

## Lab 11 – NoSQL using MongoDB

Student Name: Enter your name

Student ID: Enter your Student ID

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({})
```

```
>>> db.students.find({})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c3"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 3.5,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c4"),
    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 }
    ]
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c5"),
    FirstName: 'Abid',
    LastName: 'Kasim',
    CGPA: 2.9,
    Major: 'SDP',
    Address: {
      Street: 'ST-2, North Nazimabad,',
      City: 'Karachi',
      Province: 'Sindh',
      Country: 'Pakistan'
    },
    Phone: '9221- 66784421'
  }
]
```

```

    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("6360c084adf305a544fbd9c6"),
  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 }
  ]
},
{
  _id: ObjectId("6360c084adf305a544fbd9c7"),
  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 } ]
},
{
  _id: ObjectId("6360c084adf305a544fbd9c8"),
  FirstName: 'Fahim',
  LastName: 'Alam',
  CGPA: 3.7,

```

2. Display all the students with CS major.

```
db.students.find({"Major": "CS"})
```

```
>>> db.students.find({"Major": "CS"})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c3"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 3.5,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c6"),
    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 }
    ]
  }
]
```

3. Display all the students with SDP major.

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

```
>>> db.students.find({"Major":"SDP"})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c5"),
    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 }
    ]
  }
]
```

4. Display all the students from Karachi City.

```
db.students.find("Address.City":"Karachi")
```

```
[
{
  _id: ObjectId("6360c084adf305a544fbd9c4"),
  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 }
  ]
},
{
  _id: ObjectId("6360c084adf305a544fbd9c5"),
  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("6360c084adf305a544fbd9c6"),
  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 },

```

5. Display all the students not from Karachi City.

```
db.students.find({'Address.City': {'$not': {'$eq': 'Karachi'}}})
```

```
>>> db.students.find({"Address.City": {$not: {$eq: "Karachi"}}})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c3"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 3.5,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c7"),
    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 } ]
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c8"),
    FirstName: 'Fahim',
    LastName: 'Alam',
    CGPA: 3.7,
    Address: {
      Street: 'Wilbert Squares',
      City: 'Hunza',
      Province: 'Gilgit-Baltistan',
      Country: 'Pakistan'
    },
    Phone: '359- 99997'
  }
]
```

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



```
db.students.find({"CGPA": {$gt : 3}})
```

```
>>> db.students.find({"CGPA": {$gt: 3}})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c3"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 3.5,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c4"),
    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 }
    ]
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c6"),
    FirstName: 'Zainab',
    LastName: 'Karim',
    CGPA: 3.1,
    Major: 'CS',
```

7. Display all the students having CGPA equal to 3.5

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

```
>>> db.students.find({"CGPA": {$eq: 3.5}})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c3"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 3.5,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  }
]
```

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

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

```
>>> db.students.find({$and: [{"Address.City": "Karachi"}, {Major: "CS"}]})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c6"),
    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 }
    ]
  }
]
test>
```

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

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

```

>>> db.students.find({$or: [{Major: "SDP"}, {Major: "EE"}]})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c4"),
    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 }
    ]
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c5"),
    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("6360c084adf305a544fbd9c7"),
    FirstName: 'Kumar',
    LastName: 'Rani',
    CGPA: 2.8,
    Major: 'EE',
    Address: {
      Street: 'Malik Park Islam',
      City: 'Lahore',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
  },
]

```

10. Display only the first and last name of all students

Result: FirstName, LastName

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

```
>>> db.students.find({}, {"FirstName":1, "LastName":1})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c3"),
    FirstName: 'Hina',
    LastName: 'Baig'
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c4"),
    FirstName: 'Karim',
    LastName: 'Khan'
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c5"),
    FirstName: 'Abid',
    LastName: 'Kasim'
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c6"),
    FirstName: 'Zainab',
    LastName: 'Karim'
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c7"),
    FirstName: 'Kumar',
    LastName: 'Rani'
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c8"),
    FirstName: 'Fahim',
    LastName: 'Alam'
  }
]
test>
```

11. Display only the first name, last name, and city for all students.

Result: FirstName, LastName, City

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

```
>>> db.students.find({}, {"FirstName":1, "LastName":1, "Address.City":1})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c3"),
    FirstName: 'Hina',
    LastName: 'Baig',
    Address: { City: 'Faisalabad' }
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c4"),
    FirstName: 'Karim',
    LastName: 'Khan',
    Address: { City: 'Karachi' }
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c5"),
    FirstName: 'Abid',
    LastName: 'Kasim',
    Address: { City: 'Karachi' }
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c6"),
    FirstName: 'Zainab',
    LastName: 'Karim',
    Address: { City: 'Karachi' }
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c7"),
    FirstName: 'Kumar',
    LastName: 'Rani',
    Address: { City: 'Lahore' }
  },
  {
    _id: ObjectId("6360c084adf305a544fbd9c8"),
    FirstName: 'Fahim',
    LastName: 'Alam',
    Address: { City: 'Hunza' }
  }
]
```

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}}, {"FirstName":1, "LastName":1, _id: 0})
```

```
>>> db.students.find({"CGPA" : {$gte: 3.5}}, {"FirstName":1, "LastName":1, _id: 0})
[
  { FirstName: 'Hina', LastName: 'Baig' },
  { FirstName: 'Fahim', LastName: 'Alam' }
]
test>
```

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

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

```
{  
  _id: ObjectId("6360cd20adf305a544fbd9ca"),  
  FirstName: 'Fatima',  
  LastName: 'Tariq',  
  Phone: '03124567891',  
  Address: { Street: 'Zainab Street Saddar', City: 'Karachi' }  
}
```

