NATIONAL TECHNICAL UNIVERSITY OF UKRAINE "IGOR SIKORSKY KYIV POLYTECHNIC INSTITUTE"

Faculty of Informatics and Computer Engineering Department of Computer Engineering

Лабораторная работа 6
Node.js и MongoDB

Цель: получить практические навыки работы с Node.js и MongoDB.

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groups of IP-98
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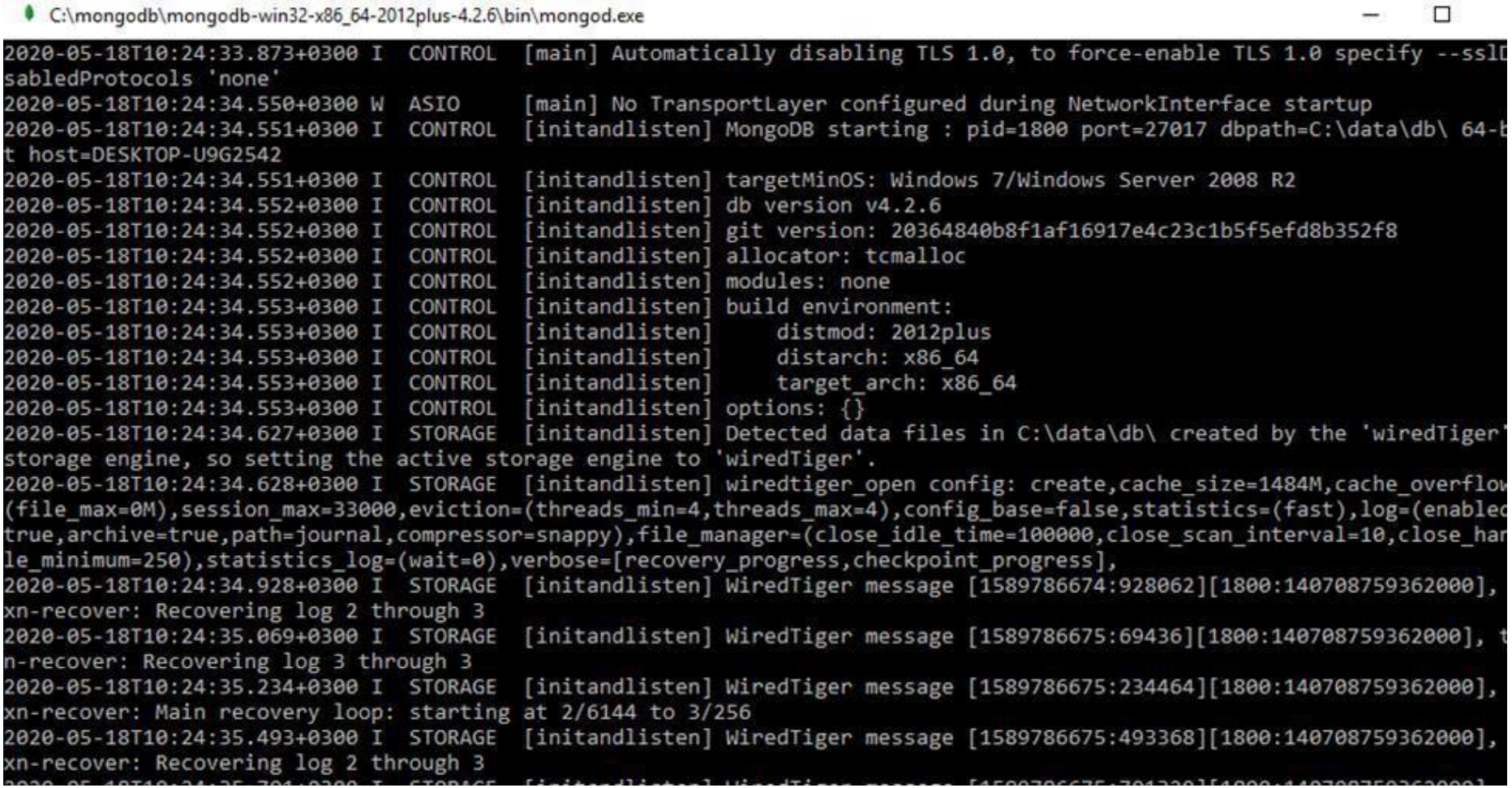
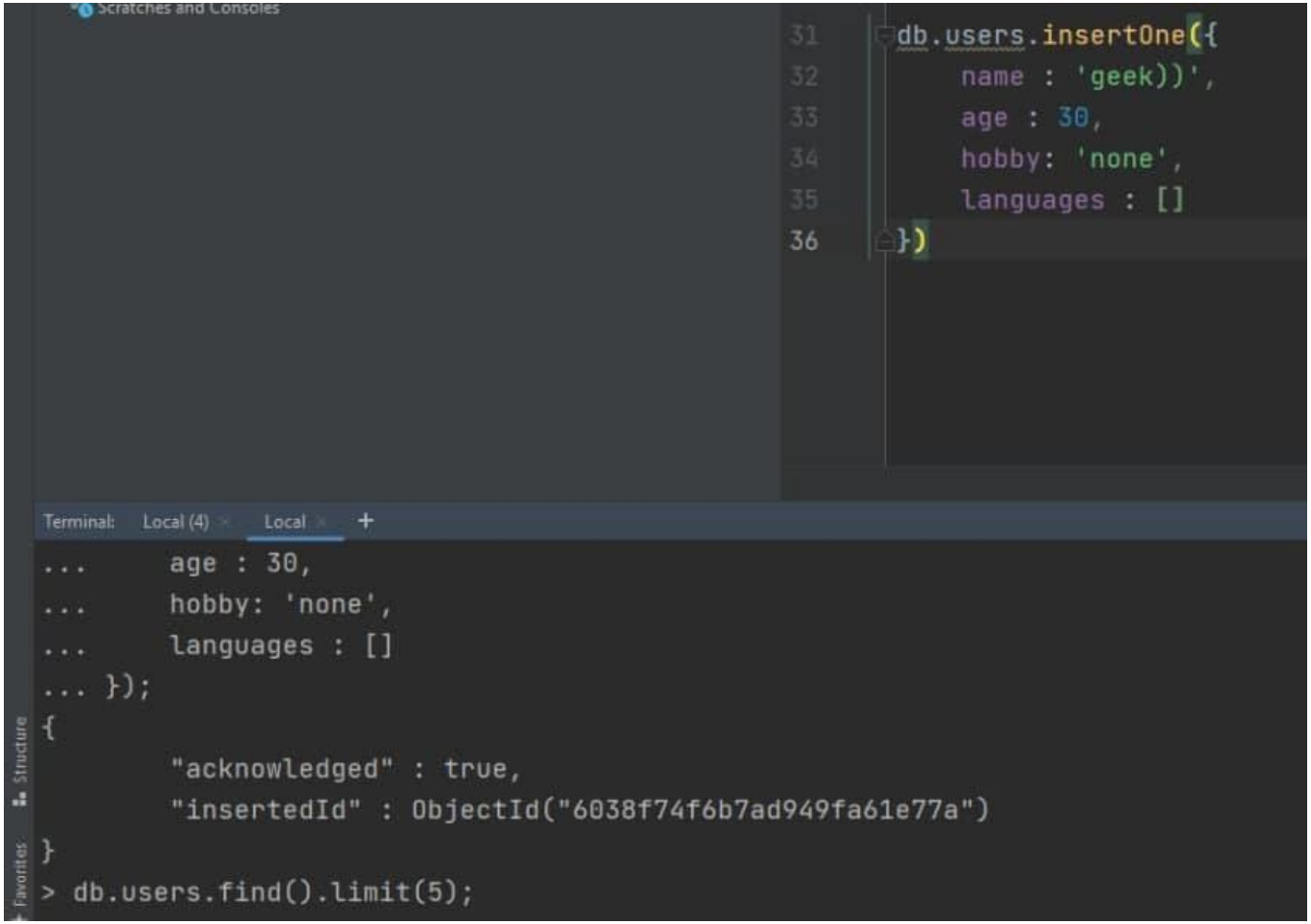
Kyiv 2021

```
const express = require('express')
const app = express()

const cors = require('cors');

const {MongoClient} = require('mongodb');

const main = async () => {
   const uri =
'mongodb://localhost:27017/?readPreference=primary&appname=MongoDB
%20Compass&ssl=false';
   const client = new MongoClient(uri);
   try {
      await client.connect()
      return client
   } catch (e) {
      throwError()
   }
}
let users = null;

main().then((response) => {
   users = response.db('usersdb').collection('users')
});

app.get('/',(req,res) => {
   //1
```

