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Full Stack Developments - LAB 8

Create a database from .json file and execute NO SQL Queries.

Problem:

Create a database from .json file and execute NO SQL Queries.

1. Create a database from .json file and execute NO SQL Queries.
2. Create Database: Create a MongoDB database named AIML.
3. Create Collection: Create a collection named employee within the AIML database.
   Import Employee Records: Import employee records from a JSON file into the employee collection. Save the following data in a json file and use it for import in Mongodb.
4. insertOne: Inserts a single document into the collection.
   { "Id": 21, "Name": "John Doe", "Project_id": 2, "Hrs_worked": 35 }
5. insertMany: Inserts multiple documents into the collection.
   { "Id": 22, "Name": "Jane Smith", "Project_id": 1, "Hrs_worked": 28 },
   { "Id": 23, "Name": "Alice Johnson", "Project_id": 3, "Hrs_worked": 42 }
6. updateOne: Updates a single document that matches the filter.
   { "Id": 21 }, { $set: { "Hrs_worked": 40 } }
7. updateMany: Updates multiple documents that match the filter.
   { "Hrs_worked": { $gt: 30 } }, { $set: { "Overtime": true } }
8. find an employee by their ID.
9. How would you retrieve all employees who are assigned to a specific project ID?
10. Write a query to find employees who have worked more than 30 hours.
11. Can you demonstrate how to use the $gt operator to find employees who are older than 40?
12. Explain the purpose of sorting in MongoDB queries.
13. Sort the Employee table based on Age in Ascending order and display.
14. Sort the Employee table based on Hrs_worked in Descending order and display.
15. Find Employee whose age is greater then 30 and Has_Worked greater then 20.
16. Find Employee whose Gender is Male or Has_Worked greater then 25.
17. Find Employee whose Project_id is not 3.
18. Write a MongoDB query to find all employees who are between the ages of 25 and 35.
19. How would you retrieve employees who have worked between 20 and 30 hours?
20. Write a query to find employees who are either working on Project 1 or Project 2.

Data:

employee.json

```
[
    {
    "Id": 1,
    "Name": "Charlie Moore",
    "Age": 44,
    "Gender": "Male",
    "Project_id": 4,
```

```
    "Hrs_worked": 12
    },

    {
    "Id": 2,
    "Name": "Frank Smith",
    "Age": 36,
    "Gender": "Female",
    "Project_id": 1,
    "Hrs_worked": 12
    },

    {
    "Id": 3,
    "Name": "Hannah Brown",
    "Age": 33,
    "Gender": "Female",
    "Project_id": 2,
    "Hrs_worked": 36
    },

    {
    "Id": 4,
    "Name": "Hannah Davis",
    "Age": 31,
    "Gender": "Female",
    "Project_id": 2,
    "Hrs_worked": 22
    },

    {
    "Id": 5,
    "Name": "Bob Davis",
    "Age": 41,
    "Gender": "Female",
    "Project_id": 4,
    "Hrs_worked": 16
    },

    {
    "Id": 6,
    "Name": "Hannah Davis",
    "Age": 57,
    "Gender": "Male",
    "Project_id": 2,
    "Hrs_worked": 28
    },

    {
    "Id": 7,
    "Name": "Frank Brown",
```

```
"Age": 49,
"Gender": "Male",
"Project_id": 4,
"Hrs_worked": 30
},

{
"Id": 8,
"Name": "David Williams",
"Age": 60,
"Gender": "Male",
"Project_id": 2,
"Hrs_worked": 34
},

{
"Id": 9,
"Name": "Charlie Johnson",
"Age": 49,
"Gender": "Male",
"Project_id": 3,
"Hrs_worked": 32
},

{
"Id": 10,
"Name": "Charlie Johnson",
"Age": 60,
"Gender": "Male",
"Project_id": 4,
"Hrs_worked": 36

},

{
"Id": 11,
"Name": "Grace Wilson",
"Age": 42,
"Gender": "Female",
"Project_id": 2,
"Hrs_worked": 15
},

{
"Id": 12,
"Name": "Isaac Smith",
"Age": 32,
"Gender": "Male",
"Project_id": 2,
"Hrs_worked": 23
},
```

```
{
"Id": 13,
"Name": "Emma Jones",
"Age": 52,
"Gender": "Male",
"Project_id": 1,
"Hrs_worked": 33
},

{
"Id": 14,
"Name": "Isaac Wilson",
"Age": 21,
"Gender": "Female",
"Project_id": 3,
"Hrs_worked": 32
},

{
"Id": 15,
"Name": "Hannah Davis",
"Age": 43,
"Gender": "Male",
"Project_id": 4,
"Hrs_worked": 32
},

{
"Id": 16,
"Name": "Alice Moore",
"Age": 29,
"Gender": "Male",
"Project_id": 1,
"Hrs_worked": 39
},

{
"Id": 17,
"Name": "David Miller",
"Age": 25,
"Gender": "Female",
"Project_id": 4,
"Hrs_worked": 32
},

{
"Id": 18,
"Name": "Isaac Wilson",
"Age": 32,
"Gender": "Female",
```

```
    "Project_id": 2,
    "Hrs_worked": 31
    },

    {
    "Id": 19,
    "Name": "Charlie Williams",
    "Age": 59,
    "Gender": "Female",
    "Project_id": 1,
    "Hrs_worked": 31
    },

    {
    "Id": 20,
    "Name": "Frank Miller",
    "Age": 55,
    "Gender": "Female",
    "Project_id": 4,
    "Hrs_worked": 24
    }
]
```


