e8ee1b0a84ef"),
                ObjectId("5cdd780e3699e8ee1b0a84f0"),
                ObjectId("5cdd780e3699e8ee1b0a84f1")
        ]
}
>
```

Customer

```
db.customer.insertMany([
    {
        "first_name":"John",
        "last_name":"Wick",
```

```
        "login":"john213",
        "password":"advisory12",
        "contacts":"johnwick@gmail.com",
        "date_of_registration": new Date('2018-09-01'),
        "balance": 1000
    },
    {
        "first_name":"Harry",
        "last_name":"Potter",
        "login":"highaf420",
        "password":"smweedmkmegreed",
        "contacts":"ggwp12cat@gmail.com",
        "date_of_registration": new Date('2019-02-07'),
        "balance": 300
    },
    {
        "first_name":"Sam",
        "last_name":"Armstrong",
        "login":"samarm",
        "password":"hgoteedw",
        "contacts":"samarm@gmail.com",
        "date_of_registration": new Date('2019-04-01'),
        "balance": 3000
    },
    {
        "first_name":"Walter",
        "last_name":"White",
        "login":"neponyal",
        "password":"kavooo",
        "contacts":"walteralbuquerque@gmail.com",
        "date_of_registration": new Date('2019-03-07'),
        "balance": 120
    }
])
```

```
> db.customer.insertMany([
...   {
...     "first_name":"John",
...     "last_name":"Wick",
...     "login":"john213",
...     "password":"advisory12",
...     "contacts":"johnwick@gmail.com",
...     "date_of_registration": new Date('2018-09-01'),
...     "balance": 1000
...   },
...   {
...     "first_name":"Harry",
...     "last_name":"Potter",
...     "login":"highaf420",
...     "password":"smweedmkmegreed",
...     "contacts":"ggwp12cat@gmail.com",
...     "date_of_registration": new Date('2019-02-07'),
...     "balance": 300
...   },
...   {
...     "first_name":"Sam",
...     "last_name":"Armstrong",
...     "login":"samarm",
...     "password":"hgoteedw",
...     "contacts":"samarm@gmail.com",
...     "date_of_registration": new Date('2019-04-01'),
...     "balance": 3000
...   },
...   {
...     "first_name":"Walter",
...     "last_name":"White",
...     "login":"neponyal",
...     "password":"kavooo",
...     "contacts":"walteralbuquerque@gmail.com",
...     "date_of_registration": new Date('2019-03-07'),
...     "balance": 120
...   }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("5cdd7b133699e8ee1b0a84f2"),
                ObjectId("5cdd7b133699e8ee1b0a84f3"),
                ObjectId("5cdd7b133699e8ee1b0a84f4"),
                ObjectId("5cdd7b133699e8ee1b0a84f5")
        ]
}
```

Basket_order

```
db.basket_order.insertMany([
  {
    "amount":2,
  },
  {
    "amount":1
  },
  {
    "amount":4,
  },
  {
    "amount":3,
  },
  {
    "amount":2
  },
  {
    "amount":1
  },
  {
    "amount":3
  }
])
```

```
> db.basket_order.insertMany([
...   {
...       "amount":2,
...   },
...   {
...       "amount":1,
...   },
...   {
...       "amount":4,
...   },
...   {
...       "amount":3,
...   },
...   {
...       "amount":2,
...   },
...   {
...       "amount":1,
...   },
...   {
...       "amount":3
...   }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("5cdd81953699e8ee1b0a84fd"),
                ObjectId("5cdd81953699e8ee1b0a84fe"),
                ObjectId("5cdd81953699e8ee1b0a84ff"),
                ObjectId("5cdd81953699e8ee1b0a8500"),
                ObjectId("5cdd81953699e8ee1b0a8501"),
                ObjectId("5cdd81953699e8ee1b0a8502"),
                ObjectId("5cdd81953699e8ee1b0a8503")
        ]
}
```

Basket

```
db.basket.insertMany([
    {
      "price_of_order":105,
      "delivery_method":" by Air",
      "payment_method":"Credit card",
      "comment":"White colour",
      "date_of_order": new Date('2019-03-12')
    },
    {
      "price_of_order":1500,
      "delivery_method":"Fed-ex",
      "payment_method":"Cash",
      "date_of_order": new Date('2019-02-14')
    },
    {
      "price_of_order":300,
      "delivery_method":"New Post",
      "payment_method":"Cash",
      "comment":"Black colour",
      "date_of_order": new Date('2019-03-03')
    },
    {
      "price_of_order":1200,
      "delivery_method":"New Post",
      "payment_method":"Credit card",
      "date_of_order": new Date('2019-03-04')
    },
    {
      "price_of_order":1000,
      "delivery_method":"Fed-ex",
      "payment_method":"Credit card",
      "comment":"White colour",
      "date_of_order": new Date('2019-03-03')
    },
    {
```

