Lab 12 – NoSQL using MongoDb

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Questions:

Note: For each Question, you are required to write the Query as well as attach a screenshot of the output. Make sure your screenshots include the executed query.

1. Display all students.

db.students.find({})

2. Display all the students with CS major.

db.students.find({'Major': 'CS'})

3. Display all the students with SDP major.

```
db.students.find({'Major': 'SDP'})
```

```
🔵 MongoDB ∨  ⓘ                                                    ▶ Run   💾 Save

1
2  db.students.insertMany([
3  {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4  ,
5  {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6  ,
7  {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','C
8  ,
9  {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.find({'Major': 'SDP'})
```

```
Output
  {
    _id: ObjectId('691d895e7401775ebe6b128e'),
    FirstName: 'Abid',
    LastName: 'Kasim',
    CGPA: 2.9,
    Major: 'SDP',
    Address: {
      Street: 'ST-2, North Nazimabad,',
      City: 'Karachi',
      Province: 'Sindh',
      Country: 'Pakistan'
    },
    Phone: '9221-6678442',
    Courses: [
      { course_id: 'CS411', course_name: 'AI', credits: 3 },
      { course_id: 'CS121', course_name: 'OOP', credits: 4 },
      { course_id: 'CS411', course_name: 'AI', credits: 3 }
    ]
  }
]
mycompiler_mongodb>
```

4. Display all the students from Karachi City.

```
db.students.find({'Address.City' : 'Karachi'})
```

```
🔵 MongoDB ∨  ⓘ                                                    ▶ Run   💾 Save

1
2  db.students.insertMany([
3  {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4  ,
5  {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6  ,
7  {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','C
8  ,
9  {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.find({'Address.City' : 'Karachi'})
```

```
Output
    FirstName: 'Abid',
    LastName: 'Kasim',
    CGPA: 2.9,
    Major: 'SDP',
    Address: {
      Street: 'ST-2, North Nazimabad,',
      City: 'Karachi',
      Province: 'Sindh',
      Country: 'Pakistan'
    },
    Phone: '9221-6678442',
    Courses: [
      { course_id: 'CS411', course_name: 'AI', credits: 3 },
      { course_id: 'CS121', course_name: 'OOP', credits: 4 },
      { course_id: 'CS411', course_name: 'AI', credits: 3 }
    ]
  },
  {
    _id: ObjectId('691d8a54feb6cc3a5e6b128f'),
    FirstName: 'Zainab',
    LastName: 'Karim',
    CGPA: 3.1
```

5. Display all the students not from Karachi City.

```
db.students.find({'Address.City' :{$ne : 'Karachi'}})
```


6. Display all the students having CGPA more than 3.

```
db.students.find({'CGPA' : {$gt: 3.0}})
```


7. Display all the students having CGPA equal to 3.5

```
db.students.find({'CGPA' : {$eq: 3.5}})
```

8. Display all the students from Karachi with a CS Major.

```
db.students.find({$and: [{'Address.City': 'Karachi'}, {'Major': 'CS'}]})
```

```
1
2  db.students.insertMany([
3  {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4  ,
5  {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6  ,
7  {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8  ,
9  {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.find({$and: [{'Address.City': 'Karachi'}, {'Major': 'CS'}]})
```

```
Output
mycompiler_mongodb> [
  {
    _id: ObjectId('691d8df995f7e75faf6b128f'),
    FirstName: 'Zainab',
    LastName: 'Karim',
    CGPA: 3.1,
    Major: 'CS',
    Address: {
      Street: '3-Khalid Centre, Wahdat Road',
      City: 'Karachi',
      Province: 'Sindh',
      Country: 'Pakistan'
    },
    Phone: '021-4412625',
    Courses: [
      { course_id: 'CS355', course_name: 'DB', credits: 4 },
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 }
    ]
  }
]
mycompiler_mongodb>
```

9. Display all the students for the SDP and EE majors.

```
db.students.find({$or: [{'Major' : 'SDP'}, {'Major' : 'EE'}]})
```

```
MongoDB ∨   ℹ                                          ▶ Run   💾 Save

1
2  db.students.insertMany([
3  {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4  ,
5  {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6  ,
7  {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8  ,
9  {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.find({$or: [{'Major' : 'SDP'}, {'Major' : 'EE'}]})
```

```
Output
  },
  {
    _id: ObjectId('691d8e61fb59cff9336b1290'),
    FirstName: 'Kumar',
    LastName: 'Rani',
    CGPA: 2.8,
    Major: 'EE',
    Address: {
      Street: 'Malik Park Islam',
      City: 'Lahore',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '042-7113284',
    Courses: [ { course_id: 'CS101', course_name: 'Pfun', credits: 4 } ]
  }
]
mycompiler_mongodb>

[Execution complete with exit code 0]
```