Code:

```
const fs = require("fs");

// Function to save console output to a file
function saveConsoleLogToFile(logs, filename) {
  fs.writeFileSync(filename, logs.join("\n"), { flag: "a" });
}

// Array to store console logs
let consoleLogs = [];

// Redefine console.log to also save the logs to an array
const originalConsoleLog = console.log;
console.log = function () {
  originalConsoleLog.apply(console, arguments);
  consoleLogs.push(Array.from(arguments).join(" "));
};

const questions = [
  {
    number: 1,
    question: "Create Database: Create a MongoDB database named AIML.",
  },
  {
    number: 2,
    question:
```

```
      "Create Collection: Create a collection named employee within the AIML database.",
  },
  {
    number: 3,
    question:
      "Import Employee Records: Import employee records from a JSON file into the employee
collection. Save the provided data in a JSON file and use it for import in MongoDB.",
  },
  {
    number: 4,
    question:
      "insertOne: Inserts a single document into the collection. { 'Id': 21, 'Name': 'John
Doe', 'Project_id': 2, 'Hrs_worked': 35 }",
  },
  {
    number: 5,
    question:
      "insertMany: Inserts multiple documents into the collection. { 'Id': 22, 'Name': 'Jane
Smith', 'Project_id': 1, 'Hrs_worked': 28 }, { 'Id': 23, 'Name': 'Alice Johnson', 'Project_id':
3, 'Hrs_worked': 42 }",
  },
  {
    number: 6,
    question:
      "updateOne: Updates a single document that matches the filter. { 'Id': 21 }, { $set: {
'Hrs_worked': 40 } }",
  },
  {
    number: 7,
    question:
      "updateMany: Updates multiple documents that match the filter. { 'Hrs_worked': { $gt: 30
} }, { $set: { 'Overtime': true } }",
  },
  {
    number: 8,
    question: "find an employee by their ID.",
  },
  {
    number: 9,
    question:
      "How would you retrieve all employees who are assigned to a specific project ID?",
  },
  {
    number: 10,
    question:
      "Write a query to find employees who have worked more than 30 hours.",
  },
  {
    number: 11,
    question:
```

```
      "Can you demonstrate how to use the $gt operator to find employees who are older than
40?",
  },
  {
    number: 12,
    question: "Explain the purpose of sorting in MongoDB queries.",
  },
  {
    number: 13,
    question:
      "Sort the Employee table based on Age in Ascending order and display.",
  },
  {
    number: 14,
    question:
      "Sort the Employee table based on Hrs_worked in Descending order and display.",
  },
  {
    number: 15,
    question:
      "Find Employee whose age is greater than 30 and Hrs_worked greater than 20.",
  },
  {
    number: 16,
    question:
      "Find Employee whose Gender is Male or Hrs_worked greater than 25.",
  },
  {
    number: 17,
    question: "Find Employee whose Project_id is not 3.",
  },
  {
    number: 18,
    question:
      "Write a MongoDB query to find all employees who are between the ages of 25 and 35.",
  },
  {
    number: 19,
    question:
      "How would you retrieve employees who have worked between 20 and 30 hours?",
  },
  {
    number: 20,
    question:
      "Write a query to find employees who are either working on Project 1 or Project 2.",
  },
];

n2 = "\n\n";
n1 = "\n";
```

```
// 1. Create Database: Create a MongoDB database named AIML.
out1 = use("AIML");
code1 = `use('AIML');`;

//print question and output in proper format
console.log("Question 1:", questions[0].question, n1);
console.log("Code:", code1, n1);
console.log("Output:", out1, n2);

// // 2. Create Collection: Create a collection named employee within the AIML database.
out2 = db.createCollection("employee");
code2 = `db.createCollection('employee');`;

console.log("Question 2:", questions[1].question, n1);
console.log("Code:", code2, n1);
console.log("Output:", out2, n2);

// 3. Import Employee Records: Import employee records from a JSON file into the employee
collection.
//Save the following data in a json file and use it for import in Mongodb.

const employeeData = JSON.parse(fs.readFileSync("employee.json"));
out3 = db.employee.insertMany(employeeData);

code3 =
  `const employeeData = JSON.parse(fs.readFileSync('employee.json'));` +
  "\n" +
  `out3 = db.employee.insertMany(employeeData);`;

console.log("Question 3:", questions[1].question, n1);
console.log("Code:", code3, n1);
console.log("Output:", out3, n2);

// 4. insertOne: Inserts a single document into the collection.
// { "Id": 21, "Name": "John Doe", "Project_id": 2, "Hrs_worked": 35 }

out4 = db.employee.insertOne({
  Id: 21,
  Name: "John Doe",
  Project_id: 2,
  Hrs_worked: 35,
});
code4 = `db.employee.insertOne({ "Id": 21, "Name": "John Doe", "Project_id": 2, "Hrs_worked":
35 });`;

console.log("Question 4:", questions[3].question, n1);
console.log("Code: ", code4, n1);
console.log("Output:", out4, n2);

// 5. insertMany: Inserts multiple documents into the collection.
// { "Id": 22, "Name": "Jane Smith", "Project_id": 1, "Hrs_worked": 28 },
```

