

Batch 2 — Detailed Line-by-Line Explanations

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Contents: 10 practical codes (MySQL, MongoDB). Layout: Code first, then detailed explanations.

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12) chit 12.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Windows\system32>mysql -u root -p
Enter password: *****
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 8.0.36 MySQL Community Server - GPL
Copyright (c) 2000, 2024, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysql> create database dbms12;
Query OK, 1 row affected (0.01 sec)
mysql> use dbms12;
Database changed
mysql> create table libaudit(roll_no int primary key, book_name varchar(50));
Query OK, 0 rows affected (0.06 sec)
mysql> INSERT INTO libaudit VALUES (4, "HCI"),(12,"SPOS"),(18."DBMS"),(19,"CNS");
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your
mysql> INSERT INTO libaudit VALUES (4, "HCI"),(12,"SPOS"),(18,"DBMS"),(19,"CNS");
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
mysql> desc libaudit;
+-----+-----+-----+-----+-----+
| Field      | Type       | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| roll_no    | int        | NO   | PRI | NULL    |       |
| book_name  | varchar(50) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
mysql> select * from libaudit;
+-----+-----+
| roll_no | book_name |
+-----+-----+
|      4  | HCI       |
|     12  | SPOS      |
|     18  | DBMS      |
|     19  | CNS       |
+-----+-----+
4 rows in set (0.00 sec)
mysql> create table libaudit_after(roll_no int primary key,book_name varchar(50));
Query OK, 0 rows affected (0.03 sec)
mysql> delimiter/
-> create trigger libtrig_after
-> after delete on libaudit
-> for each row
-> begin
-> insert into libaudit_after values (old.roll_no, old.book_name);
```

```

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your
after delete on libaudit
for each row
beg' at line 1
mysql> delimiter /
mysql> create trigger libtrig_after
    -> after delete on libaudit
    -> for each row
    -> begin
    -> insert into libaudit_after values (old.roll_no, old.book_name);
    -> end/
Query OK, 0 rows affected (0.01 sec)
mysql> delimiter ;
mysql> delete from libaudit where roll_no=18;
Query OK, 1 row affected (0.01 sec)
mysql> select * from libaudit;
+-----+-----+
| roll_no | book_name |
+-----+-----+
|      4 | HCI      |
|     12 | SPOS     |
|     19 | CNS      |
+-----+-----+
3 rows in set (0.00 sec)
mysql> select * from libaudit_after;
+-----+-----+
| roll_no | book_name |
+-----+-----+
|     18 | DBMS     |
+-----+-----+
1 row in set (0.00 sec)

```

Line-by-line Explanation:

Line 1: C:\Windows\system32>mysql -u root -p — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: Enter password: ***** — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: Your MySQL connection id is 28 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 4: Server version: 8.0.36 MySQL Community Server - GPL — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 5: Copyright (c) 2000, 2024, Oracle and/or its affiliates. — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 6: Oracle is a registered trademark of Oracle Corporation and/or its — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 7: affiliates. Other names may be trademarks of their respective — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 8: owners. — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: Type 'help;' or '\h' for help. Type '\c' to clear the current input statement. — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: create database dbms12; — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 11: Query OK, 1 row affected (0.01 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 12: use dbms12; — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 13: Database changed — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 14: create table libaudit(roll_no int primary key, book_name varchar(50)); — Creates a table/collection with the specified columns/fields and constraints.

Line 15: Query OK, 0 rows affected (0.06 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 16: INSERT INTO libaudit VALUES (4, "HCI"),(12,"SPOS"),(18."DBMS"),(19,"CNS"); — Inserts one or multiple records/documents into the table/collection.
 Line 17: ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '"DBMS"),(19,"CNS")' at line 1 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 18: INSERT INTO libaudit VALUES (4, "HCI"),(12,"SPOS"),(18,"DBMS"),(19,"CNS"); — Inserts one or multiple records/documents into the table/collection.
 Line 19: Query OK, 4 rows affected (0.01 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 20: Records: 4 Duplicates: 0 Warnings: 0 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 21: desc libaudit; — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 22: +-----+-----+-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 23: | Field | Type | Null | Key | Default | Extra | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 24: +-----+-----+-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 25: | roll_no | int | NO | PRI | NULL || — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 26: | book_name | varchar(50) | YES || NULL || — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 27: +-----+-----+-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 28: 2 rows in set (0.00 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 29: select * from libaudit; — Retrieves data — SELECT (SQL) or find/aggregate (MongoDB). May include filters, projections, or aggregation stages.
 Line 30: +-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 31: | roll_no | book_name | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 32: +-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 33: | 4 | HCI | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 34: | 12 | SPOS | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 35: | 18 | DBMS | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 36: | 19 | CNS | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 37: +-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 38: 4 rows in set (0.00 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
 Line 39: create table libaudit_after(roll_no int primary key,book_name varchar(50)); — Creates a table/collection with the specified columns/fields and constraints.
 Line 40: Query OK, 0 rows affected (0.03 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Notes & Corrections:

- Original session contained SQL syntax errors in some commands — these are noted inline and corrected in the explanations. Ensure commas and delimiters are placed correctly.

Sample Output / Result:

Field	Type	Null	Key	Default	Extra

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

13) chit 13.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Admin>java --version
'java' is not recognized as an internal or external command,
operable program or batch file.
C:\Users\Admin>mongosh
Current Mongosh Log ID: 68ebc37aa9bc7a28d4cebea3
Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=20000
Using MongoDB: 8.2.1
Using Mongosh: 2.5.8
For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/
-----
The server generated these startup warnings when booting
2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write acc...
-----
test> use mydb
switched to db mydb
mydb> db.movies.insertMany([
...   {
...     name: "Movie1",
...     type: "action",
...     budget: 1000000,
...     producer: {
...       name: "producer1",
...       address: "PUNE"
...     }
...   },
...   {
...     name: "Movie2",
...     type: "drama",
...     budget: 80000,
...     producer: {
...       name: "producer2",
...       address: "DELHI"
...     }
...   },
...   {
...     name: "Movie3",
...     type: "action",
...     budget: 200000,
...     producer: {
...       name: "producer1",
...       address: "PUNE"
...     }
...   }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('68ebc3a1a9bc7a28d4cebea4'),
    '1': ObjectId('68ebc3a1a9bc7a28d4cebea5'),
    '2': ObjectId('68ebc3a1a9bc7a28d4cebea6')
  }
}
mydb> db.movies.find(
...   { budget: { $gt: 100000 } },
...   { name: 1, _id: 0 }
```

```

...
[ { name: 'Movie1' }, { name: 'Movie3' } ]
mydb> db.movies.find(
...   { "producer.address": "PUNE" },
...   { "producer.name": 1, _id: 0 }
...
[ {
  producer: { name: 'producer1' } ,
  producer: { name: 'producer1' } }
]
mydb> db.movies.updateMany(
...   { type: "action" },
...   { $set: { type: "horror" } }
...
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 2,
  modifiedCount: 2,
  upsertedCount: 0
}
...
{ "producer.name": "producer1" },
{ name: 1, "producer.address": 1, _id: 0 }
...
[ {
  name: 'Movie1', producer: { address: 'PUNE' } },
  { name: 'Movie3', producer: { address: 'PUNE' } }
]
mydb>

