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Questions:

Basic CRUD Operations Objective: Understand and implement basic CRUD (Create, Read, Update) operations in MongoDB.

Tasks:

1. **Create: Insert multiple documents into a collection called students with fields such as name, age, grade, and subjects.**
2. **Read: Write queries to:**
    - **Find all students.**
    - **Find students who are older than 15 years.**
    - **Find students who have "Math" as one of their subjects.**
    - **Find students who have "Math" and "Humanities" subjects.**
    - **Find students who do not have both "Finance" and "Arts" subjects.**
3. **Update: Update the grade of a student named "Supriya" to "A"**

Solution:

1.Create: Insert multiple documents into a collection called students with fields such as name, age, grade, and subjects.

Query:
```
db.students.insertMany([
    { name: "Alice", age: 14, grade: "B", subjects: ["Math",
"Science"] },
    { name: "Bob", age: 16, grade: "A", subjects: ["Math",
"Humanities"] },
    { name: "Charlie", age: 15, grade: "C", subjects:
["Science", "Arts"] },
    { name: "Supriya", age: 17, grade: "B", subjects:
["Math", "Finance"] },
```

```
    { name: "David", age: 18, grade: "A", subjects:
["Humanities", "Arts"] }
]);
```

Output:

```
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66a91bcfb2c04a4443b90726'),
    '1': ObjectId('66a91bcfb2c04a4443b90727'),
    '2': ObjectId('66a91bcfb2c04a4443b90728'),
    '3': ObjectId('66a91bcfb2c04a4443b90729'),
    '4': ObjectId('66a91bcfb2c04a4443b9072a')
  }
}
```

2.Read: Write queries to:

Query:
Find all students.

```
db.students.find();
```

Output:

```
{
  _id: ObjectId('66a91bcfb2c04a4443b90726'),
  name: 'Alice',
  age: 14,
  grade: 'B',
  subjects: [
    'Math',
    'Science'
  ]
}
{
  _id: ObjectId('66a91bcfb2c04a4443b90727'),
  name: 'Bob',
  age: 16,
  grade: 'A',
  subjects: [
    'Math',
    'Humanities'
  ]
}
{
  _id: ObjectId('66a91bcfb2c04a4443b90728'),
  name: 'Charlie',
  age: 15,
  grade: 'C',
  subjects: [
    'Science',
    'Arts'
  ]
}
{
  _id: ObjectId('66a91bcfb2c04a4443b90729'),
  name: 'Supriya',
  age: 17,
  grade: 'B',
  subjects: [
    'Math',
    'Finance'
  ]
}
{
  _id: ObjectId('66a91bcfb2c04a4443b9072a'),
  name: 'David',
  age: 18,
  grade: 'A',
  subjects: [
    'Humanities',
    'Arts'
  ]
}
```

Find students who are older than 15 years.
Query:
```
db.students.find({ age: { $gt: 15 } });
```
Output:

```
< {
    _id: ObjectId('66a91bcfb2c04a4443b90727'),
    name: 'Bob',
    age: 16,
    grade: 'A',
    subjects: [
      'Math',
      'Humanities'
    ]
  }
  {
    _id: ObjectId('66a91bcfb2c04a4443b90729'),
    name: 'Supriya',
    age: 17,
    grade: 'B',
    subjects: [
      'Math',
      'Finance'
    ]
  }
```

```
{
    _id: ObjectId('66a91bcfb2c04a4443b9072a'),
    name: 'David',
    age: 18,
    grade: 'A',
    subjects: [
      'Humanities',
      'Arts'
    ]
  }
```

Find students who have "Math" as one of their subjects.
Query:
```
db.students.find({ subjects: "Math" });
```
Output:

```
> db.students.find({ subjects: "Math" });
< {
    _id: ObjectId('66a91bcfb2c04a4443b90726'),
    name: 'Alice',
    age: 14,
    grade: 'B',
    subjects: [
      'Math',
      'Science'
    ]
  }
  {
    _id: ObjectId('66a91bcfb2c04a4443b90727'),
    name: 'Bob',
    age: 16,
    grade: 'A',
    subjects: [
      'Math',
      'Humanities'
    ]
```

```
    _id: ObjectId('66a91bcfb2c04a4443b90729'),
    name: 'Supriya',
    age: 17,
    grade: 'B',
    subjects: [
      'Math',
      'Finance'
    ]
  }
```

Find students who have "Math" and "Humanities" subjects.
Query:

```
db.students.find({
   $and: [
      { subjects: "Math" },
      { subjects: "Humanities" }
   ]
});
```

Output:

```
> db.students.find({
    $and: [
       { subjects: "Math" },
       { subjects: "Humanities" }
    ]
 });
< {
    _id: ObjectId('66a91bcfb2c04a4443b90727'),
    name: 'Bob',
    age: 16,
    grade: 'A',
    subjects: [
       'Math',
       'Humanities'
    ]
 }
```

Find students who do not have both "Finance" and "Arts" subjects.
Query:
```
db.students.find({ $nor: [ { subjects: "Finance" }, {
subjects: "Arts" } ] });
```

Output:
```
> db.students.find({ $nor: [ { subjects: "Finance" }, { subjects: "Arts" } ] });
< {
    _id: ObjectId('66a91bcfb2c04a4443b90726'),
    name: 'Alice',
    age: 14,
    grade: 'B',
    subjects: [
      'Math',
      'Science'
    ]
  }
  {
    _id: ObjectId('66a91bcfb2c04a4443b90727'),
    name: 'Bob',
    age: 16,
    grade: 'A',
    subjects: [
      'Math',
      'Humanities'
    ]
```

3.Update: Update the grade of a student named "Supriya" to "A".
Query:
```
db.students.updateOne(
    { name: "Supriya" },
    { $set: { grade: "A" } }
);
```
Output:

```
> db.students.updateOne(
      { name: "Supriya" },
      { $set: { grade: "A" } }
  );
< {
    acknowledged: true,
    insertedId: null,
    matchedCount: 1,
    modifiedCount: 1,
    upsertedCount: 0
  }
```

```
{
  _id: ObjectId('66a91bcfb2c04a4443b90729'),
  name: 'Supriya',
  age: 17,
  grade: 'A',
  subjects: [
    'Math',
    'Finance'
  ]
}
```