10. Display only the first and last name of all students
    Result: FirstName, LastName

```
db.students.find({}, {'FirstName': 1, 'LastName': 1})
```

```
MongoDB ∨   ℹ                                          ▶ Run   💾 Save

1
2  db.students.insertMany([
3  {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4  ,
5  {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6  ,
7  {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8  ,
9  {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.find({}, {'FirstName': 1, 'LastName': 1})
```

```
Output
    }
  }
mycompiler_mongodb>
mycompiler_mongodb> [
  {
    _id: ObjectId('691d8f29fa3cd1390b6b128c'),
    FirstName: 'Hina',
    LastName: 'Baig'
  },
  {
    _id: ObjectId('691d8f29fa3cd1390b6b128d'),
    FirstName: 'Karim',
    LastName: 'Khan'
  },
  {
    _id: ObjectId('691d8f29fa3cd1390b6b128e'),
    FirstName: 'Abid',
    LastName: 'Kasim'
  },
  {
    _id: ObjectId('691d8f29fa3cd1390b6b128f'),
```

11. Display only the first name, last name, and city for all students.
    Result: FirstName, LastName, City

```
db.students.find({}, {'FirstName': 1, 'LastName': 1, 'Address.City': 1})
```

```
1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4 ,
5 {'FirstName': 'Karim', 'LastName': 'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName': 'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8 ,
9 {'FirstName':'Zainab', 'LastName': 'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.find({}, {'FirstName': 1, 'LastName': 1, 'Address.City': 1})
```

```
Output
    FirstName: 'Karim',
    LastName: 'Khan',
    Address: { City: 'Karachi' }
  },
  {
    _id: ObjectId('691d8f4ce0bf1d7d306b128e'),
    FirstName: 'Abid',
    LastName: 'Kasim',
    Address: { City: 'Karachi' }
  },
  {
    _id: ObjectId('691d8f4ce0bf1d7d306b128f'),
    FirstName: 'Zainab',
    LastName: 'Karim',
    Address: { City: 'Karachi' }
  },
  {
    _id: ObjectId('691d8f4ce0bf1d7d306b1290'),
    FirstName: 'Kumar',
    LastName: 'Rani',
    Address: { City: 'Lahore' }
```

12. Display only the first name, last name for all the students with CGPA greater than or equal to 3.5 (without Object IDs)

```
db.students.find({'CGPA' : {$gte: 3.5}}, {'_id': 0, 'FirstName': 1, 'LastName': 1})
```

MongoDB ⬤ ℹ   ▶ Run   💾 Save

```
1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4 ,
5 {'FirstName': 'Karim', 'LastName': 'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName': 'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8 ,
9 {'FirstName':'Zainab', 'LastName': 'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.find({'CGPA' : {$gte: 3.5}}, {'_id': 0, 'FirstName': 1, 'LastName': 1})
```

```
Output

mycompiler_mongodb>
mycompiler_mongodb> ... ... ... ... ... ... ... ... ... ... {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('691d8fee55fd028ae06b128c'),
    '1': ObjectId('691d8fee55fd028ae06b128d'),
    '2': ObjectId('691d8fee55fd028ae06b128e'),
    '3': ObjectId('691d8fee55fd028ae06b128f'),
    '4': ObjectId('691d8fee55fd028ae06b1290'),
    '5': ObjectId('691d8fee55fd028ae06b1291')
  }
}
mycompiler_mongodb>
mycompiler_mongodb> [
  { FirstName: 'Hina', LastName: 'Baig' },
  { FirstName: 'Fahim', LastName: 'Alam' }
]
mycompiler_mongodb>
```

13. Insert a student record with the following information (refer to manual)

```
db.students.insert({'FirstName' : 'Fatima', 'LastName': 'Tariq', 'Phone': '03124567891',
'Address':{'Street': 'Zainab Street Saddar', 'City': 'Karachi'}})
```