```

Line-by-line Explanation:

Line 1: C:\Users\Admin>java --version — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: 'java' is not recognized as an internal or external command, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: operable program or batch file. — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 4: C:\Users\Admin>mongosh — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 5: Current Mongosh Log ID: 68ebc37aa9bc7a28d4cebea3 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 6: Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 7: Using MongoDB: 8.2.1 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 8: Using Mongosh: 2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: For mongosh info see: <https://www.mongodb.com/docs/mongodb-shell/> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 11: The server generated these startup warnings when booting — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 12: 2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 13: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 14: use mydb — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 15: switched to db mydb — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 16: mydb> db.movies.insertMany([— This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 17: ... { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 18: ... name: "Movie1", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 19: ... type: "action", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 20: ... budget: 1000000, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 21: ... producer: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 22: ... name: "producer1", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 23: ... address: "PUNE" — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 24: ... } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 25: ... }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 26: ... { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 27: ... name: "Movie2", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: ... type: "drama", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: ... budget: 80000, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 30: ... producer: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: ... name: "producer2", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: ... address: "DELHI" — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 33: ... } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: ... }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: ... { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: ... name: "Movie3", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: ... type: "action", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 38: ... budget: 200000, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: ... producer: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: ... name: "producer1", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Sample Output / Result:

```
[ { name: 'Movie1' }, { name: 'Movie3' } ]
```

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

14) chit 14.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Windows\system32>mongosh
Current Mongosh Log ID: 68ebc5c760f525e1e2cebea3
Connecting to:      mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=20000
Using MongoDB:      8.2.1
Using Mongosh:      2.5.8
For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/
-----
   The server generated these startup warnings when booting
   2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write acc...
-----
test> use mydb
switched to db mydb
mydb> db.Teachers.insertMany([
...   { Tname: "Ravi", dno: 1, Experience: 5, Salary: 12000, Date_of_Joining: new Date("2018-06-15") },
...   { Tname: "Neha", dno: 2, Experience: 7, Salary: 15000, Date_of_Joining: new Date("2017-03-10") },
...   { Tname: "Arun", dno: 2, Experience: 4, Salary: 9500, Date_of_Joining: new Date("2020-08-25") },
...   { Tname: "Priya", dno: 3, Experience: 6, Salary: 18000, Date_of_Joining: new Date("2016-11-05") }
... ]);
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('68ebc5dd60f525e1e2cebea4'),
    '1': ObjectId('68ebc5dd60f525e1e2cebea5'),
    '2': ObjectId('68ebc5dd60f525e1e2cebea6'),
    '3': ObjectId('68ebc5dd60f525e1e2cebea7')
  }
}
...
{ Dno: 1, Dname: "Computer" },
{ Dno: 2, Dname: "Mechanical" },
{ Dno: 3, Dname: "Civil" }
mydb>
{
mydb>
  insertedIds: {
mydb>
    '1': ObjectId('68ebc5e560f525e1e2cebea9'),
mydb>
  }
mydb>
mydb>
mydb> db.Students.insertMany([
...   { Sname: "Amit", Roll_No: 1, Class: "SE" },
...   { Sname: "xyz", Roll_No: 2, Class: "TE" },
...   { Sname: "Kiran", Roll_No: 3, Class: "FE" },
...   { Sname: "Meena", Roll_No: 4, Class: "BE" },
...   { Sname: "Rohit", Roll_No: 5, Class: "FE" }
... ]);
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('68ebc5f560f525e1e2cebeab'),
    '1': ObjectId('68ebc5f560f525e1e2cebeac'),
    '2': ObjectId('68ebc5f560f525e1e2cebead'),
    '3': ObjectId('68ebc5f560f525e1e2cebeae'),
    '4': ObjectId('68ebc5f560f525e1e2cebeaf')
  }
}
```

```

        }
    }
mydb> db.Teachers.find({dno:2,Salary:{$gte:10000}});
[
  {
    _id: ObjectId('68ebc4ae74e7bd7c1bcebea5'),
    Tname: 'Neha',
    dno: 2,
    Experience: 7,
    Salary: 15000,
    Date_of_Joining: ISODate('2017-03-10T00:00:00.000Z')
  },
  {
    _id: ObjectId('68ebc53fcceb873cd5ccebea5'),
    Tname: 'Neha',
    dno: 2,
    Experience: 7,
    Salary: 15000,
    Date_of_Joining: ISODate('2017-03-10T00:00:00.000Z')
  },
  {
    _id: ObjectId('68ebc5dd60f525e1e2cebea5'),
    Tname: 'Neha',
    dno: 2,
    Experience: 7,
    Salary: 15000,
    Date_of_Joining: ISODate('2017-03-10T00:00:00.000Z')
  }
]
mydb> db.Students.find({ $or: [ { Roll_No: 2 }, { Sname: "xyz" } ] });
[
  {
    _id: ObjectId('68ebc4c274e7bd7c1bcebeac'),
    Sname: 'xyz',
    Roll_No: 2,
    Class: 'TE'
  },
  {
    _id: ObjectId('68ebc55fcceb873cd5ccebeac'),
    Sname: 'xyz',
    Roll_No: 2,
    Class: 'TE'
  },
  {
    _id: ObjectId('68ebc5f560f525e1e2cebeac'),
    Sname: 'xyz',
    Roll_No: 2,
    Class: 'TE'
  }
]
...   { Roll_No: 5 },
...   { $set: { Sname: "Rakesh" } }
mydb>
{
mydb>
  insertedId: null,
mydb>
  modifiedCount: 0,
mydb>
}
...   { Roll_No: 5 },
...   { $set: { Sname: "Rakesh" } }
... );

```

Line-by-line Explanation:

Line 1: C:\Windows\system32>mongosh — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: Current Mongosh Log ID: 68ebc5c760f525e1e2cebea3 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 4: Using MongoDB: 8.2.1 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 5: Using Mongosh: 2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 6: For mongosh info see: <https://www.mongodb.com/docs/mongodb-shell/> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 7: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 8: The server generated these startup warnings when booting — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: 2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 11: use mydb — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 12: switched to db mydb — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 13: mydb> db.Teachers.insertMany([— This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 14: ... { Tname: "Ravi", dno: 1, Experience: 5, Salary: 12000, Date_of_Joining: new Date("2018-06-15") }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 15: ... { Tname: "Neha", dno: 2, Experience: 7, Salary: 15000, Date_of_Joining: new Date("2017-03-10") }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 16: ... { Tname: "Arun", dno: 2, Experience: 4, Salary: 9500, Date_of_Joining: new Date("2020-08-25") }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 17: ... { Tname: "Priya", dno: 3, Experience: 6, Salary: 18000, Date_of_Joining: new Date("2016-11-05") } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 18: ...]); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 19: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 20: acknowledged: true, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 21: insertedIds: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 22: '0': ObjectId('68ebc5dd60f525e1e2cebea4'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 23: '1': ObjectId('68ebc5dd60f525e1e2cebea5'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 24: '2': ObjectId('68ebc5dd60f525e1e2cebea6'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 25: '3': ObjectId('68ebc5dd60f525e1e2cebea7') — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 26: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 27: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: ... { Dno: 1, Dname: "Computer" }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: ... { Dno: 2, Dname: "Mechanical" }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 30: ... { Dno: 3, Dname: "Civil" } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: mydb> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 33: mydb> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: insertedIds: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: mydb> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: '1': ObjectId('68ebc5e560f525e1e2cebea9'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: mydb> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 38: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: mydb> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: mydb> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Sample Output / Result:

```
[ { Roll_No: 2 }, { Sname: "xyz" } ]
```

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

15) chit 15.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Windows\system32>mongosh
Current Mongosh Log ID: 68ebca7f114ad7cda4cebea3
Connecting to:      mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=20000
Using MongoDB:      8.2.1
Using Mongosh:      2.5.8
For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/
-----
   The server generated these startup warnings when booting
   2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write acc...
-----
test> use Institute
switched to db Institute
Institute> db.createCollection("Students")
{ ok: 1 }
Institute> db.Students.insertMany([
...   {
...     RollNo: 1,
...     StudentName: "Amit Sharma",
...     Age: 16,
...     Branch: "Mechanical",
...     Address: { City: "Pune", State: "Maharashtra" },
...     Hobbies: ["Cricket", "Music"]
...   },
...   {
...     RollNo: 2,
...     StudentName: "Priya Deshmukh",
...     Age: 14,
...     Branch: "Computer",
...     Address: { City: "Mumbai", State: "Maharashtra" },
...     Hobbies: ["Reading", "Dancing"]
...   },
...   {
...     RollNo: 3,
...     StudentName: "Rohit Patil",
...     Age: 17,
...     Branch: "Electrical",
...     Address: { City: "Nashik", State: "Maharashtra" },
...     Hobbies: ["Football", "Gaming"]
...   },
...   {
...     RollNo: 4,
...     StudentName: "Anjali Gupta",
...     Age: 18,
...     Branch: "Computer",
...     Address: { City: "Pune", State: "Maharashtra" },
...     Hobbies: ["Singing", "Drawing"]
...   },
...   {
...     RollNo: 5,
...     StudentName: "Suresh Kumar",
...     Age: 15,
...     Branch: "Civil",
...     Address: { City: "Delhi", State: "Delhi" },
...     Hobbies: ["Reading", "Chess"]
...   },
... ])
```

```

...
{
  RollNo: 6,
  StudentName: "Neha Singh",
  Age: 17,
  Branch: "Computer",
  Address: { City: "Pune", State: "Maharashtra" },
  Hobbies: ["Dancing", "Traveling"]
},
{
  RollNo: 7,
  StudentName: "Akash Mehta",
  Age: 16,
  Branch: "IT",
  Address: { City: "Nagpur", State: "Maharashtra" },
  Hobbies: ["Gaming", "Movies"]
},
{
  RollNo: 8,
  StudentName: "Riya Kulkarni",
  Age: 18,
  Branch: "Computer",
  Address: { City: "Pune", State: "Maharashtra" },
  Hobbies: ["Reading", "Painting"]
},
{
  RollNo: 9,
  StudentName: "Deepak Yadav",
  Age: 14,
  Branch: "Civil",
  Address: { City: "Aurangabad", State: "Maharashtra" },
  Hobbies: ["Swimming", "Running"]
},
{
  RollNo: 10,
  StudentName: "Aarav Joshi",
  Age: 19,
  Branch: "Mechanical",
  Address: { City: "Pune", State: "Maharashtra" },
  Hobbies: ["Cricket", "Cooking"]
}
])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('68ebcad9114ad7cda4cebea4'),
    '1': ObjectId('68ebcad9114ad7cda4cebea5'),
    '2': ObjectId('68ebcad9114ad7cda4cebea6'),
    '3': ObjectId('68ebcad9114ad7cda4cebea7'),
    '4': ObjectId('68ebcad9114ad7cda4cebea8'),
    '5': ObjectId('68ebcad9114ad7cda4cebea9'),
    '6': ObjectId('68ebcad9114ad7cda4cebeaa'),
    '7': ObjectId('68ebcad9114ad7cda4cebeab'),
    '8': ObjectId('68ebcad9114ad7cda4cebeac'),
    '9': ObjectId('68ebcad9114ad7cda4cebead')
  }
}
Institute> db.Students.find().pretty()
[
  {
    _id: ObjectId('68ebcad9114ad7cda4cebea4'),
    RollNo: 1,
    StudentName: 'Amit Sharma',
    Age: 16,

```

Line-by-line Explanation:

Line 1: C:\Windows\system32>mongosh — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: Current Mongosh Log ID: 68ebca7f114ad7cda4cebea3 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 4: Using MongoDB: 8.2.1 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 5: Using Mongosh: 2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 6: For mongosh info see: <https://www.mongodb.com/docs/mongodb-shell/> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 7: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 8: The server generated these startup warnings when booting — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: 2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 11: use Institute — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 12: switched to db Institute — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 13: db.createCollection("Students") — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 14: { ok: 1 } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 15: db.Students.insertMany([— Inserts one or multiple records/documents into the table/collection.

Line 16: ... { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 17: ... RollNo: 1, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 18: ... StudentName: "Amit Sharma", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 19: ... Age: 16, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 20: ... Branch: "Mechanical", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 21: ... Address: { City: "Pune", State: "Maharashtra" }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 22: ... Hobbies: ["Cricket", "Music"] — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 23: ... }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 24: ... { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 25: ... RollNo: 2, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 26: ... StudentName: "Priya Deshmukh", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 27: ... Age: 14, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: ... Branch: "Computer", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: ... Address: { City: "Mumbai", State: "Maharashtra" }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 30: ... Hobbies: ["Reading", "Dancing"] — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: ... }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: ... { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 33: ... RollNo: 3, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: ... StudentName: "Rohit Patil", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: ... Age: 17, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: ... Branch: "Electrical", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: ... Address: { City: "Nashik", State: "Maharashtra" }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 38: ... Hobbies: ["Football", "Gaming"] — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: ... }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: ... { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Sample Output / Result:

```
[  
  { StudentName: 'Anjali Gupta' },  
  { StudentName: 'Neha Singh' },  
  { StudentName: 'Riya Kulkarni' },  
  { StudentName: 'Aarav Joshi' }  
]
```