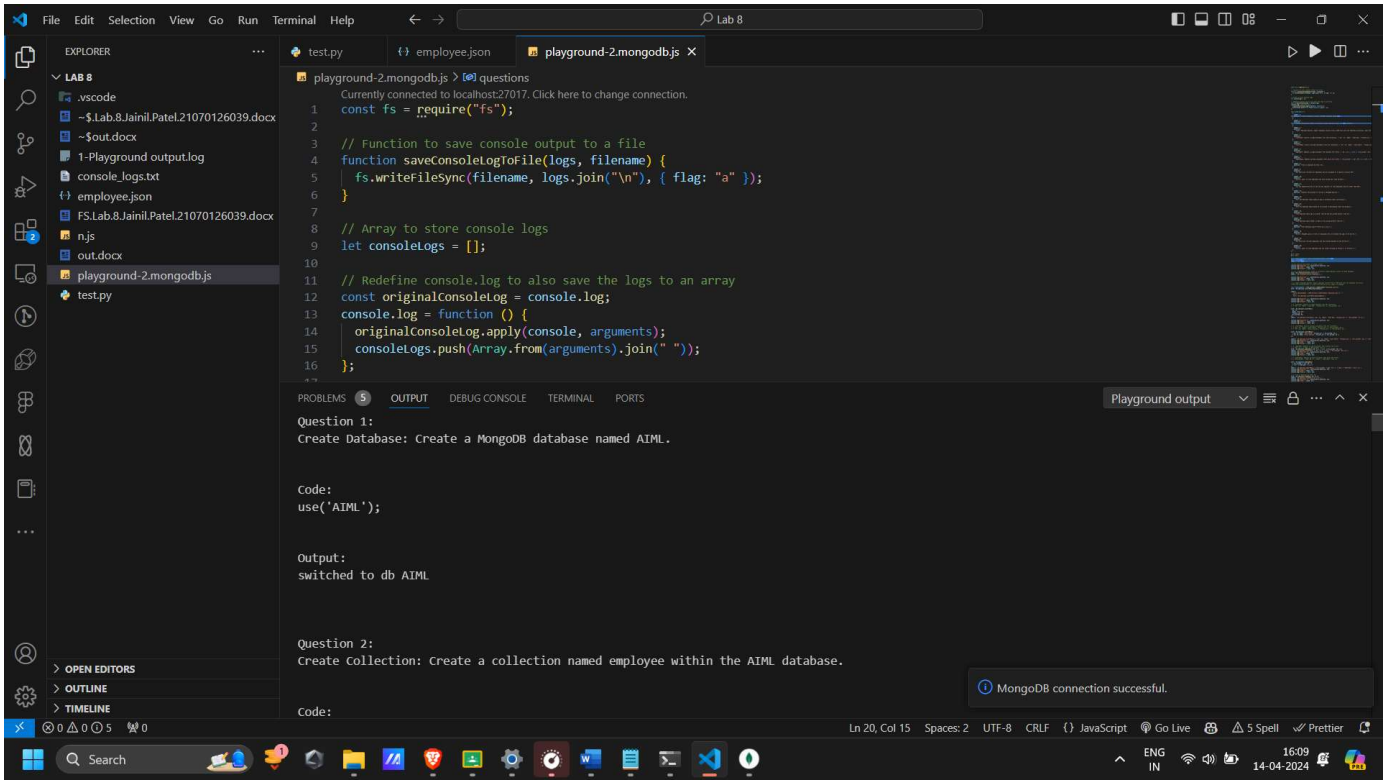
```
// { "Id": 23, "Name": "Alice Johnson", "Project_id": 3, "Hrs_worked": 42 }

out5 = db.employee.insertMany([
  { Id: 22, Name: "Jane Smith", Project_id: 1, Hrs_worked: 28 },
  { Id: 23, Name: "Alice Johnson", Project_id: 3, Hrs_worked: 42 },
]);

code5 = `db.employee.insertMany([ { "Id": 22, "Name": "Jane Smith", "Project_id": 1,
"Hrs_worked": 28 }, { "Id": 23, "Name": "Alice Johnson", "Project_id": 3, "Hrs_worked": 42 }
]);`;
console.log("Question 5:", questions[4].question, n1);
console.log("Code: ", code5, n1);
console.log("Output:", out5, n2);

// 6. updateOne: Updates a single document that matches the filter.
// { "Id": 21 }, { $set: { "Hrs_worked": 40 } }
out6 = db.employee.updateOne({ Id: 21 }, { $set: { Hrs_worked: 40 } });
code6 = `db.employee.updateOne( { "Id": 21 }, { $set: { "Hrs_worked": 40 } });`;
console.log("Question 6:", questions[5].question, n1);
console.log("Code:", code6, n1);
console.log("Output:", out6, n2);

// 7. updateMany: Updates multiple documents that match the filter.
// { "Hrs_worked": { $gt: 30 } }, { $set: { "Overtime": true } }

out7 = db.employee.updateMany(
  { Hrs_worked: { $gt: 30 } },
  { $set: { Overtime: true } }
);
code7 = `db.employee.updateMany( { "Hrs_worked": { $gt: 30 } }, { $set: { "Overtime": true }
});`;
console.log("Question 7:", questions[6].question, n1);
console.log("Code:", code7, n1);
console.log("Output:", out7, n2);

// 8. find an employee by their ID.
out8 = db.employee.findOne({ Id: 21 });
code8 = `db.employee.findOne({ Id: 21 });`;
console.log("Question 8:", questions[7].question, n1);
console.log("Code:", code8, n1);
console.log("Output:", out8, n2);

// 9. How would you retrieve all employees who are assigned to a specific project ID?

out9 = db.employee.find({ Project_id: 2 });
code9 = `db.employee.find({ Project_id: 2 });`;
console.log("Question 9:", questions[8].question), n1;
console.log("Code:", code9, n1);
console.log("Output:", out9, n2);

// 10. Write a query to find employees who have worked more than 30 hours.
```

```
out10 = db.employee.find({ Hrs_worked: { $gt: 30 } });
code10 = `db.employee.find({ Hrs_worked: { $gt: 30 } });`;
console.log("Question 10:", questions[9].question, n1);
console.log("Code:", code10, n1);
console.log("Output:", out10, n2);

// 11. Can you demonstrate how to use the $gt operator to find employees who are older than 40?

out11 = db.employee.find({ Age: { $gt: 40 } });
code11 = `db.employee.find({ Age: { $gt: 40 } });`;
console.log("Question 11:", questions[10].question, n1);
console.log("Code:", code11, n1);
console.log("Output:", out11, n2);

// 12. Explain the purpose of sorting in MongoDB queries.
out12 =
  "Sorting in MongoDB organizes query results based on specified fields, facilitating data
analysis and presentation, improving performance with indexed fields, and enhancing user
experience through ordered document retrieval.";
console.log("Question 12:", questions[11].question, n1);
console.log("Answer:", out12, n2);

// 13. Sort the Employee table based on Age in Ascending order and display.
out13 = db.employee.find().sort({ Age: 1 });
code13 = `db.employee.find().sort({ Age: 1 });`;

console.log("Question 13:", questions[12].question, n1);
console.log("Code:", code13, n1);
console.log("Output:", out13, n2);

// 14. Sort the Employee table based on Hrs_worked in Descending order and display.
out14 = db.employee.find().sort({ Hrs_worked: -1 });
code14 = `db.employee.find().sort({ Hrs_worked: -1 });`;
console.log("Question 14:", questions[13].question, n1);
console.log("Code:", code14, n1);
console.log("Output:", out14, n2);

// 15. Find Employee whose age is greater then 30 and Has_Worked greater then 20.

out15 = db.employee.find({ Age: { $gt: 30 }, Hrs_worked: { $gt: 20 } });
code15 = `db.employee.find({ Age: { $gt: 30 }, Hrs_worked: { $gt: 20 } });`;
console.log("Question 15:", questions[14].question, n1);
console.log("Code:", code15, n1);
console.log("Output:", out15, n2);

// 16. Find Employee whose Gender is Male or Has_Worked greater then 25.
out16 = db.employee.find({
  $or: [{ Gender: "Male" }, { Hrs_worked: { $gt: 25 } }],
});
code16 = `db.employee.find({ $or: [{ Gender: "Male" }, { Hrs_worked: { $gt: 25 } }] });`;
console.log("Question 16:", questions[15].question, n1);
```