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

```
db.students.find({"Major": {$exists:false}})
```

```
>>> db.students.find({"Major": {$exists:false}})
[
  {
    _id: ObjectId("6360c084adf305a544fbd9c8"),
    FirstName: 'Fahim',
    LastName: 'Alam',
    CGPA: 3.7,
    Address: {
      Street: 'Wilbert Squares',
      City: 'Hunza',
      Province: 'Gilgit-Baltistan',
      Country: 'Pakistan'
    },
    Phone: '359- 99997'
  },
  {
    _id: ObjectId("6360cd0fadf305a544fbd9c9"),
    FirstName: 'Fatima',
    LastName: 'Tariq',
    Phone: '03124567891',
    Address: { Street: 'Zainab Street Saddar', City: 'Karachi' }
  },
  {
    _id: ObjectId("6360cd20adf305a544fbd9ca"),
    FirstName: 'Fatima',
    LastName: 'Tariq',
    Phone: '03124567891',
    Address: { Street: 'Zainab Street Saddar', City: 'Karachi' }
  }
]
```

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"}])
```



```
{
  _id: ObjectId("6360ce44adf305a544fbd9cb"),
  FirstName: 'Zahid',
  LastName: 'Hakim',
  Major: 'CS'
},
{
  _id: ObjectId("6360ce44adf305a544fbd9cc"),
  FirstName: 'Ayesha',
  LastName: 'Asif'
},
{
  _id: ObjectId("6360ce44adf305a544fbd9cd"),
  FirstName: 'Faheem',
  LastName: 'Faiz',
  Phone: '0213456789'
}
]
test>
```

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

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

```
>>> db.students.find({"Courses.course_id": "CS355"})
[
  {
    _id: ObjectId("6360cef3a7e138622c4410d2"),
    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 }
    ]
  },
  {
    _id: ObjectId("6360cef3a7e138622c4410d4"),
    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 }
    ]
  }
]
```

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

```
db.students.find({"Courses.course_id": {$not : {$eq : "CS355"}}})
```

```
>>> db.students.find({"Courses.course_Id": {$not : {$eq : "CS355"}}})
[
  {
    _id: ObjectId("6360cef3a7e138622c4410d1"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 3.5,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  },
  {
    _id: ObjectId("6360cef3a7e138622c4410d2"),
    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 }
    ]
  },
  {
    _id: ObjectId("6360cef3a7e138622c4410d3"),
    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: [
```

18. Increment the CGPA of all students by 0.1.

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

```
test>
>>> db.students.find()
[
  {
    _id: ObjectId("6360cef3a7e138622c4410d1"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 3.6,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  },
  {
    _id: ObjectId("6360cef3a7e138622c4410d2"),
    FirstName: 'Kamran',
    LastName: 'Khan',
    CGPA: 3.6,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  }
]
```

19. Set the CGPA of all students to 0.1

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

```

>>> db.students.updateMany({}, {$set : {"CGPA":0.1}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 10,
  modifiedCount: 6,
  upsertedCount: 0
}
test>
>>> db.students.find()
[
  {
    _id: ObjectId("6360cef3a7e138622c4410d1"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 0.1,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'cour se_id': 'CS121', course_name: 'OOP', credits: 4 }
    ]
  },
  {
    _id: ObjectId("6360cef3a7e138622c4410d2"),
    FirstName: 'Karim',
    LastName: 'Khan',
    CGPA: 0.1,
    Major: 'EE',
    Address: {
      Street: ' Off Nishter Road',
      City: 'Karachi',
      Province: 'Sindh',

```

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

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

```

>>> db.students.updateMany({}, {$set : {"Minor": "CH"}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 10,
  modifiedCount: 10,
  upsertedCount: 0
}
test>
>>> db.students.find()
[
  {
    _id: ObjectId("6360cef3a7e138622c4410d1"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 0.1,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      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("6360cef3a7e138622c4410d2"),
    FirstName: 'Karim',
    LastName: 'Khan',
    CGPA: 0.1,
    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 }
    ],
    Minor: 'CH'
  },
  {

```

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}}})

```

```

>>> db.students.updateMany({}, {$push: {"Courses": {"course_id": "CH101", "course_name": "Liberal Core", "credits": 1}}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 10,
  modifiedCount: 10,
  upsertedCount: 0
}
test>
>>> db.students.find()
[
  {
    _id: ObjectId("6360cef3a7e138622c4410d1"),
    FirstName: 'Hina',
    LastName: 'Baig',
    CGPA: 0.1,
    Major: 'CS',
    Address: {
      Street: 'Puran Nagar',
      City: 'Faisalabad',
      Province: 'Punjab',
      Country: 'Pakistan'
    },
    Phone: '3233389064 ',
    Courses: [
      { course_id: 'CS101', course_name: 'Pfun', credits: 4 },
      { 'course_id': 'CS121', course_name: 'OOP', credits: 4 },
      { course_id: 'CH101', course_name: 'Liberal Core', credits: 1 }
    ],
    Minor: 'CH'
  },
  {
    _id: ObjectId("6360cef3a7e138622c4410d2"),
    FirstName: 'Karim',
    LastName: 'Khan',
    CGPA: 0.1,
    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 },
      { course_id: 'CH101', course_name: 'Liberal Core', credits: 1 }
    ],
    Minor: 'CH'
  },
]

```

## 22. Delete all the students with CGPA less than 3.0

```

db.students.deleteMany({"CGPA" : {$lt : 3.0}})
test>
>>> db.students.deleteMany({"CGPA" : {$lt : 3.0}})
{ acknowledged: true, deletedCount: 10 }
test>
>>> db.students.find()
test>

```