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

16) chit 16.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Windows\system32>mongosh
Current Mongosh Log ID: 68ebcf2676fe035ba4cebea3
Connecting to:      mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=20000
Using MongoDB:      8.2.1
Using Mongosh:      2.5.8
For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/
-----
  The server generated these startup warnings when booting
  2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write acc...
-----
test> use department
switched to db department
department> db.teacher.insertMany([
...   { name: "Alice", department: "Computer Science", experience: 5, salary: 60000 },
...   { name: "Bob", department: "Computer Science", experience: 8, salary: 75000 },
...   { name: "Carol", department: "Mathematics", experience: 10, salary: 70000 },
...   { name: "David", department: "Mathematics", experience: 6, salary: 65000 },
...   { name: "Eve", department: "Physics", experience: 12, salary: 80000 },
...   { name: "Frank", department: "Physics", experience: 3, salary: 55000 }
... ])
{
  acknowledged: true,
  insertedIds: [
    '0': ObjectId('68ebcf3676fe035ba4cebea4'),
    '1': ObjectId('68ebcf3676fe035ba4cebea5'),
    '2': ObjectId('68ebcf3676fe035ba4cebea6'),
    '3': ObjectId('68ebcf3676fe035ba4cebea7'),
    '4': ObjectId('68ebcf3676fe035ba4cebea8'),
    '5': ObjectId('68ebcf3676fe035ba4cebea9')
  ]
}
...
  {
    $group: {
      _id: "$department",
      avgSalary: { $avg: "$salary" }
    }
  }
...
])
[
  { _id: 'Mathematics', avgSalary: 67500 },
  { _id: 'Computer Science', avgSalary: 67500 },
  { _id: 'Physics', avgSalary: 67500 }
]
department>
department>
department> db.teacher.aggregate([
...   {
...     $group: {
...       _id: "$department",
...       avgSalary: { $avg: "$salary" }
...     }
...   }
... ])
[
  { _id: 'Mathematics', avgSalary: 67500 },
```

```

{ _id: 'Computer Science', avgSalary: 67500 },
{ _id: 'Physics', avgSalary: 67500 }
]
department>
department>
department> db.teacher.aggregate([
...   {
...     $group: {
...       _id: "$department",
...       totalEmployees: { $sum: 1 }
...     }
...   }
... ])
[
  { _id: 'Mathematics', totalEmployees: 2 },
  { _id: 'Computer Science', totalEmployees: 2 },
  { _id: 'Physics', totalEmployees: 2 }
]
department>
department>
department> db.teacher.aggregate([
...   {
...     $group: {
...       _id: "$department",
...       minSalary: { $min: "$salary" }
...     }
...   }
... ])
[
  { _id: 'Physics', minSalary: 55000 },
  { _id: 'Computer Science', minSalary: 60000 },
  { _id: 'Mathematics', minSalary: 65000 }
]
department>
department>
department> db.teacher.createIndex({ department: 1 })
department_1
department> db.teacher.getIndexes()
[
  { v: 2, key: { _id: 1 }, name: '_id_' },
  { v: 2, key: { department: 1 }, name: 'department_1' }
]
department> db.teacher.dropIndex({ department: 1 })
{ nIndexesWas: 2, ok: 1 }
department>

```

Line-by-line Explanation:

Line 1: C:\Windows\system32>mongosh — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: Current Mongosh Log ID: 68ebcf2676fe035ba4cebea3 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

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Line 5: Using Mongosh: 2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

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Line 8: The server generated these startup warnings when booting — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: 2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 11: use department — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 12: switched to db department — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 13: department> db.teacher.insertMany([— This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 14: ... { name: "Alice", department: "Computer Science", experience: 5, salary: 60000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 15: ... { name: "Bob", department: "Computer Science", experience: 8, salary: 75000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 16: ... { name: "Carol", department: "Mathematics", experience: 10, salary: 70000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 17: ... { name: "David", department: "Mathematics", experience: 6, salary: 65000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 18: ... { name: "Eve", department: "Physics", experience: 12, salary: 80000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 19: ... { name: "Frank", department: "Physics", experience: 3, salary: 55000 } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 20: ...]) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 21: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 22: acknowledged: true, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 23: insertedIds: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 24: '0': ObjectId('68ebcf3676fe035ba4cebea4'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 25: '1': ObjectId('68ebcf3676fe035ba4cebea5'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 26: '2': ObjectId('68ebcf3676fe035ba4cebea6'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 27: '3': ObjectId('68ebcf3676fe035ba4cebea7'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: '4': ObjectId('68ebcf3676fe035ba4cebea8'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: '5': ObjectId('68ebcf3676fe035ba4cebea9') — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 30: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: ... { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 33: group: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: ... _id: "\$department", — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: ... avgSalary: { \$avg: "\$salary" } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: ... } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: ... } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 38: ...]) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: [— This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: { _id: 'Mathematics', avgSalary: 67500 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Sample Output / Result:

```
[  
  { _id: 'Mathematics', avgSalary: 67500 },  
  { _id: 'Computer Science', avgSalary: 67500 },  
  { _id: 'Physics', avgSalary: 67500 }  
]
```

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

17) chit 17.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
mysql> create database EmpDB;
Query OK, 1 row affected (0.01 sec)
mysql> use EmpDB;
Database changed
mysql> create table Employee(Eid int primary key, EName varchar(50), Address varchar(50), Salary int, Co
Query OK, 0 rows affected (0.02 sec)
mysql> insert into Employee values
(1,'Amit','Pune',35000,5000),
(2,'Sneha','Pune',25000,NULL),
(3,'Savita','Nasik',28000,2000),
(4,'Pooja','Mumbai',19000,NULL),
(5,'Sagar','Mumbai',25000,3000);
Query OK, 5 rows affected (0.01 sec)
mysql> create table Project(PrNo int, PrAdd varchar(50));
Query OK, 0 rows affected (0.01 sec)
mysql> insert into Project values
(10,'Mumbai'),
(20,'Pune'),
(30,'Nasik');
Query OK, 3 rows affected (0.01 sec)
1. Find different locations from where employees belong
mysql> select distinct Address from Employee;
+-----+
| Address |
+-----+
| Pune    |
| Nasik   |
| Mumbai  |
+-----+
3 rows in set (0.00 sec)
2. What is maximum and minimum salary?
mysql> select max(Salary), min(Salary) from Employee;
+-----+-----+
| max(Salary) | min(Salary) |
+-----+-----+
|      35000 |       19000 |
+-----+-----+
1 row in set (0.00 sec)
3. Display employees in ascending order of salary
mysql> select * from Employee order by Salary asc;
4. Employees who live in Nasik or Pune
mysql> select EName from Employee where Address in ('Nasik', 'Pune');
5. Employees who do not get commission
mysql> select EName from Employee where Commission is NULL;
6. Change city of Amit to Nashik
mysql> update Employee set Address='Nashik' where EName='Amit';
Query OK, 1 row affected (0.01 sec)
7. Employees whose name starts with 'A'
mysql> select * from Employee where EName like 'A%';
8. Count staff from Mumbai
mysql> select count(*) from Employee where Address='Mumbai';
9. Count staff from each city
mysql> select Address, count(*) from Employee group by Address;
10. Find address of employees & project locations
mysql> select Address from Employee
union
select PrAdd from Project;
```

```
11. City-wise minimum salary
mysql> select Address, min(Salary) from Employee group by Address;
12. City-wise maximum salary greater than 26000
mysql> select Address, max(Salary) from Employee group by Address having max(Salary)>26000;
13. Delete employee having salary greater than 30000
mysql> delete from Employee where Salary>30000;
Query OK, 1 row affected (0.01 sec)
```

Line-by-line Explanation:

- Line 1: create database EmpDB; — Creates or switches to a database; ensures subsequent commands run in this database context.
- Line 2: Query OK, 1 row affected (0.01 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 3: use EmpDB; — Creates or switches to a database; ensures subsequent commands run in this database context.
- Line 4: Database changed — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 5: create table Employee(Eid int primary key,EName varchar(50),Address varchar(50),Salary int,Commission int); — Creates a table/collection with the specified columns/fields and constraints.
- Line 6: Query OK, 0 rows affected (0.02 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 7: insert into Employee values — Inserts one or multiple records/documents into the table/collection.
- Line 8: (1,'Amit','Pune',35000,5000), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 9: (2,'Sneha','Pune',25000,NULL), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 10: (3,'Savita','Nasik',28000,2000), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 11: (4,'Pooja','Mumbai',19000,NULL), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 12: (5,'Sagar','Mumbai',25000,3000); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 13: Query OK, 5 rows affected (0.01 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 14: create table Project(PrNo int,PrAdd varchar(50)); — Creates a table/collection with the specified columns/fields and constraints.
- Line 15: Query OK, 0 rows affected (0.01 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 16: insert into Project values — Inserts one or multiple records/documents into the table/collection.
- Line 17: (10,'Mumbai'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 18: (20,'Pune'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 19: (30,'Nasik'); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 20: Query OK, 3 rows affected (0.01 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 21: 1. Find different locations from where employees belong — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 22: select distinct Address from Employee; — Retrieves data — SELECT (SQL) or find/aggregate (MongoDB). May include filters, projections, or aggregation stages.
- Line 23: +-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 24: | Address | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 25: +-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 26: | Pune | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.
- Line 27: | Nasik | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: | Mumbai | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: +-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 30: 3 rows in set (0.00 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: 2. What is maximum and minimum salary? — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: select max(Salary), min(Salary) from Employee; — Retrieves data — SELECT (SQL) or find/aggregate (MongoDB). May include filters, projections, or aggregation stages.

Line 33: +-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: | max(Salary) | min(Salary) | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: +-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: | 35000 | 19000 | — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: +-----+-----+ — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 38: 1 row in set (0.00 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: 3. Display employees in ascending order of salary — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: select * from Employee order by Salary asc; — Retrieves data — SELECT (SQL) or find/aggregate (MongoDB). May include filters, projections, or aggregation stages.

Sample Output / Result:

```
+-----+
| Address |
+-----+
```

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

18) chit 18.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Windows\system32>mongosh
Current Mongosh Log ID: 68ebd2fc58bcd38766cebea3
Connecting to:      mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=20000
Using MongoDB:      8.2.1
Using Mongosh:      2.5.8
For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/
-----
  The server generated these startup warnings when booting
  2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write acc...
-----
test> use cityDB
switched to db cityDB
cityDB> db.city.insertMany([
...     { city: "pune", type: "urban", state: "MH", population: 5600000 },
...     { city: "mumbai", type: "urban", state: "MH", population: 12400000 },
...     { city: "nagpur", type: "urban", state: "MH", population: 2400000 },
...     { city: "nashik", type: "semi-urban", state: "MH", population: 1500000 },
...     { city: "bhopal", type: "urban", state: "MP", population: 1800000 },
...     { city: "indore", type: "urban", state: "MP", population: 2000000 },
...     { city: "gwalior", type: "semi-urban", state: "MP", population: 1200000 }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('68ebd30f58bcd38766cebea4'),
    '1': ObjectId('68ebd30f58bcd38766cebea5'),
    '2': ObjectId('68ebd30f58bcd38766cebea6'),
    '3': ObjectId('68ebd30f58bcd38766cebea7'),
    '4': ObjectId('68ebd30f58bcd38766cebea8'),
    '5': ObjectId('68ebd30f58bcd38766cebea9'),
    '6': ObjectId('68ebd30f58bcd38766cebeaa')
  }
}
cityDB>
cityDB> var mapFunctionState = function() {
...   emit(this.state, this.population);
...
}
cityDB> var reduceFunctionState = function(key, values) {
...   return Array.sum(values);
...
}
cityDB>
cityDB> db.city.mapReduce(
...   mapFunctionState,
...   reduceFunctionState,
...   { out: "statewise_population" }
...
)
DeprecationWarning: Collection.mapReduce() is deprecated. Use an aggregation instead.
See https://mongodb.com/docs/manual/core/map-reduce for details.
{ result: 'statewise_population', ok: 1 }
cityDB>
cityDB>
cityDB> db.statewise_population.find().pretty();
[ { _id: 'MH', value: 21900000 }, { _id: 'MP', value: 5000000 } ]
cityDB>
cityDB> var mapFunctionCity = function() {
```

```

...      emit(this.city, this.population);
... };
cityDB>
cityDB> var reduceFunctionCity = function(key, values) {
...     return Array.sum(values);
... };
cityDB>
cityDB> db.city.mapReduce(
...     mapFunctionCity,
...     reduceFunctionCity,
...     { out: "citywise_population" }
... )
{ result: 'citywise_population', ok: 1 }
cityDB>
cityDB> db.citywise_population.find().pretty();
[
  { _id: 'indore', value: 2000000 },
  { _id: 'nagpur', value: 2400000 },
  { _id: 'pune', value: 5600000 },
  { _id: 'mumbai', value: 12400000 },
  { _id: 'bhopal', value: 1800000 },
  { _id: 'gwalior', value: 1200000 },
  { _id: 'nashik', value: 1500000 }
]
cityDB>
...      emit(this.type, this.population);
cityDB>
cityDB>
cityDB>
cityDB>
cityDB> var mapFunctionType = function() {
...     emit(this.type, this.population);
... };
cityDB> var reduceFunctionType = function(key, values) {
...     return Array.sum(values);
... };
...      mapFunctionType,
...      reduceFunctionType,
...      { out: "typewise_population" }
... )
{ result: 'typewise_population', ok: 1 }
cityDB>
cityDB> db.typewise_population.find().pretty();
[
  { _id: 'semi-urban', value: 2700000 },
  { _id: 'urban', value: 24200000 }
]
cityDB>

```

Line-by-line Explanation:

Line 1: C:\Windows\system32>mongosh — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: Current Mongosh Log ID: 68ebd2fc58bcd38766cebea3 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 4: Using MongoDB: 8.2.1 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 5: Using Mongosh: 2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 6: For mongosh info see: <https://www.mongodb.com/docs/mongodb-shell/> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 7: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 8: The server generated these startup warnings when booting — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: 2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 11: use cityDB — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 12: switched to db cityDB — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 13: cityDB> db.city.insertMany([— This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 14: ... { city: "pune", type: "urban", state: "MH", population: 5600000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 15: ... { city: "mumbai", type: "urban", state: "MH", population: 12400000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 16: ... { city: "nagpur", type: "urban", state: "MH", population: 2400000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 17: ... { city: "nashik", type: "semi-urban", state: "MH", population: 1500000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 18: ... { city: "bhopal", type: "urban", state: "MP", population: 1800000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 19: ... { city: "indore", type: "urban", state: "MP", population: 2000000 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 20: ... { city: "gwalior", type: "semi-urban", state: "MP", population: 1200000 } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 21: ...]) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 22: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 23: acknowledged: true, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 24: insertedIds: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 25: '0': ObjectId('68ebd30f58bcd38766cebea4'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 26: '1': ObjectId('68ebd30f58bcd38766cebea5'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 27: '2': ObjectId('68ebd30f58bcd38766cebea6'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: '3': ObjectId('68ebd30f58bcd38766cebea7'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: '4': ObjectId('68ebd30f58bcd38766cebea8'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 30: '5': ObjectId('68ebd30f58bcd38766cebea9'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: '6': ObjectId('68ebd30f58bcd38766cebeaa') — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 33: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: cityDB> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: cityDB> var mapFunctionState = function() { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: ... emit(this.state, this.population); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: ... }; — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 38: cityDB> var reduceFunctionState = function(key, values) { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: ... return Array.sum(values); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: ... }; — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Sample Output / Result:

```
[ { _id: 'MH', value: 21900000 }, { _id: 'MP', value: 5000000 } ]
```

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

19) chit 19.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
+++++Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Windows\system32>mysql -u root -p
Enter password: ****
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.36 MySQL Community Server - GPL
Copyright (c) 2000, 2024, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysql> CREATE DATABASE company;
Query OK, 1 row affected (0.10 sec)
mysql> USE company;
Database changed
mysql> CREATE TABLE emp (
    ->     Eno INT AUTO_INCREMENT PRIMARY KEY,
    ->     Ename VARCHAR(50) NOT NULL,
    ->     Address VARCHAR(100) DEFAULT 'Nashik',
    ->     Joindate DATE,
    ->     Salary DECIMAL(10,2)
    -> );
Query OK, 0 rows affected (0.15 sec)
mysql> ALTER TABLE emp AUTO_INCREMENT = 101;
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0
mysql> ALTER TABLE emp ADD Post VARCHAR(50);
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0
mysql> INSERT INTO emp (Ename, Address, Joindate, Salary, Post)
    -> VALUES
    -> ('Rahul Patil', DEFAULT, '2022-04-10', 40000, 'Manager'),
    -> ('Sneha Deshmukh', 'Pune', '2023-01-15', 35000, 'Clerk'),
    -> ('Vijay More', DEFAULT, '2021-11-05', 45000, 'Supervisor'),
    -> ('Pooja Kale', 'Mumbai', '2024-06-01', 50000, 'HR');
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
mysql> CREATE INDEX idx_ename ON emp(Ename);
Query OK, 0 rows affected (0.08 sec)
Records: 0  Duplicates: 0  Warnings: 0
mysql> CREATE VIEW emp_view AS
    -> SELECT Ename, Salary FROM emp;
Query OK, 0 rows affected (0.02 sec)
mysql> SELECT * FROM emp;
+----+-----+-----+-----+-----+-----+
| Eno | Ename      | Address | Joindate | Salary   | Post     |
+----+-----+-----+-----+-----+-----+
| 101 | Rahul Patil | Nashik  | 2022-04-10 | 40000.00 | Manager  |
| 102 | Sneha Deshmukh | Pune    | 2023-01-15 | 35000.00 | Clerk    |
| 103 | Vijay More   | Nashik  | 2021-11-05 | 45000.00 | Supervisor |
| 104 | Pooja Kale   | Mumbai  | 2024-06-01 | 50000.00 | HR       |
+----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
mysql> SELECT * FROM emp_view;
+-----+-----+
| Ename      | Salary   |
+-----+-----+
```

```

+-----+-----+
| Rahul Patil | 40000.00 |
| Sneha Deshmukh | 35000.00 |
| Vijay More | 45000.00 |
| Pooja Kale | 50000.00 |
+-----+-----+
4 rows in set (0.00 sec)

mysql> SHOW INDEX FROM emp;
+-----+-----+-----+-----+-----+-----+-----+
| Table | Non_unique | Key_name | Seq_in_index | Column_name | Collation | Cardinality | Sub_part |
+-----+-----+-----+-----+-----+-----+-----+
| emp | 0 | PRIMARY | 1 | Eno | A | 4 | NULL |
| emp | 1 | idx_ename | 1 | Ename | A | 4 | NULL |
+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.05 sec)

```

Line-by-line Explanation:

Line 1: ++++++Microsoft Windows [Version 10.0.19045.6332] — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: C:\Windows\system32>mysql -u root -p — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: Enter password: *————— — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 4: Your MySQL connection id is 8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 5: Server version: 8.0.36 MySQL Community Server - GPL — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 6: Copyright (c) 2000, 2024, Oracle and/or its affiliates. — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 7: Oracle is a registered trademark of Oracle Corporation and/or its — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 8: affiliates. Other names may be trademarks of their respective — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: owners. — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: Type 'help;' or '\h' for help. Type '\c' to clear the current input statement. — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 11: CREATE DATABASE company; — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 12: Query OK, 1 row affected (0.10 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 13: USE company; — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 14: Database changed — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 15: CREATE TABLE emp (— Creates a table/collection with the specified columns/fields and constraints.

Line 16: Eno INT AUTO_INCREMENT PRIMARY KEY, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 17: Ename VARCHAR(50) NOT NULL, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 18: Address VARCHAR(100) DEFAULT 'Nashik', — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 19: Joindate DATE, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 20: Salary DECIMAL(10,2) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 21:); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 22: Query OK, 0 rows affected (0.15 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 23: ALTER TABLE emp AUTO_INCREMENT = 101; — Alters table structure or renames columns; may affect dependent views or constraints.

Line 24: Query OK, 0 rows affected (0.05 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 25: Records: 0 Duplicates: 0 Warnings: 0 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 26: ALTER TABLE emp ADD Post VARCHAR(50); — Alters table structure or renames columns; may affect dependent views or constraints.

Line 27: Query OK, 0 rows affected (0.04 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: Records: 0 Duplicates: 0 Warnings: 0 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: INSERT INTO emp (Ename, Address, Joindate, Salary, Post) — Inserts one or multiple records/documents into the table/collection.

Line 30: VALUES — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: ('Rahul Patil', DEFAULT, '2022-04-10', 40000, 'Manager'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: ('Sneha Deshmukh', 'Pune', '2023-01-15', 35000, 'Clerk'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 33: ('Vijay More', DEFAULT, '2021-11-05', 45000, 'Supervisor'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: ('Pooja Kale', 'Mumbai', '2024-06-01', 50000, 'HR'); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: Query OK, 4 rows affected (0.01 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: Records: 4 Duplicates: 0 Warnings: 0 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: CREATE INDEX idx_ename ON emp(Ename); — Creates an index on specified column(s)/fields to optimize query performance.

Line 38: Query OK, 0 rows affected (0.08 sec) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: Records: 0 Duplicates: 0 Warnings: 0 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: CREATE VIEW emp_view AS — Defines a stored routine or database object (procedure/function/trigger/view) with its logic.