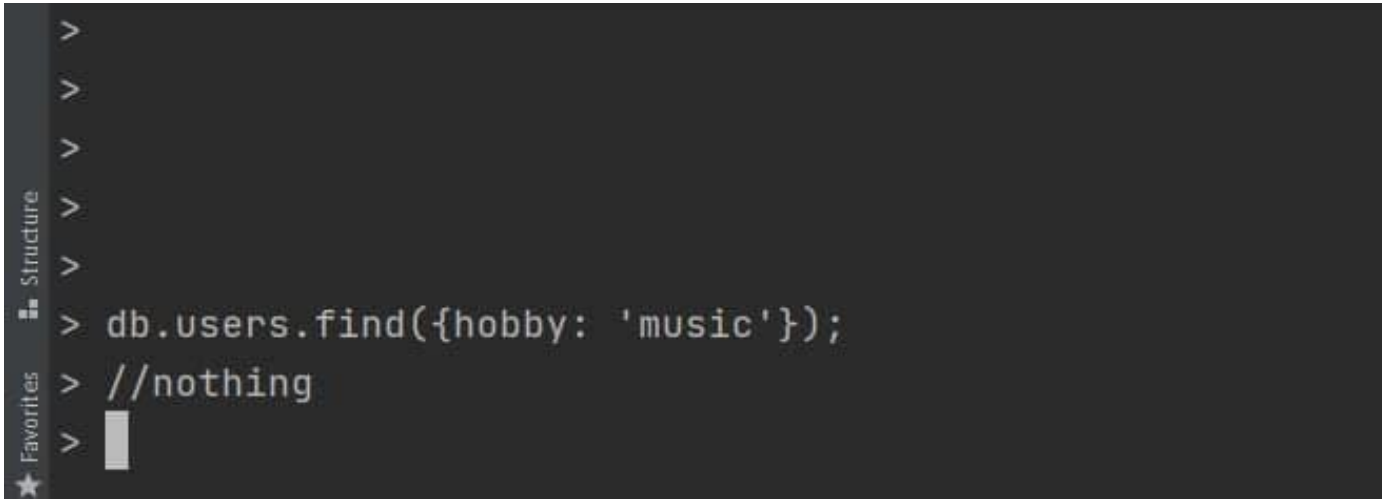
```
    users.find().toArray((err,result) => {
        console.log(result.slice(0,5))
    })

    //2
    users.find({languages: ['english','franch']}).toArray(read);

    //3
    users.find({ "languages.0" : "english"}).toArray(read);

    //4
    users.find({hobby: 'music'}).toArray(read);

    //5
    users.find({age : {$lt: 30,$gt: 24}}).toArray(read)
})
const read = (err,result) => {
    if (err){
        console.log(err)
    }
    console.log(result)
}



app.use(cors())
```