MongoDB ⬤ ℹ   ▶ Run   💾 Save

```
1
2
3 :{'Street':'Puran Nagar','City': 'Faisalabad','Province':'Punjab','Country':'Pakistan'},'Phone':'3233389064','Co
4
5 ':{'Street':' Off Nishter Road','City': 'Karachi','Province':'Sindh','Country':'Pakistan'},'Phone':'9221-7733790
6
7 s':{'Street':'ST-2, North Nazimabad,','City': 'Karachi','Province':'Sindh','Country':'Pakistan'},'Phone':'9221-6
8
9 ss':{'Street':'3-Khalid Centre, Wahdat Road','City': 'Karachi','Province':'Sindh','Country':'Pakistan'},'Phone':
10
11 ':{'Street':'Malik Park Islam','City': 'Lahore','Province':'Punjab','Country':'Pakistan'},'Phone':'042-7113284',
12
13 Wilbert Squares','City': 'Hunza','Province':'Gilgit-Baltistan','Country':'Pakistan'},'Phone':'359-99997'}
14
15
16 : '03124567891', 'Address':{'Street': 'Zainab Street Saddar', 'City': 'Karachi'}})
17
```

```
Output
    CGPA: 3.7,
    Address: {
      Street: 'Wilbert Squares',
      City: 'Hunza',
      Province: 'Gilgit-Baltistan',
      Country: 'Pakistan'
    },
    Phone: '359-99997'
  },
  {
    _id: ObjectId('691d91323051faa80a6b1292'),
    FirstName: 'Fatima',
    LastName: 'Tariq',
    Phone: '03124567891',
    Address: { Street: 'Zainab Street Saddar', City: 'Karachi' }
  }
]
mycompiler_mongodb>

[Execution complete with exit code 0]
```

14. Display all the student who do not have major property.

```
db.students.find({'Major': {$exists: 0}})
```

MongoDB ▼ ⓘ   ▶ Run   💾 Save

```
1
2  db.students.insertMany([
3  {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4  ,
5  {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6  ,
7  {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8  ,
9  {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.find({'Major': {$exists: 0}})
```

Output

```
}
mycompiler_mongodb>
mycompiler_mongodb> [
  {
    _id: ObjectId('691d91d5e537e546626b1291'),
    FirstName: 'Fahim',
    LastName: 'Alam',
    CGPA: 3.7,
    Address: {
      Street: 'Wilbert Squares',
      City: 'Hunza',
      Province: 'Gilgit-Baltistan',
      Country: 'Pakistan'
    },
    Phone: '359-99997'
  }
]
mycompiler_mongodb>

[Execution complete with exit code 0]
```

15. Insert the following students using insertMany (refer to manual)

```
db.students.insertMany([{'FirstName': 'Zahid', 'LastName' : 'Hakim', 'Major' : 'CS'},
{'FirstName': 'Ayesha', 'LastName': 'Asif'}, {'FirstName': 'Faheem', 'LastName' : 'Faiz',
'Phone': '0213456789'}])
```

```
1
2
3  b','Country':'Pakistan'},'Phone':'3233389064','Courses':[{'course_id':'CS101','course_name':'Pfun','credits':4},
4
5  indh','Country':'Pakistan'},'Phone':'9221-7733790','Courses':[{'course_id':'CH111','course_name':'PMAS','credits
6
7  ce':'Sindh','Country':'Pakistan'},'Phone':'9221-6678442','Courses':[{'course_id':'CS411','course_name':'AI','cre
8
9  'Province':'Sindh','Country':'Pakistan'},'Phone':'021-4412625','Courses':[{'course_id':'CS355','course_name':'DB
10
11 jab','Country':'Pakistan'},'Phone':'042-7113284','Courses':[{'course_id':'CS101','course_name':'Pfun','credits':
12
13 'Country':'Pakistan'},'Phone':'359-99997'}
14
15
16 rstName': 'Faheem', 'LastName' : 'Faiz', 'Phone': '0213456789'}])
17
```

Output

```
    _id: ObjectId('691d92fb21a6c9d42a6b1292'),
    FirstName: 'Zahid',
    LastName: 'Hakim',
    Major: 'CS'
  },
  {
    _id: ObjectId('691d92fb21a6c9d42a6b1293'),
    FirstName: 'Ayesha',
    LastName: 'Asif'
  },
  {
    _id: ObjectId('691d92fb21a6c9d42a6b1294'),
    FirstName: 'Faheem',
    LastName: 'Faiz',
    Phone: '0213456789'
  }
]
mycompiler_mongodb>

[Execution complete with exit code 0]
```