Sample Output / Result:

+++++

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

20) chit 20.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Windows\system32>mongosh
Current Mongosh Log ID: 68ebdae96e21f4fb25cebea3
Connecting to:      mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=20000
Using MongoDB:      8.2.1
Using Mongosh:      2.5.8
For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/
-----
  The server generated these startup warnings when booting
  2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write acc...
-----
test> use collegeDB
switched to db collegeDB
collegeDB> db.createCollection("students");
{ ok: 1 }
collegeDB> db.students.insertMany([
...   { Rollno: 1, name: "Navin", subject: "DMSA", marks: 78 },
...   { Rollno: 2, name: "Anusha", subject: "OSD", marks: 75 },
...   { Rollno: 3, name: "Ravi", subject: "TOC", marks: 69 },
...   { Rollno: 4, name: "Veena", subject: "TOC", marks: 70 },
...   { Rollno: 5, name: "Pravini", subject: "OSD", marks: 80 },
...   { Rollno: 6, name: "Reena", subject: "DMSA", marks: 50 },
...   { Rollno: 7, name: "Geeta", subject: "CN", marks: 90 },
...   { Rollno: 8, name: "Akash", subject: "CN", marks: 85 }
... ]);
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('68ebdafd6e21f4fb25cebea4'),
    '1': ObjectId('68ebdafd6e21f4fb25cebea5'),
    '2': ObjectId('68ebdafd6e21f4fb25cebea6'),
    '3': ObjectId('68ebdafd6e21f4fb25cebea7'),
    '4': ObjectId('68ebdafd6e21f4fb25cebea8'),
    '5': ObjectId('68ebdafd6e21f4fb25cebea9'),
    '6': ObjectId('68ebdafd6e21f4fb25cebeaa'),
    '7': ObjectId('68ebdafd6e21f4fb25cebeab')
  }
}
collegeDB>
collegeDB> db.students.createIndex({ name: 1 });
name_1
collegeDB>
collegeDB> db.students.createIndex({ subject: 1, marks: -1 });
subject_1_marks_-1
collegeDB>
collegeDB> db.students.createIndex({ Rollno: 1 }, { unique: true });
Rollno_1
collegeDB>
collegeDB> db.students.getIndexes();
[
  { v: 2, key: { _id: 1 }, name: '_id_' },
  { v: 2, key: { name: 1 }, name: 'name_1' },
  { v: 2, key: { subject: 1, marks: -1 }, name: 'subject_1_marks_-1' },
  { v: 2, key: { Rollno: 1 }, name: 'Rollno_1', unique: true }
]
collegeDB>
```

```

collegeDB> db.students.dropIndex({ name: 1 });
{ nIndexesWas: 4, ok: 1 }
collegeDB>
collegeDB> db.students.aggregate([
...   { $group: { _id: "$subject", MaxMarks: { $max: "$marks" } } }
... ]);
[
  { _id: 'TOC', MaxMarks: 70 },
  { _id: 'DMSA', MaxMarks: 78 },
  { _id: 'OSD', MaxMarks: 80 },
  { _id: 'CN', MaxMarks: 90 }
]
collegeDB>
collegeDB> db.students.aggregate([
...   { $group: { _id: "$subject", MinMarks: { $min: "$marks" } } }
... ]);
[
  { _id: 'OSD', MinMarks: 75 },
  { _id: 'DMSA', MinMarks: 50 },
  { _id: 'TOC', MinMarks: 69 },
  { _id: 'CN', MinMarks: 85 }
]
collegeDB>
collegeDB> db.students.aggregate([
...   { $group: { _id: "$subject", TotalMarks: { $sum: "$marks" } } }
... ]);
[
  { _id: 'TOC', TotalMarks: 139 },
  { _id: 'DMSA', TotalMarks: 128 },
  { _id: 'OSD', TotalMarks: 155 },
  { _id: 'CN', TotalMarks: 175 }
]
collegeDB>
collegeDB> db.students.aggregate([
...   { $group: { _id: "$subject", AvgMarks: { $avg: "$marks" } } }
... ]);
[
  { _id: 'TOC', AvgMarks: 69.5 },
  { _id: 'DMSA', AvgMarks: 64 },
  { _id: 'OSD', AvgMarks: 77.5 },
  { _id: 'CN', AvgMarks: 87.5 }
]
collegeDB>
collegeDB> db.students.aggregate([
...   { $sort: { subject: 1, Rollno: 1 } },
...   { $group: { _id: "$subject", FirstRecord: { $first: "$$ROOT" } } }
... ]);
[
  {
    _id: 'OSD',
    FirstRecord: {
      _id: ObjectId('68ebdafd6e21f4fb25cebea5'),
      Rollno: 2,
      name: 'Anusha',
      subject: 'OSD',
      marks: 75
    }
  },
  {
    _id: 'CN',
    FirstRecord: {
      _id: ObjectId('68ebdafd6e21f4fb25cebeaa'),
      Rollno: 7,
    }
  }
]

```

Line-by-line Explanation:

Line 1: C:\Windows\system32>mongosh — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: Current Mongosh Log ID: 68ebdae96e21f4fb25cebea3 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 4: Using MongoDB: 8.2.1 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 5: Using Mongosh: 2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 6: For mongosh info see: <https://www.mongodb.com/docs/mongodb-shell/> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 7: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 8: The server generated these startup warnings when booting — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: 2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 11: use collegeDB — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 12: switched to db collegeDB — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 13: collegeDB> db.createCollection("students"); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 14: { ok: 1 } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 15: collegeDB> db.students.insertMany([— This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 16: ... { Rollno: 1, name: "Navin", subject: "DMSA", marks: 78 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 17: ... { Rollno: 2, name: "Anusha", subject: "OSD", marks: 75 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 18: ... { Rollno: 3, name: "Ravi", subject: "TOC", marks: 69 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 19: ... { Rollno: 4, name: "Veena", subject: "TOC", marks: 70 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 20: ... { Rollno: 5, name: "Pravini", subject: "OSD", marks: 80 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 21: ... { Rollno: 6, name: "Reena", subject: "DMSA", marks: 50 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 22: ... { Rollno: 7, name: "Geeta", subject: "CN", marks: 90 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 23: ... { Rollno: 8, name: "Akash", subject: "CN", marks: 85 } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 24: ...]); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 25: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 26: acknowledged: true, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 27: insertedIds: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: '0': ObjectId('68ebdafd6e21f4fb25cebea4'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: '1': ObjectId('68ebdafd6e21f4fb25cebea5'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 30: '2': ObjectId('68ebdafd6e21f4fb25cebea6'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: '3': ObjectId('68ebdafd6e21f4fb25cebea7'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: '4': ObjectId('68ebdafd6e21f4fb25cebea8'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 33: '5': ObjectId('68ebdafd6e21f4fb25cebea9'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: '6': ObjectId('68ebdafd6e21f4fb25cebeaa'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: '7': ObjectId('68ebdafd6e21f4fb25cebeab') — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 38: collegeDB> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: collegeDB> db.students.createIndex({ name: 1 }); — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: name_1 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Sample Output / Result:

```
[  
  { v: 2, key: { _id: 1 }, name: '_id_' },  
  { v: 2, key: { name: 1 }, name: 'name_1' },  
  { v: 2, key: { subject: 1, marks: -1 }, name: 'subject_1_marks_-1' },  
  { v: 2, key: { Rollno: 1 }, name: 'Rollno_1', unique: true }  
]
```

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.

21) chit 21.txt

Purpose:

Demonstration of database commands and operations (MySQL / MongoDB). Contains DDL, DML, stored routines, triggers, indexes, and aggregation examples.

Code / Session Transcript:

```
Microsoft Windows [Version 10.0.19045.6332]
(c) Microsoft Corporation. All rights reserved.
C:\Windows\system32>mongosh
Current Mongosh Log ID: 68ebe441811a2025a3cebea3
Connecting to:      mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=20000
Using MongoDB:      8.2.1
Using Mongosh:      2.5.8
For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/
-----
   The server generated these startup warnings when booting
   2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write acc...
-----
test> use Institute
switched to db Institute
Institute> db.orderinfo.insertMany([
...   { cust_id: 123, cust_name: "abc", status: "A", price: 250 },
...   { cust_id: 124, cust_name: "xyz", status: "B", price: 300 },
...   { cust_id: 125, cust_name: "pqr", status: "A", price: 200 },
...   { cust_id: 126, cust_name: "lmn", status: "B", price: 350 },
...   { cust_id: 127, cust_name: "stu", status: "A", price: 400 },
...   { cust_id: 128, cust_name: "opq", status: "B", price: 150 },
...   { cust_id: 129, cust_name: "def", status: "A", price: 275 },
...   { cust_id: 130, cust_name: "ghi", status: "B", price: 325 },
...   { cust_id: 131, cust_name: "jkl", status: "A", price: 225 },
...   { cust_id: 132, cust_name: "mno", status: "B", price: 375 }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('68ebe44e811a2025a3cebea4'),
    '1': ObjectId('68ebe44e811a2025a3cebea5'),
    '2': ObjectId('68ebe44e811a2025a3cebea6'),
    '3': ObjectId('68ebe44e811a2025a3cebea7'),
    '4': ObjectId('68ebe44e811a2025a3cebea8'),
    '5': ObjectId('68ebe44e811a2025a3cebea9'),
    '6': ObjectId('68ebe44e811a2025a3cebeaa'),
    '7': ObjectId('68ebe44e811a2025a3cebeab'),
    '8': ObjectId('68ebe44e811a2025a3cebeac'),
    '9': ObjectId('68ebe44e811a2025a3cebead')
  }
}
Institute> db.orderinfo.find().pretty()
[
  {
    "_id": ObjectId('68ebe44e811a2025a3cebea4'),
    "cust_id": 123,
    "cust_name": "abc",
    "status": "A",
    "price": 250
  },
  {
    "_id": ObjectId('68ebe44e811a2025a3cebea5'),
    "cust_id": 124,
    "cust_name": "xyz",
    "status": "B",
    "price": 300
  }
],
```

```

{
  _id: ObjectId('68ebe44e811a2025a3cebea6'),
  cust_id: 125,
  cust_name: 'pqr',
  status: 'A',
  price: 200
},
{
  _id: ObjectId('68ebe44e811a2025a3cebea7'),
  cust_id: 126,
  cust_name: 'lmn',
  status: 'B',
  price: 350
},
{
  _id: ObjectId('68ebe44e811a2025a3cebea8'),
  cust_id: 127,
  cust_name: 'stu',
  status: 'A',
  price: 400
},
{
  _id: ObjectId('68ebe44e811a2025a3cebea9'),
  cust_id: 128,
  cust_name: 'opq',
  status: 'B',
  price: 150
},
{
  _id: ObjectId('68ebe44e811a2025a3cebeaa'),
  cust_id: 129,
  cust_name: 'def',
  status: 'A',
  price: 275
},
{
  _id: ObjectId('68ebe44e811a2025a3cebeab'),
  cust_id: 130,
  cust_name: 'ghi',
  status: 'B',
  price: 325
},
{
  _id: ObjectId('68ebe44e811a2025a3cebeac'),
  cust_id: 131,
  cust_name: 'jkl',
  status: 'A',
  price: 225
},
{
  _id: ObjectId('68ebe44e811a2025a3cebead'),
  cust_id: 132,
  cust_name: 'mno',
  status: 'B',
  price: 375
}
]
Institute>
Institute> db.orderinfo.updateMany({}, { $set: { Age: 30 } })
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 10,

```

Line-by-line Explanation:

Line 1: C:\Windows\system32>mongosh — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 2: Current Mongosh Log ID: 68ebe441811a2025a3cebea3 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 3: Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 4: Using MongoDB: 8.2.1 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 5: Using Mongosh: 2.5.8 — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 6: For mongosh info see: <https://www.mongodb.com/docs/mongodb-shell/> — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 7: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 8: The server generated these startup warnings when booting — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 9: 2025-10-12T19:39:20.799+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 10: ----- — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 11: use Institute — Creates or switches to a database; ensures subsequent commands run in this database context.

Line 12: switched to db Institute — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 13: db.orderinfo.insertMany([— Inserts one or multiple records/documents into the table/collection.

Line 14: ... { cust_id: 123, cust_name: "abc", status: "A", price: 250 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 15: ... { cust_id: 124, cust_name: "xyz", status: "B", price: 300 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 16: ... { cust_id: 125, cust_name: "pqr", status: "A", price: 200 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 17: ... { cust_id: 126, cust_name: "lmn", status: "B", price: 350 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 18: ... { cust_id: 127, cust_name: "stu", status: "A", price: 400 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 19: ... { cust_id: 128, cust_name: "opq", status: "B", price: 150 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 20: ... { cust_id: 129, cust_name: "def", status: "A", price: 275 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 21: ... { cust_id: 130, cust_name: "ghi", status: "B", price: 325 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 22: ... { cust_id: 131, cust_name: "jkl", status: "A", price: 225 }, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 23: ... { cust_id: 132, cust_name: "mno", status: "B", price: 375 } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 24: ...]) — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 25: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 26: acknowledged: true, — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 27: insertedIds: { — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 28: '0': ObjectId('68ebe44e811a2025a3cebea4'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 29: '1': ObjectId('68ebe44e811a2025a3cebea5'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 30: '2': ObjectId('68ebe44e811a2025a3cebea6'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 31: '3': ObjectId('68ebe44e811a2025a3cebea7'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 32: '4': ObjectId('68ebe44e811a2025a3cebea8'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 33: '5': ObjectId('68ebe44e811a2025a3cebea9'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 34: '6': ObjectId('68ebe44e811a2025a3cebeaa'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 35: '7': ObjectId('68ebe44e811a2025a3cebeab'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 36: '8': ObjectId('68ebe44e811a2025a3cebeac'), — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 37: '9': ObjectId('68ebe44e811a2025a3cebead') — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 38: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 39: } — This line is a command or output line; its role is to either run a DDL/DML operation or display server output.

Line 40: db.orderinfo.find().pretty() — Retrieves data — SELECT (SQL) or find/aggregate (MongoDB). May include filters, projections, or aggregation stages.

Sample Output / Result:

```
[ { cust_id: { '$eq': 123 } }, { status: { '$eq': 'A' } } ]
```

Possible Viva Questions & Answers:

Q: Why is indexing important?

A: Indexes speed up read queries by allowing the database to locate rows/documents without scanning entire collection/table; they add write and storage overhead.

Q: When should you prefer aggregation pipeline over map-reduce (MongoDB)?

A: Aggregation pipeline is usually faster, simpler, and optimized; prefer it unless you need custom map-reduce logic.