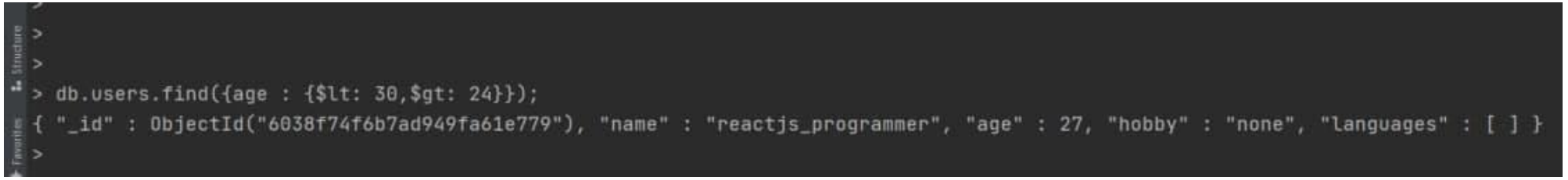
```
app.use(express.json())




app.listen(8080, () => console.log('server started at 8080 port'))
```


C:\mongodb\mongodb-win32-x86_64-2012plus-4.2.6\bin\mongod.exe
2020-05-18T10:24:33.873+0300 I CONTROL [main] Automatically disabling TLS 1.0, to force-enable TLS 1.0 specify --sslD
sabledProtocols 'none'
2020-05-18T10:24:34.550+0300 W ASIO [main] No TransportLayer configured during NetworkInterface startup
2020-05-18T10:24:34.551+0300 I CONTROL [initandlisten] MongoDB starting : pid=1800 port=27017 dbpath=C:\data\db\ 64-b
t host=DESKTOP-U9G2542
2020-05-18T10:24:34.551+0300 I CONTROL [initandlisten] targetMinOS: Windows 7/Windows Server 2008 R2
2020-05-18T10:24:34.552+0300 I CONTROL [initandlisten] db version v4.2.6
2020-05-18T10:24:34.552+0300 I CONTROL [initandlisten] git version: 20364840b8f1af16917e4c23c1b5f5efd8b352f8
2020-05-18T10:24:34.552+0300 I CONTROL [initandlisten] allocator: tcmalloc
2020-05-18T10:24:34.552+0300 I CONTROL [initandlisten] modules: none
2020-05-18T10:24:34.553+0300 I CONTROL [initandlisten] build environment:
2020-05-18T10:24:34.553+0300 I CONTROL [initandlisten] distmod: 2012plus
2020-05-18T10:24:34.553+0300 I CONTROL [initandlisten] distarch: x86_64
2020-05-18T10:24:34.553+0300 I CONTROL [initandlisten] target_arch: x86_64
2020-05-18T10:24:34.553+0300 I CONTROL [initandlisten] options: {}
2020-05-18T10:24:34.627+0300 I STORAGE [initandlisten] Detected data files in C:\data\db\ created by the 'wiredTiger'
storage engine, so setting the active storage engine to 'wiredTiger'.
2020-05-18T10:24:34.628+0300 I STORAGE [initandlisten] wiredtiger_open config: create,cache_size=1484M,cache_overflow
(file_max=0M),session_max=33000,eviction=(threads_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled
true,archive=true,path=journal,compressor=snappy),file_manager=(close_idle_time=100000,close_scan_interval=10,close_han
le_minimum=250),statistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress],
2020-05-18T10:24:34.928+0300 I STORAGE [initandlisten] WiredTiger message [1589786674:928062][1800:140708759362000],
xn-recover: Recovering log 2 through 3
2020-05-18T10:24:35.069+0300 I STORAGE [initandlisten] WiredTiger message [1589786675:69436][1800:140708759362000], t
n-recover: Recovering log 3 through 3
2020-05-18T10:24:35.234+0300 I STORAGE [initandlisten] WiredTiger message [1589786675:234464][1800:140708759362000],
xn-recover: Main recovery loop: starting at 2/6144 to 3/256
2020-05-18T10:24:35.493+0300 I STORAGE [initandlisten] WiredTiger message [1589786675:493368][1800:140708759362000],
xn-recover: Recovering log 2 through 3


Scratches and Consoles
31 db.users.insertOne({
32 name : 'geek))',
33 age : 30,
34 hobby: 'none',
35 languages : []
36 })
Terminal: Local (4) Local +
... age : 30,
... hobby: 'none',
... languages : []
... });
{
"acknowledged" : true,
"insertedId" : ObjectId("6038f74f6b7ad949fa61e77a")
}
> db.users.find().limit(5);
Structure
Favorites

```
{ "_id" : ObjectId("6038f74c6b7ad949fa61e772"), "name" : "helloworld", "age" : 20, "hobby" : "play_piano", "languages" : [ "english", "franch", "" ] }
{ "_id" : ObjectId("6038f74c6b7ad949fa61e773"), "name" : "qweqwe", "age" : 22, "hobby" : "playComputer", "languages" : [ "english", "franch" ] }
> db.users.find({languages: ['english','franch']});
{ "_id" : ObjectId("6038f74c6b7ad949fa61e773"), "name" : "qweqwe", "age" : 22, "hobby" : "playComputer", "languages" : [ "english", "franch" ] }
>
```


Structure
Favorites
>
>
>
>
>
> db.users.find({hobby: 'music'});
> //nothing
>


Structure
Favorites
>
>
>
> db.users.find({age : {$lt: 30,$gt: 24}});
{ "_id" : ObjectId("6038f74f6b7ad949fa61e779"), "name" : "reactjs_programmer", "age" : 27, "hobby" : "none", "languages" : [ ] }
>

==ANSWERS===

Questions for self-assessment

1. What is MongoDB?

MongoDB is a document-oriented NoSQL database used for high volume data storage. Instead of using tables and rows as in the traditional relational databases, MongoDB makes use of collections and documents. ... Collections contain sets of documents and function which is the equivalent of relational database tables.

2. How we can get statistics on the current database?

Database statistics can be gathered manually by the DBA or automatically by the DBMS. For example, many DBMS vendors support the SQL's ANALYZE command to gather statistics. In addition, many vendors have their own routines to gather statistics.

3. Describe methods for adding a single object and a set of objects to MongoDB.

createIndex method The createIndex method is used to create an index based on the "Employeeid" of the document. The '1' parameter indicates that when the index is created with the "Employeeid" Field values, they should be sorted in ascending order.

4. How we can read data in Node.js from a MongoDB database?

Connect to the MongoDB database.

Have a function that is expecting a string variable and a callback.

Search the database for the variable (a specific key of 'GroupName')

Create a JSON object if successful.

Catch the error if not successful.

5. Describe several ways to delete documents in MongoDB.

To delete multiple documents, use db. collection. deleteMany .

To delete a single document, use db. collection. deleteOne

6. Describe methods for updating items in MongoDB •

To update a document, MongoDB provides update operators such as $set to modify field values. { <update operator>: { <field1>: <value1>, ... }, <update operator>: { <field2>: <value2>, ... }, ... } Some update operators, such as $set , will create the field if the field does not exist.