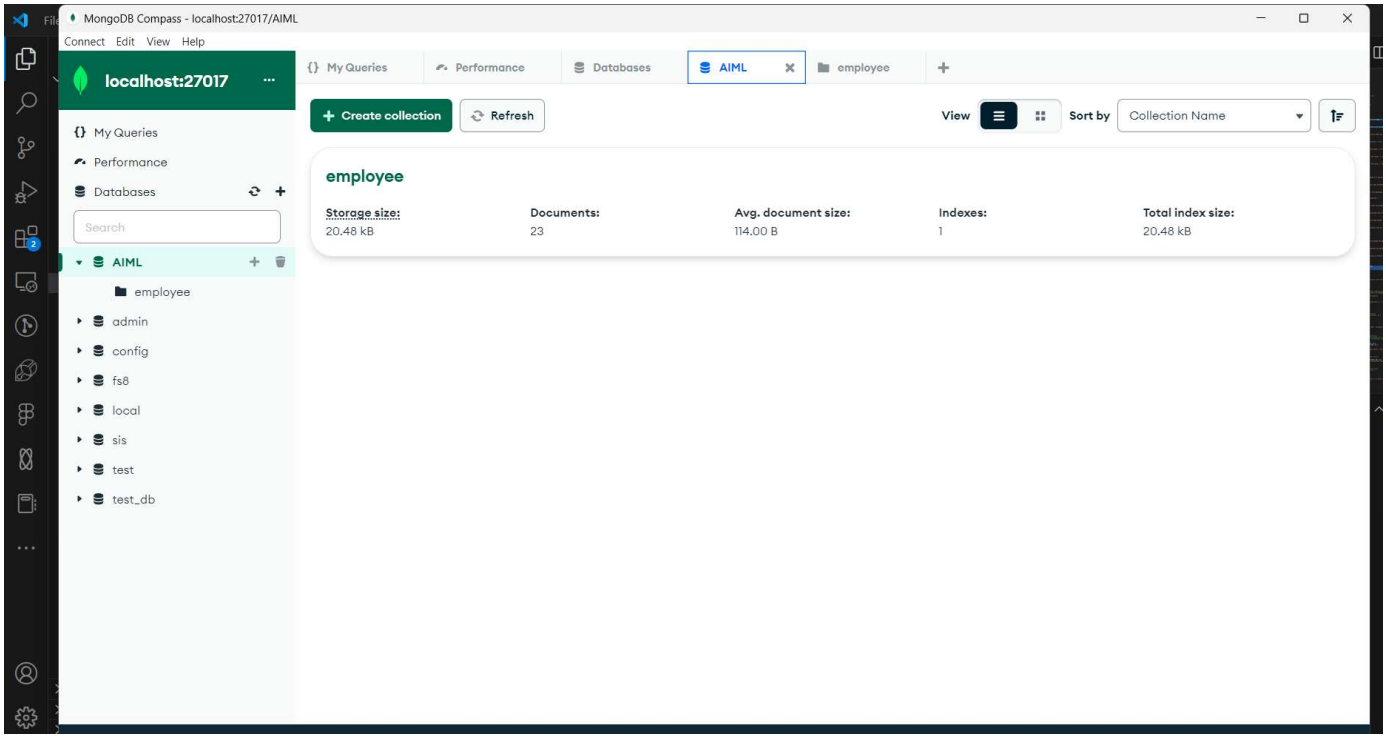
```
console.log("Code:", code16, n1);
console.log("Output:", out16, n2);

// 17. Find Employee whose Project_id is not 3.
out17 = db.employee.find({ Project_id: { $ne: 3 } });
code17 = `db.employee.find({ Project_id: { $ne: 3 } });`;
console.log("Question 17:", questions[16].question, n1);
console.log("Code:", code17, n1);
console.log("Output:", out17, n2);

// 18. Write a MongoDB query to find all employees who are between the ages of 25 and 35.
out18 = db.employee.find({ Age: { $gte: 25, $lte: 35 } });
code18 = `db.employee.find({ Age: { $gte: 25, $lte: 35 } });`;
console.log("Question 18:", questions[17].question, n1);
console.log("Code:", code18, n1);
console.log("Output:", out18, n2);

// 19. How would you retrieve employees who have worked between 20 and 30 hours?
out19 = db.employee.find({ Hrs_worked: { $gte: 20, $lte: 30 } });
code19 = `db.employee.find({ Hrs_worked: { $gte: 20, $lte: 30 } });`;
console.log("Question 19:", questions[18].question, n1);
console.log("Code:", code19, n1);
console.log("Output:", out19, n2);

// 20. Write a query to find employees who are either working on Project 1 or Project 2.
out20 = db.employee.find({ Project_id: { $in: [1, 2] } });
code20 = `db.employee.find({ Project_id: { $in: [1, 2] } });`;
console.log("Question 20:", questions[19].question, n1);
console.log("Code:", code20, n1);
console.log("Output:", out20, n2);

saveConsoleLogToFile(consoleLogs, "console_logs.txt");
```

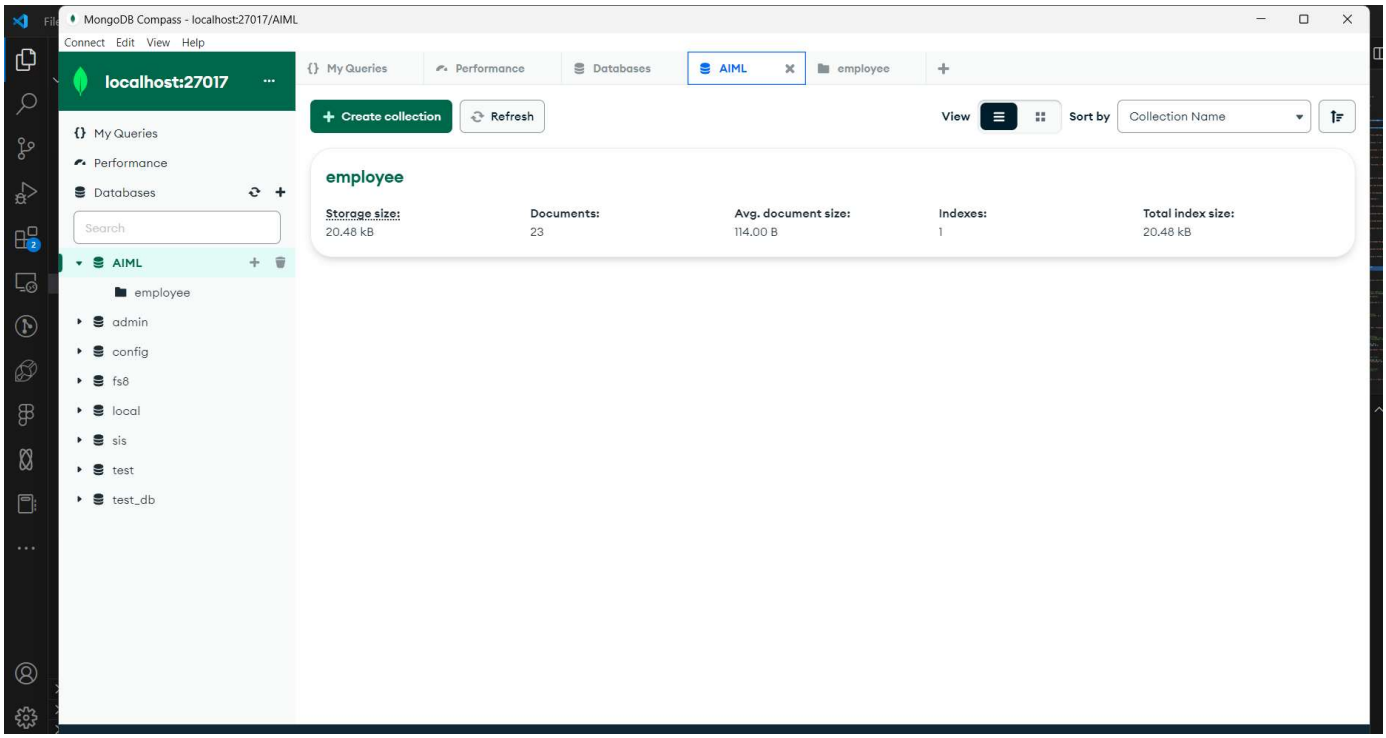
Output:

VS code:



Mongo DB





Output Logs:

```
Question 1:
Create Database: Create a MongoDB database named AIML.


Code:
use('AIML');


Output:
switched to db AIML



Question 2:
Create Collection: Create a collection named employee within the AIML database.


Code:
db.createCollection('employee');


Output:
{ ok: 1 }
```

```
Question :
Create Collection: Create a collection named employee within the AIML database.


Code:
const employeeData = JSON.parse(fs.readFileSync('employee.json'));
out3 = db.employee.insertMany(employeeData);


Output:
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('661bb255e67a7dd4398a5a55'),
    '1': ObjectId('661bb255e67a7dd4398a5a56'),
    '2': ObjectId('661bb255e67a7dd4398a5a57'),
    '3': ObjectId('661bb255e67a7dd4398a5a58'),
    '4': ObjectId('661bb255e67a7dd4398a5a59'),
    '5': ObjectId('661bb255e67a7dd4398a5a5a'),
    '6': ObjectId('661bb255e67a7dd4398a5a5b'),
    '7': ObjectId('661bb255e67a7dd4398a5a5c'),
    '8': ObjectId('661bb255e67a7dd4398a5a5d'),
    '9': ObjectId('661bb255e67a7dd4398a5a5e'),
    '10': ObjectId('661bb255e67a7dd4398a5a5f'),
    '11': ObjectId('661bb255e67a7dd4398a5a60'),
    '12': ObjectId('661bb255e67a7dd4398a5a61'),
    '13': ObjectId('661bb255e67a7dd4398a5a62'),
    '14': ObjectId('661bb255e67a7dd4398a5a63'),
    '15': ObjectId('661bb255e67a7dd4398a5a64'),
    '16': ObjectId('661bb255e67a7dd4398a5a65'),
    '17': ObjectId('661bb255e67a7dd4398a5a66'),
    '18': ObjectId('661bb255e67a7dd4398a5a67'),
    '19': ObjectId('661bb255e67a7dd4398a5a68')
  }
}



Question 4:
insertOne: Inserts a single document into the collection. { 'Id': 21, 'Name': 'John Doe',
'Project_id': 2, 'Hrs_worked': 35 }


Code:
db.employee.insertOne({ "Id": 21, "Name": "John Doe", "Project_id": 2, "Hrs_worked": 35 });


Output:
{
  acknowledged: true,
  insertedId: ObjectId('661bb255e67a7dd4398a5a69')
```

```
}



Question 5:
insertMany: Inserts multiple documents into the collection. { 'Id': 22, 'Name': 'Jane Smith',
'Project_id': 1, 'Hrs_worked': 28 }, { 'Id': 23, 'Name': 'Alice Johnson', 'Project_id': 3,
'Hrs_worked': 42 }


Code:
db.employee.insertMany([ { "Id": 22, "Name": "Jane Smith", "Project_id": 1, "Hrs_worked": 28 },
{ "Id": 23, "Name": "Alice Johnson", "Project_id": 3, "Hrs_worked": 42 } ]);


Output:
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('661bb255e67a7dd4398a5a6a'),
    '1': ObjectId('661bb255e67a7dd4398a5a6b')
  }
}



Question 6:
updateOne: Updates a single document that matches the filter. { 'Id': 21 }, { $set: {
'Hrs_worked': 40 } }


Code:
db.employee.updateOne( { "Id": 21 }, { $set: { "Hrs_worked": 40 } });


Output:
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}



Question 7:
updateMany: Updates multiple documents that match the filter. { 'Hrs_worked': { $gt: 30 } }, {
$set: { 'Overtime': true } }


Code:
```

```
db.employee.updateMany( { "Hrs_worked": { $gt: 30 } }, { $set: { "Overtime": true } });


Output:
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 13,
  modifiedCount: 13,
  upsertedCount: 0
}



Question 8:
find an employee by their ID.


Code:
db.employee.findOne({ Id: 21 });


Output:
{
  _id: ObjectId('661bb255e67a7dd4398a5a69'),
  Id: 21,
  Name: 'John Doe',
  Project_id: 2,
  Hrs_worked: 40,
  Overtime: true
}



Question 9:
How would you retrieve all employees who are assigned to a specific project ID?
Code:
db.employee.find({ Project_id: 2 });


Output:
{
  cursorHasMore: false,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a57'),
      Id: 3,
      Name: 'Hannah Brown',
      Age: 33,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 36,
```

```
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a58'),
    Id: 4,
    Name: 'Hannah Davis',
    Age: 31,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 22
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5a'),
    Id: 6,
    Name: 'Hannah Davis',
    Age: 57,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 28
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5c'),
    Id: 8,
    Name: 'David Williams',
    Age: 60,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 34,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5f'),
    Id: 11,
    Name: 'Grace Wilson',
    Age: 42,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 15
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a60'),
    Id: 12,
    Name: 'Isaac Smith',
    Age: 32,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 23
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a66'),
    Id: 18,
```

```
      Name: 'Isaac Wilson',
      Age: 32,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 31,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a69'),
      Id: 21,
      Name: 'John Doe',
      Project_id: 2,
      Hrs_worked: 40,
      Overtime: true
    }
  ]
}
```

Question 10:
Write a query to find employees who have worked more than 30 hours.

