



NATIONAL UNIVERSITY  
OF COMPUTER & EMERGING SCIENCES  
PESHAWAR CAMPUS



<b>Assignment Points:</b>	Indexes – SQL, NoSQL	<b>Semester:</b>	Spring 2021
<b>Date Set:</b>	1 <sup>st</sup> June, 2021	<b>Due Date:</b>	8 <sup>th</sup> June, 2021
<b>Course:</b>	Database Systems	<b>Instructor:</b>	Ms. Safia Fatima

**Note:** Read the whole assignment before starting your work as there are important bits of information laid out for your ease.

This assignment shall test your concepts of **indexes** that you have studied in database systems course. A schema has already been made for this assignment and so you need to first download it from this link:

<https://www.dropbox.com/s/ya3b9eh6up1w6uo/assign3.sql?dl=0>

After downloading it in your desired folder, you need to source it in mysql prompt using the command:

```
mysql> SOURCE /<path to installed schema>/assign3.sql
```

After issuing this command you will have a database created named 'person', with all the required tables and data inserted in those particular tables for you.

## 1. MySQL Indexes

*Your task is to employ the use of Indexes on the **Users** table as mentioned below:*

- 1 . Create a single-column index using attribute email.
- 2 . Create a composite-column index using attributes username and password.
- 3 . Display the list of indexes for table users.
- 4 . Drop all indexes you have created till now.
- 5 . Explain briefly the difference between implicit index and unique index?

## 2. NoSQL (MongoDB) Indexes

Now, let us move on to how Indexes operate in MongoDB. For this part of the assignment, you will need to read up on this link below and then answer some questions.

<https://www.guru99.com/working-mongodb-indexes.html#1>

Assuming you have read up about MongoDB indexes in the link above, answer as briefly as possible the questions below:

- 1 . Explain in your own words the importance of Indexes and give any single use case where Indexes can be used?
- 2 . Is there any difference between commands of dropping an index in MySQL versus MongoDB? If yes, mention the commands and explain working of both the commands.
- 3 . Let's say we issued a command of 'getIndexes()' for a 'studentgrades' collection. We got the output as mentioned below. Explain this output.

```
> db.studentgrades.getIndexes( )
[
  {
    "v" : 2,
    "key" : {
      "_id" : 1
    },
    "name" : "_id_"
  },
  {
    "v" : 2,
    "key" : {
      "name" : 1
    },
    "name" : "student name index"
  }
]
```

### 3. Submission

For this assignment, you will submit only *one single log file*. Every command you will issue, shall be recorded in this log file along with the outputs. The way to create a log file in mysql is by issuing this command:

tee <<insert your roll number here>>;

*For example: mysql> tee p18\_0058;*

As for theory part (questions requiring text based answers) of this assignment, you will write the answers at the end of the log file by mentioning the question number and then giving the answer in front.