16. Display all the students have taken the CS355 course.

```
db.students.find({'Courses.course_id': 'CS355'})
```

```
1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4 ,
5 {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','(
8 ,
9 {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City':'Hunza','Provi
14 ])
15
16 db.students.find({'Courses.course_id': 'CS355'})
```

```
Output
        '5': ObjectId('691d93747cc81f8bcc6b1291')
      }
    }
mycompiler_mongodb>
mycompiler_mongodb> [
    {
      _id: ObjectId('691d93747cc81f8bcc6b128d'),
      FirstName: 'Karim',
      LastName: 'Khan',
      CGPA: 3.2,
      Major: 'EE',
      Address: {
        Street: ' Off Nishter Road',
        City: 'Karachi',
        Province: 'Sindh',
        Country: 'Pakistan'
      },
      Phone: '9221-7733790',
      Courses: [
        { course_id: 'CH111', course_name: 'PMAS', credits: 3 },
        { course_id: 'CS355', course_name: 'DB', credits: 4 }
```

17. Display all the students have not taken the CS355 course.

```
db.students.find({'Courses.course_id': {$ne :'CS355'}})
```

```
🍃 MongoDB ∨   ⓘ                                                          ▶ Run   💾 Save

1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4 ,
5 {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','(
8 ,
9 {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City':'Hunza','Provi
14 ])
15
16 db.students.find({'Courses.course_id': {$ne :'CS355'}})
```

```
Output
      Major: 'EE',
      Address: {
        Street: 'Malik Park Islam',
        City: 'Lahore',
        Province: 'Punjab',
        Country: 'Pakistan'
      },
      Phone: '042-7113284',
      Courses: [ { course_id: 'CS101', course_name: 'Pfun', credits: 4 } ]
    },
    {
      _id: ObjectId('691d93b1e37add50376b1291'),
      FirstName: 'Fahim',
      LastName: 'Alam',
      CGPA: 3.7,
      Address: {
        Street: 'Wilbert Squares',
        City: 'Hunza',
        Province: 'Gilgit-Baltistan',
        Country: 'Pakistan'
      },
      Phone: '058-00007'
```

18. Increment the CGPA of all students by 0.1.

```
db.students.updateMany({}, {$inc : {'CGPA': 0.1}})
```

```
🍃 MongoDB ∨   ⓘ                                                          ▶ Run   💾 Save

1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4 ,
5 {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','(
8 ,
9 {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City':'Hunza','Provi
14 ])
15
16 db.students.updateMany({}, {$inc : {'CGPA': 0.1}})
17
```

```
Output
    insertedIds: {
      '0': ObjectId('691d946eac3869e1086b128c'),
      '1': ObjectId('691d946eac3869e1086b128d'),
      '2': ObjectId('691d946eac3869e1086b128e'),
      '3': ObjectId('691d946eac3869e1086b128f'),
      '4': ObjectId('691d946eac3869e1086b1290'),
      '5': ObjectId('691d946eac3869e1086b1291')
    }
  }
mycompiler_mongodb>
mycompiler_mongodb> {
  acknowledged: true,
  insertedId: null,
  matchedCount: 6,
  modifiedCount: 6,
  upsertedCount: 0
}
mycompiler_mongodb>

[Execution complete with exit code 0]
```

19. Set the CGPA of all students to 0.1

```
db.students.updateMany({}, {$set : {'CGPA': 0.1}})
```

MongoDB ▾ ⓘ   ▶ Run   💾 Save

1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4 ,
5 {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8 ,
9 {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14])
15
16 db.students.updateMany({}, {$set : {'CGPA': 0.1}})
17 db.students.find({})
18

Output
     City: 'Karachi',
     Province: 'Sindh',
     Country: 'Pakistan'
   },
   Phone: '9221-7733790',
   Courses: [
     { course_id: 'CH111', course_name: 'PMAS', credits: 3 },
     { course_id: 'CS355', course_name: 'DB', credits: 4 }
   ]
  },
  {
   _id: ObjectId('691d94a6ad4dacb97a6b128e'),
   FirstName: 'Abid',
   LastName: 'Kasim',
   CGPA: 0.1,
   Major: 'SDP',
   Address: {
     Street: 'ST-2, North Nazimabad,',
     City: 'Karachi',
     Province: 'Sindh',
     Country: 'Pakistan'