Code:

```
db.employee.find({ Hrs_worked: { $gt: 30 } });
```

Output:

```
{
  cursorHasMore: false,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a57'),
      Id: 3,
      Name: 'Hannah Brown',
      Age: 33,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 36,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5c'),
      Id: 8,
      Name: 'David Williams',
      Age: 60,
      Gender: 'Male',
      Project_id: 2,
      Hrs_worked: 34,
      Overtime: true
```

```
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5d'),
    Id: 9,
    Name: 'Charlie Johnson',
    Age: 49,
    Gender: 'Male',
    Project_id: 3,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5e'),
    Id: 10,
    Name: 'Charlie Johnson',
    Age: 60,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 36,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a61'),
    Id: 13,
    Name: 'Emma Jones',
    Age: 52,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 33,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a62'),
    Id: 14,
    Name: 'Isaac Wilson',
    Age: 21,
    Gender: 'Female',
    Project_id: 3,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a63'),
    Id: 15,
    Name: 'Hannah Davis',
    Age: 43,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 32,
    Overtime: true
  },
```

```
  {
    _id: ObjectId('661bb255e67a7dd4398a5a64'),
    Id: 16,
    Name: 'Alice Moore',
    Age: 29,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 39,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a65'),
    Id: 17,
    Name: 'David Miller',
    Age: 25,
    Gender: 'Female',
    Project_id: 4,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a66'),
    Id: 18,
    Name: 'Isaac Wilson',
    Age: 32,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a67'),
    Id: 19,
    Name: 'Charlie Williams',
    Age: 59,
    Gender: 'Female',
    Project_id: 1,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a69'),
    Id: 21,
    Name: 'John Doe',
    Project_id: 2,
    Hrs_worked: 40,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a6b'),
    Id: 23,
```

```
      Name: 'Alice Johnson',
      Project_id: 3,
      Hrs_worked: 42,
      Overtime: true
    }
  ]
}



Question 11:
Can you demonstrate how to use the $gt operator to find employees who are older than 40?


Code:
db.employee.find({ Age: { $gt: 40 } });


Output:
{
  cursorHasMore: false,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a55'),
      Id: 1,
      Name: 'Charlie Moore',
      Age: 44,
      Gender: 'Male',
      Project_id: 4,
      Hrs_worked: 12
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a59'),
      Id: 5,
      Name: 'Bob Davis',
      Age: 41,
      Gender: 'Female',
      Project_id: 4,
      Hrs_worked: 16
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5a'),
      Id: 6,
      Name: 'Hannah Davis',
      Age: 57,
      Gender: 'Male',
      Project_id: 2,
      Hrs_worked: 28
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5b'),
```

```
    Id: 7,
    Name: 'Frank Brown',
    Age: 49,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 30
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5c'),
    Id: 8,
    Name: 'David Williams',
    Age: 60,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 34,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5d'),
    Id: 9,
    Name: 'Charlie Johnson',
    Age: 49,
    Gender: 'Male',
    Project_id: 3,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5e'),
    Id: 10,
    Name: 'Charlie Johnson',
    Age: 60,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 36,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5f'),
    Id: 11,
    Name: 'Grace Wilson',
    Age: 42,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 15
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a61'),
    Id: 13,
    Name: 'Emma Jones',
    Age: 52,
```

```
      Gender: 'Male',
      Project_id: 1,
      Hrs_worked: 33,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a63'),
      Id: 15,
      Name: 'Hannah Davis',
      Age: 43,
      Gender: 'Male',
      Project_id: 4,
      Hrs_worked: 32,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a67'),
      Id: 19,
      Name: 'Charlie Williams',
      Age: 59,
      Gender: 'Female',
      Project_id: 1,
      Hrs_worked: 31,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a68'),
      Id: 20,
      Name: 'Frank Miller',
      Age: 55,
      Gender: 'Female',
      Project_id: 4,
      Hrs_worked: 24
    }
  ]
}
```

Question 12:
Explain the purpose of sorting in MongoDB queries.

Answer:
Sorting in MongoDB organizes query results based on specified fields, facilitating data analysis and presentation, improving performance with indexed fields, and enhancing user experience through ordered document retrieval.

Question 13:

Sort the Employee table based on Age in Ascending order and display.