```
      "price_of_order":105,
      "delivery_method":"Air",
      "payment_method":"Credit card",
      "date_of_order": new Date('2019-02-09')
   },
   {
      "price_of_order":400,
      "delivery_method":"Air",
      "payment_method":"Cash",
      "comment":"Blue colour",
      "date_of_order": new Date('2019-02-13')
   }
])
```

```
> db.basket.insertMany([
...   {
...      "price_of_order":105,
...      "delivery_method":" by Air",
...      "payment_method":"Credit card",
...      "comment":"White colour",
...      "date_of_order": new Date('2019-03-12')
...   },
...   {
...      "price_of_order":1500,
...      "delivery_method":"Fed-ex",
...      "payment_method":"Cash",
...      "date_of_order": new Date('2019-02-14')
...   },
...   {
...      "price_of_order":300,
...      "delivery_method":"New Post",
...      "payment_method":"Cash",
...      "comment":"Black colour",
...      "date_of_order": new Date('2019-03-03')
...   },
...   {
...      "price_of_order":1200,
...      "delivery_method":"New Post",
...      "payment_method":"Credit card",
...      "date_of_order": new Date('2019-03-04')
...   },
...   {
...      "price_of_order":1000,
...      "delivery_method":"Fed-ex",
...      "payment_method":"Credit card",
...      "comment":"White colour",
...      "date_of_order": new Date('2019-03-03')
...   },
...   {
...      "price_of_order":105,
...      "delivery_method":"Air",
...      "payment_method":"Credit card",
...      "date_of_order": new Date('2019-02-09')
...   },
...   {
...      "price_of_order":400,
...      "delivery_method":"Air",
...      "payment_method":"Cash",
...      "comment":"Blue colour",
...      "date_of_order": new Date('2019-02-13')
...   }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("5cdd82ba3699e8ee1b0a8504"),
                ObjectId("5cdd82ba3699e8ee1b0a8505"),
                ObjectId("5cdd82ba3699e8ee1b0a8506"),
                ObjectId("5cdd82ba3699e8ee1b0a8507"),
                ObjectId("5cdd82ba3699e8ee1b0a8508"),
                ObjectId("5cdd82ba3699e8ee1b0a8509"),
                ObjectId("5cdd82ba3699e8ee1b0a850a")
        ]
}
```

Benefit

```
db.benefit.insertMany([
   {
      "discount":10
   },
   {
      "discount":3
   },
   {
      "discount":15
   },
   {
      "discount":50
   },
   {
      "discount":5
   }
])
```

```
> db.benefit.insertMany([
...    {
...       "discount":10
...    },
...    {
...       "discount":3
...    },
...    {
...       "discount":15
...    },
...    {
...       "discount":50
...    },
...    {
...       "discount":5
...    }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("5cdd83333699e8ee1b0a850b"),
                ObjectId("5cdd83333699e8ee1b0a850c"),
                ObjectId("5cdd83333699e8ee1b0a850d"),
                ObjectId("5cdd83333699e8ee1b0a850e"),
                ObjectId("5cdd83333699e8ee1b0a850f")
        ]
}
>
```

Benefit_order

```
db.benefit_order.insertMany([
   {
      "code":129393929389124,
      "date_of_expiration": new Date('2020-01-01')
   },
   {
      "code":429493943449124,
      "date_of_expiration": new Date('2025-01-01')
   },
   {
      "code":334449394438434,
      "date_of_expiration": new Date('2019-01-04')
   },
   {
      "code":1123123252341958,
      "date_of_expiration": new Date('2020-01-01')
   },
```

```
    },
    {
        "code":22923434552367886,
        "date_of_expiration": new Date('2023-07-05')
    }
])
```

```
> db.benefit_order.insertMany([
...    {
...        "code":129393929389124,
...        "date_of_expiration": new Date('2020-01-01')
...    },
...    {
...        "code":429493943449124,
...        "date_of_expiration": new Date('2025-01-01')
...    },
...    {
...        "code":334449394438434,
...        "date_of_expiration": new Date('2019-01-04')
...    },
...    {
...        "code":1123123252341958,
...        "date_of_expiration": new Date('2020-01-01')
...    },
...    {
...        "code":22923434552367886,
...        "date_of_expiration": new Date('2023-07-05')
...    }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("5cdd84223699e8ee1b0a8510"),
                ObjectId("5cdd84223699e8ee1b0a8511"),
                ObjectId("5cdd84223699e8ee1b0a8512"),
                ObjectId("5cdd84223699e8ee1b0a8513"),
                ObjectId("5cdd84223699e8ee1b0a8514")
        ]
}
```

Висновок: На даній лабораторній роботі я навчився створювати та обробляти інформацію в базі даних типу NoSQL в СУБД MongoDB.