20. Introduce a new attribute Minor for the students with the value CH

```
db.students.updateMany({}, {$set : {'Minor': "CH"}})
```

MongoDB ▾ ⓘ   ▶ Run   💾 Save

1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4 ,
5 {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8 ,
9 {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14])
15
16 db.students.updateMany({}, {$set : {'Minor': "CH"}})
17 db.students.find({})
18

Output
     Province: 'Punjab',
     Country: 'Pakistan'
   },
   Phone: '3233389064',
   Courses: [
     { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
     { course_id: 'CS121', course_name: 'OOP', credits: 4 }
   ],
   Minor: 'CH'
  },
  {
   _id: ObjectId('691d960973b8c675496b128d'),
   FirstName: 'Karim',
   LastName: 'Khan',
   CGPA: 3.2,
   Major: 'EE',
   Address: {
     Street: ' Off Nishter Road',
     City: 'Karachi',
     Province: 'Sindh',
     Country: 'Pakistan'

21. Add a new course all students with the following information (refer to manual)

```
db.students.updateMany({}, {$push : {'Courses': {'course_id' : 'CH101', 'course_name'
: 'Liberal Core', 'credits': 1}}})
```

```
1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa
4 ,
5 {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8 ,
9 {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.updateMany({}, {$push : {'Courses': {'course_id' : 'CH101', 'course_name' : 'Liberal Core', 'credit
17 db.students.find({})
18
```

Output
```
    courses: [
        { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
        { course_id: 'CH101', course_name: 'Liberal Core', credits: 1 }
    ]
},
{
    _id: ObjectId('691d9b323fbf039f1b6b1291'),
    FirstName: 'Fahim',
    LastName: 'Alam',
    CGPA: 3.7,
    Address: {
        Street: 'Wilbert Squares',
        City: 'Hunza',
        Province: 'Gilgit-Baltistan',
        Country: 'Pakistan'
    },
    Phone: '359-99997',
    Courses: [ { course_id: 'CH101', course_name: 'Liberal Core', credits: 1 }
}
]
mycompiler_mongodb>
```

22. Delete all the students with CGPA less than 3.0

db.students.deleteMany({'CGPA' : {$lt: 3.0}})

```
1
2 db.students.insertMany([
3 {'FirstName':'Hina', 'LastName':'Baig','CGPA':3.5,'Major':'CS','Address':{'Street':'Puran Nagar','City': 'Faisa.
4 ,
5 {'FirstName':'Karim', 'LastName':'Khan','CGPA':3.2,'Major':'EE','Address':{'Street':' Off Nishter Road','City':
6 ,
7 {'FirstName':'Abid', 'LastName':'Kasim','CGPA':2.9,'Major':'SDP','Address':{'Street':'ST-2, North Nazimabad,','
8 ,
9 {'FirstName':'Zainab', 'LastName':'Karim','CGPA':3.1,'Major':'CS','Address':{'Street':'3-Khalid Centre, Wahdat
10 ,
11 {'FirstName':'Kumar', 'LastName':'Rani','CGPA':2.8,'Major':'EE','Address':{'Street':'Malik Park Islam','City':
12 ,
13 {'FirstName':'Fahim', 'LastName':'Alam','CGPA':3.7,'Address':{'Street':'Wilbert Squares','City': 'Hunza','Provi
14 ])
15
16 db.students.deleteMany({'CGPA' : {$lt: 3.0}})
17 db.students.find({})
```

Output
```
mycompiler_mongodb>
mycompiler_mongodb> ... ... ... ... ... ... ... ... ... ... ... {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('691d9c1e73e5ba4d886b128c'),
    '1': ObjectId('691d9c1e73e5ba4d886b128d'),
    '2': ObjectId('691d9c1e73e5ba4d886b128e'),
    '3': ObjectId('691d9c1e73e5ba4d886b128f'),
    '4': ObjectId('691d9c1e73e5ba4d886b1290'),
    '5': ObjectId('691d9c1e73e5ba4d886b1291')
  }
}
mycompiler_mongodb>
mycompiler_mongodb> { acknowledged: true, deletedCount: 2 }
mycompiler_mongodb> [
  {
    _id: ObjectId('691d9c1e73e5ba4d886b128c'),
    FirstName: 'Hina',
    LastName: 'Baig',
```