Code:

```
db.employee.find().sort({ Age: 1 });
```

Output:

```
{
  cursorHasMore: true,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a69'),
      Id: 21,
      Name: 'John Doe',
      Project_id: 2,
      Hrs_worked: 40,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a6a'),
      Id: 22,
      Name: 'Jane Smith',
      Project_id: 1,
      Hrs_worked: 28
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a6b'),
      Id: 23,
      Name: 'Alice Johnson',
      Project_id: 3,
      Hrs_worked: 42,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a62'),
      Id: 14,
      Name: 'Isaac Wilson',
      Age: 21,
      Gender: 'Female',
      Project_id: 3,
      Hrs_worked: 32,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a65'),
      Id: 17,
      Name: 'David Miller',
      Age: 25,
      Gender: 'Female',
      Project_id: 4,
```

```
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a64'),
    Id: 16,
    Name: 'Alice Moore',
    Age: 29,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 39,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a58'),
    Id: 4,
    Name: 'Hannah Davis',
    Age: 31,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 22
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a60'),
    Id: 12,
    Name: 'Isaac Smith',
    Age: 32,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 23
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a66'),
    Id: 18,
    Name: 'Isaac Wilson',
    Age: 32,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a57'),
    Id: 3,
    Name: 'Hannah Brown',
    Age: 33,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 36,
    Overtime: true
  },
```

```
  {
    _id: ObjectId('661bb255e67a7dd4398a5a56'),
    Id: 2,
    Name: 'Frank Smith',
    Age: 36,
    Gender: 'Female',
    Project_id: 1,
    Hrs_worked: 12
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a59'),
    Id: 5,
    Name: 'Bob Davis',
    Age: 41,
    Gender: 'Female',
    Project_id: 4,
    Hrs_worked: 16
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5f'),
    Id: 11,
    Name: 'Grace Wilson',
    Age: 42,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 15
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a63'),
    Id: 15,
    Name: 'Hannah Davis',
    Age: 43,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a55'),
    Id: 1,
    Name: 'Charlie Moore',
    Age: 44,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 12
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5b'),
    Id: 7,
    Name: 'Frank Brown',
    Age: 49,
```

```
      Gender: 'Male',
      Project_id: 4,
      Hrs_worked: 30
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5d'),
      Id: 9,
      Name: 'Charlie Johnson',
      Age: 49,
      Gender: 'Male',
      Project_id: 3,
      Hrs_worked: 32,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a61'),
      Id: 13,
      Name: 'Emma Jones',
      Age: 52,
      Gender: 'Male',
      Project_id: 1,
      Hrs_worked: 33,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a68'),
      Id: 20,
      Name: 'Frank Miller',
      Age: 55,
      Gender: 'Female',
      Project_id: 4,
      Hrs_worked: 24
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5a'),
      Id: 6,
      Name: 'Hannah Davis',
      Age: 57,
      Gender: 'Male',
      Project_id: 2,
      Hrs_worked: 28
    }
  ]
}



Question 14:
Sort the Employee table based on Hrs_worked in Descending order and display.
```

```
Code:
db.employee.find().sort({ Hrs_worked: -1 });


Output:
{
  cursorHasMore: true,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a6b'),
      Id: 23,
      Name: 'Alice Johnson',
      Project_id: 3,
      Hrs_worked: 42,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a69'),
      Id: 21,
      Name: 'John Doe',
      Project_id: 2,
      Hrs_worked: 40,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a64'),
      Id: 16,
      Name: 'Alice Moore',
      Age: 29,
      Gender: 'Male',
      Project_id: 1,
      Hrs_worked: 39,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a57'),
      Id: 3,
      Name: 'Hannah Brown',
      Age: 33,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 36,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5e'),
      Id: 10,
      Name: 'Charlie Johnson',
      Age: 60,
      Gender: 'Male',
      Project_id: 4,
```

```
    Hrs_worked: 36,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5c'),
    Id: 8,
    Name: 'David Williams',
    Age: 60,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 34,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a61'),
    Id: 13,
    Name: 'Emma Jones',
    Age: 52,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 33,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5d'),
    Id: 9,
    Name: 'Charlie Johnson',
    Age: 49,
    Gender: 'Male',
    Project_id: 3,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a62'),
    Id: 14,
    Name: 'Isaac Wilson',
    Age: 21,
    Gender: 'Female',
    Project_id: 3,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a63'),
    Id: 15,
    Name: 'Hannah Davis',
    Age: 43,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 32,
```

```
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a65'),
    Id: 17,
    Name: 'David Miller',
    Age: 25,
    Gender: 'Female',
    Project_id: 4,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a66'),
    Id: 18,
    Name: 'Isaac Wilson',
    Age: 32,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a67'),
    Id: 19,
    Name: 'Charlie Williams',
    Age: 59,
    Gender: 'Female',
    Project_id: 1,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5b'),
    Id: 7,
    Name: 'Frank Brown',
    Age: 49,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 30
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5a'),
    Id: 6,
    Name: 'Hannah Davis',
    Age: 57,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 28
  },
  {
```

```
      _id: ObjectId('661bb255e67a7dd4398a5a6a'),
      Id: 22,
      Name: 'Jane Smith',
      Project_id: 1,
      Hrs_worked: 28
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a68'),
      Id: 20,
      Name: 'Frank Miller',
      Age: 55,
      Gender: 'Female',
      Project_id: 4,
      Hrs_worked: 24
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a60'),
      Id: 12,
      Name: 'Isaac Smith',
      Age: 32,
      Gender: 'Male',
      Project_id: 2,
      Hrs_worked: 23
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a58'),
      Id: 4,
      Name: 'Hannah Davis',
      Age: 31,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 22
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a59'),
      Id: 5,
      Name: 'Bob Davis',
      Age: 41,
      Gender: 'Female',
      Project_id: 4,
      Hrs_worked: 16
    }
  ]
}



Question 15:
Find Employee whose age is greater than 30 and Hrs_worked greater than 20.
```

```
Code:
db.employee.find({ Age: { $gt: 30 }, Hrs_worked: { $gt: 20 } });


Output:
{
  cursorHasMore: false,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a57'),
      Id: 3,
      Name: 'Hannah Brown',
      Age: 33,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 36,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a58'),
      Id: 4,
      Name: 'Hannah Davis',
      Age: 31,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 22
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5a'),
      Id: 6,
      Name: 'Hannah Davis',
      Age: 57,
      Gender: 'Male',
      Project_id: 2,
      Hrs_worked: 28
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5b'),
      Id: 7,
      Name: 'Frank Brown',
      Age: 49,
      Gender: 'Male',
      Project_id: 4,
      Hrs_worked: 30
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5c'),
      Id: 8,
      Name: 'David Williams',
      Age: 60,
      Gender: 'Male',
```

```
    Project_id: 2,
    Hrs_worked: 34,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5d'),
    Id: 9,
    Name: 'Charlie Johnson',
    Age: 49,
    Gender: 'Male',
    Project_id: 3,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5e'),
    Id: 10,
    Name: 'Charlie Johnson',
    Age: 60,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 36,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a60'),
    Id: 12,
    Name: 'Isaac Smith',
    Age: 32,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 23
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a61'),
    Id: 13,
    Name: 'Emma Jones',
    Age: 52,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 33,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a63'),
    Id: 15,
    Name: 'Hannah Davis',
    Age: 43,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 32,
```

```
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a66'),
      Id: 18,
      Name: 'Isaac Wilson',
      Age: 32,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 31,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a67'),
      Id: 19,
      Name: 'Charlie Williams',
      Age: 59,
      Gender: 'Female',
      Project_id: 1,
      Hrs_worked: 31,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a68'),
      Id: 20,
      Name: 'Frank Miller',
      Age: 55,
      Gender: 'Female',
      Project_id: 4,
      Hrs_worked: 24
    }
  ]
}



Question 16:
Find Employee whose Gender is Male or Hrs_worked greater than 25.


Code:
db.employee.find({ $or: [{ Gender: "Male" }, { Hrs_worked: { $gt: 25 } }] });


Output:
{
  cursorHasMore: false,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a55'),
      Id: 1,
```

```
    Name: 'Charlie Moore',
    Age: 44,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 12
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a57'),
    Id: 3,
    Name: 'Hannah Brown',
    Age: 33,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 36,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5a'),
    Id: 6,
    Name: 'Hannah Davis',
    Age: 57,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 28
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5b'),
    Id: 7,
    Name: 'Frank Brown',
    Age: 49,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 30
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5c'),
    Id: 8,
    Name: 'David Williams',
    Age: 60,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 34,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5d'),
    Id: 9,
    Name: 'Charlie Johnson',
    Age: 49,
    Gender: 'Male',
    Project_id: 3,
```

```
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5e'),
    Id: 10,
    Name: 'Charlie Johnson',
    Age: 60,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 36,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a60'),
    Id: 12,
    Name: 'Isaac Smith',
    Age: 32,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 23
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a61'),
    Id: 13,
    Name: 'Emma Jones',
    Age: 52,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 33,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a62'),
    Id: 14,
    Name: 'Isaac Wilson',
    Age: 21,
    Gender: 'Female',
    Project_id: 3,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a63'),
    Id: 15,
    Name: 'Hannah Davis',
    Age: 43,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 32,
    Overtime: true
```

```
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a64'),
    Id: 16,
    Name: 'Alice Moore',
    Age: 29,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 39,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a65'),
    Id: 17,
    Name: 'David Miller',
    Age: 25,
    Gender: 'Female',
    Project_id: 4,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a66'),
    Id: 18,
    Name: 'Isaac Wilson',
    Age: 32,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a67'),
    Id: 19,
    Name: 'Charlie Williams',
    Age: 59,
    Gender: 'Female',
    Project_id: 1,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a69'),
    Id: 21,
    Name: 'John Doe',
    Project_id: 2,
    Hrs_worked: 40,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a6a'),
```

```
      Id: 22,
      Name: 'Jane Smith',
      Project_id: 1,
      Hrs_worked: 28
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a6b'),
      Id: 23,
      Name: 'Alice Johnson',
      Project_id: 3,
      Hrs_worked: 42,
      Overtime: true
    }
  ]
}
```

Question 17:
Find Employee whose Project_id is not 3.

Code:

```
db.employee.find({ Project_id: { $ne: 3 } });
```

Output:

```
{
  cursorHasMore: true,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a55'),
      Id: 1,
      Name: 'Charlie Moore',
      Age: 44,
      Gender: 'Male',
      Project_id: 4,
      Hrs_worked: 12
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a56'),
      Id: 2,
      Name: 'Frank Smith',
      Age: 36,
      Gender: 'Female',
      Project_id: 1,
      Hrs_worked: 12
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a57'),
      Id: 3,
```

```
    Name: 'Hannah Brown',
    Age: 33,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 36,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a58'),
    Id: 4,
    Name: 'Hannah Davis',
    Age: 31,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 22
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a59'),
    Id: 5,
    Name: 'Bob Davis',
    Age: 41,
    Gender: 'Female',
    Project_id: 4,
    Hrs_worked: 16
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5a'),
    Id: 6,
    Name: 'Hannah Davis',
    Age: 57,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 28
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5b'),
    Id: 7,
    Name: 'Frank Brown',
    Age: 49,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 30
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5c'),
    Id: 8,
    Name: 'David Williams',
    Age: 60,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 34,
```

```
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5e'),
    Id: 10,
    Name: 'Charlie Johnson',
    Age: 60,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 36,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5f'),
    Id: 11,
    Name: 'Grace Wilson',
    Age: 42,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 15
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a60'),
    Id: 12,
    Name: 'Isaac Smith',
    Age: 32,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 23
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a61'),
    Id: 13,
    Name: 'Emma Jones',
    Age: 52,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 33,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a63'),
    Id: 15,
    Name: 'Hannah Davis',
    Age: 43,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 32,
    Overtime: true
  },
  {
```

```
    _id: ObjectId('661bb255e67a7dd4398a5a64'),
    Id: 16,
    Name: 'Alice Moore',
    Age: 29,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 39,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a65'),
    Id: 17,
    Name: 'David Miller',
    Age: 25,
    Gender: 'Female',
    Project_id: 4,
    Hrs_worked: 32,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a66'),
    Id: 18,
    Name: 'Isaac Wilson',
    Age: 32,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a67'),
    Id: 19,
    Name: 'Charlie Williams',
    Age: 59,
    Gender: 'Female',
    Project_id: 1,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a68'),
    Id: 20,
    Name: 'Frank Miller',
    Age: 55,
    Gender: 'Female',
    Project_id: 4,
    Hrs_worked: 24
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a69'),
    Id: 21,
```

```
      Name: 'John Doe',
      Project_id: 2,
      Hrs_worked: 40,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a6a'),
      Id: 22,
      Name: 'Jane Smith',
      Project_id: 1,
      Hrs_worked: 28
    }
  ]
}



Question 18:
Write a MongoDB query to find all employees who are between the ages of 25 and 35.


Code:
db.employee.find({ Age: { $gte: 25, $lte: 35 } });


Output:
{
  cursorHasMore: false,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a57'),
      Id: 3,
      Name: 'Hannah Brown',
      Age: 33,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 36,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a58'),
      Id: 4,
      Name: 'Hannah Davis',
      Age: 31,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 22
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a60'),
      Id: 12,
```

```
      Name: 'Isaac Smith',
      Age: 32,
      Gender: 'Male',
      Project_id: 2,
      Hrs_worked: 23
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a64'),
      Id: 16,
      Name: 'Alice Moore',
      Age: 29,
      Gender: 'Male',
      Project_id: 1,
      Hrs_worked: 39,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a65'),
      Id: 17,
      Name: 'David Miller',
      Age: 25,
      Gender: 'Female',
      Project_id: 4,
      Hrs_worked: 32,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a66'),
      Id: 18,
      Name: 'Isaac Wilson',
      Age: 32,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 31,
      Overtime: true
    }
  ]
}
```

Question 19:
How would you retrieve employees who have worked between 20 and 30 hours?

Code:

```
db.employee.find({ Hrs_worked: { $gte: 20, $lte: 30 } });
```

Output:

```
{
```

```
cursorHasMore: false,
documents: [
  {
    _id: ObjectId('661bb255e67a7dd4398a5a58'),
    Id: 4,
    Name: 'Hannah Davis',
    Age: 31,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 22
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5a'),
    Id: 6,
    Name: 'Hannah Davis',
    Age: 57,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 28
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5b'),
    Id: 7,
    Name: 'Frank Brown',
    Age: 49,
    Gender: 'Male',
    Project_id: 4,
    Hrs_worked: 30
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a60'),
    Id: 12,
    Name: 'Isaac Smith',
    Age: 32,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 23
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a68'),
    Id: 20,
    Name: 'Frank Miller',
    Age: 55,
    Gender: 'Female',
    Project_id: 4,
    Hrs_worked: 24
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a6a'),
    Id: 22,
    Name: 'Jane Smith',
```

```
      Project_id: 1,
      Hrs_worked: 28
    }
  ]
}



Question 20:
Write a query to find employees who are either working on Project 1 or Project 2.


Code:
db.employee.find({ Project_id: { $in: [1, 2] } });


Output:
{
  cursorHasMore: false,
  documents: [
    {
      _id: ObjectId('661bb255e67a7dd4398a5a56'),
      Id: 2,
      Name: 'Frank Smith',
      Age: 36,
      Gender: 'Female',
      Project_id: 1,
      Hrs_worked: 12
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a57'),
      Id: 3,
      Name: 'Hannah Brown',
      Age: 33,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 36,
      Overtime: true
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a58'),
      Id: 4,
      Name: 'Hannah Davis',
      Age: 31,
      Gender: 'Female',
      Project_id: 2,
      Hrs_worked: 22
    },
    {
      _id: ObjectId('661bb255e67a7dd4398a5a5a'),
      Id: 6,
```

```
    Name: 'Hannah Davis',
    Age: 57,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 28
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5c'),
    Id: 8,
    Name: 'David Williams',
    Age: 60,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 34,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a5f'),
    Id: 11,
    Name: 'Grace Wilson',
    Age: 42,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 15
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a60'),
    Id: 12,
    Name: 'Isaac Smith',
    Age: 32,
    Gender: 'Male',
    Project_id: 2,
    Hrs_worked: 23
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a61'),
    Id: 13,
    Name: 'Emma Jones',
    Age: 52,
    Gender: 'Male',
    Project_id: 1,
    Hrs_worked: 33,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a64'),
    Id: 16,
    Name: 'Alice Moore',
    Age: 29,
    Gender: 'Male',
    Project_id: 1,
```

```
    Hrs_worked: 39,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a66'),
    Id: 18,
    Name: 'Isaac Wilson',
    Age: 32,
    Gender: 'Female',
    Project_id: 2,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a67'),
    Id: 19,
    Name: 'Charlie Williams',
    Age: 59,
    Gender: 'Female',
    Project_id: 1,
    Hrs_worked: 31,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a69'),
    Id: 21,
    Name: 'John Doe',
    Project_id: 2,
    Hrs_worked: 40,
    Overtime: true
  },
  {
    _id: ObjectId('661bb255e67a7dd4398a5a6a'),
    Id: 22,
    Name: 'Jane Smith',
    Project_id: 1,
    Hrs_worked: 28
  }
 ]
}
```