Document store NoSQL: MongoDB

Convert the following RDBMS table into MongoDB collection for Student details and answer the given questions.

Collection Name: Student_Details

S_Name	Admission_No	Course_Code	Course_Name	Start_Date	Course_Fees	Duration_Months	Hostel
Sanjay Kumar	14589	O9876	Oracle	12-Mar-17	13800	12	Y
Gowri Shankar	15896	Js3698	Javascript	23-Jan-18	7950	10	N
Divya Prabha	14836	C2569	Null	Null	Null	Null	Null
Gokul Krishna	15865	L876	Linux	13-Aug-17	12500	10	Y
Shree Nandhini	15487	C2569	C#	30-Sep-16	9600	8	N
Umesh Yadav	15489	Dn598	Dotnet	17-Apr-18	6800	6	Y
Sanjay Kumar	14589	C2569	C#	12-Mar-17	9600	12	Y

Creating Schema and inserting data into Database:

```
C:\Windows\System32\cmd.exe - mongo.exe
> use student
switched to db student
> db.Student_Details.insert([
...     {
...       S_Name: "Sanjay Kumar",
...       Admission_No: 14589,
...       Course_Code: "O9876",
...       Course_Name: "Oracle",
...       Start_Date:new Date("12-FEB-17"),
...       Course_Fees:13800,
...       Duration_Months:12,
...       Hostel:"Y"
...     },
... {
...       S_Name: "Gowri Shankar",
...       Admission_No: 15896,
...       Course_Code: "Js3698",
...       Course_Name: "javascript",
...       Start_Date:new Date("23-Jan-18"),
...       Course_Fees: 7950,
...       Duration_Months:10,
...       Hostel: "N"
...     },
... {
...       S_Name: "Divya Prabha",
...       Admission_No: 14836,
...       Course_Code: "C2569",
...     },
... {
...       S_Name: "Gokul Krishna",
...       Admission_No: 15865,
...       Course_Code: "L876",
...       Course_Name: "Linux",
...       Start_Date:new Date("13-Aug-17"),
...       Course_Fees: 12500,
...       Duration_Months: 10,
...       Hostel:"Y"
...     },
```

```
C:\. C:\Windows\System32\cmd.exe - mongo.exe
...        Hostel:"Y"
...      },
... {
...        S_Name: "Shree Nandhini",
...        Admission_No: 15487,
...        Course_Code: "C2569",
...        Course_Name: "C#",
...        Start_Date:new Date("30-Sep-16"),
...        Course_Fees: 9600,
...        Duration_Months: 8,
...        Hostel:"N"
...      },
... {
...        S_Name: "Umesh Yadav",
...        Admission_No: 15489,
...        Course_Code: "Dn598",
...        Course_Name: "Dotnet",
...        Start_Date:new Date("17-Apr-18"),
...        Course_Fees: 6800,
...        Duration_Months:6,
...        Hostel:"Y"
...      },
...      {
...        S_Name: "Sanjay Kumar",
...        Admission_No: 14589,
...        Course_Code: "C2569",
...        Course_Name: "C#",
...        Start_Date:new Date("12-Mar-17"),
...        Course_Fees: 9600,
...        Duration_Months:12,
...        Hostel:"Y"
...      }
... ])
BulkWriteResult({
        "writeErrors" : [ ],
        "writeConcernErrors" : [ ],
        "nInserted" : 7,
        "nUpserted" : 0,
        "nMatched" : 0,
        "nModified" : 0,
        "nRemoved" : 0,
        "upserted" : [ ]
})
>
```

Write the **MongoDB queries** for the following

      i.   Display the Course Name for which the course duration is more than 10 months.

```
>
> db.Student_Details.find({Duration_Months: {$gt: 10 }},{Course_Name:1})
{ "_id" : ObjectId("602771935270e365f1db17b3"), "Course_Name" : "Oracle" }
{ "_id" : ObjectId("602771935270e365f1db17b9"), "Course_Name" : "C#" }
>
```

ii.   Display the details of students who opted for Course Oracle and C#.

```
> use student
switched to db student
> db.Student_Details.find({$or:[{"Course_Name":"Oracle"},{"Course_Name":"C#"}]})
{ "_id" : ObjectId("602771935270e365f1db17b3"), "S_Name" : "Sanjay Kumar", "Admission_No" : 14589, "Course_Code" : "O987
6", "Course_Name" : "Oracle", "Start_Date" : ISODate("1970-01-01T00:00:00Z"), "Course_Fees" : 13800, "Duration_Months" :
 12, "Hostel" : "Y" }
{ "_id" : ObjectId("602771935270e365f1db17b7"), "S_Name" : "Shree Nandhini", "Admission_No" : 15487, "Course_Code" : "C2
569", "Course_Name" : "C#", "Start_Date" : ISODate("1970-01-01T00:00:00Z"), "Course_Fees" : 9600, "Duration_Months" : 8,
 "Hostel" : "N" }
{ "_id" : ObjectId("602771935270e365f1db17b9"), "S_Name" : "Sanjay Kumar", "Admission_No" : 14589, "Course_Code" : "C256
9", "Course_Name" : "C#", "Start_Date" : ISODate("1970-01-01T00:00:00Z"), "Course_Fees" : 9600, "Duration_Months" : 12,
"Hostel" : "Y" }
>
```

iii.   Display the Name and Admission number in a single column.

```
> db.Student_Details.aggregate([{ $project: { Name_Admission: { $concat: [ "$S_Name",{$toString: "$Admission_No"}]}}}])
{ "_id" : ObjectId("602771935270e365f1db17b3"), "Name_Admission" : "Sanjay Kumar14589" }
{ "_id" : ObjectId("602771935270e365f1db17b4"), "Name_Admission" : "Gowri Shankar15896" }
{ "_id" : ObjectId("602771935270e365f1db17b5"), "Name_Admission" : "Divya Prabha14836" }
{ "_id" : ObjectId("602771935270e365f1db17b6"), "Name_Admission" : "Gokul Krishna15865" }
{ "_id" : ObjectId("602771935270e365f1db17b7"), "Name_Admission" : "Shree Nandhini15487" }
{ "_id" : ObjectId("602771935270e365f1db17b8"), "Name_Admission" : "Umesh Yadav15489" }
{ "_id" : ObjectId("602771935270e365f1db17b9"), "Name_Admission" : "Sanjay Kumar14589" }
>
```

iv.   Display the Name of the student who have chosen C# after December 2016

```
}
> db.Student_Details.find({$and:[{"Start_Date":{$gt:new Date("2016-12-31")}},{"Course_Name":"C#"}]},{"S_Name":1})
{ "_id" : ObjectId("602771935270e365f1db17b9"), "S_Name" : "Sanjay Kumar" }
>
```

v.   Display the Course Name in which the duration is greater than 10 months and amount is less than 13000.

```
>
> db.Student_Details.find({$and:[{"Duration_Months":{$gt:10}},{"Course_Fees":{$lt:13000}}]},{"Course_Name":1})
{ "_id" : ObjectId("602771935270e365f1db17b9"), "Course_Name" : "C#" }
>
```

vi.   Display the student details who has opted hostel facility.

```
> db.Student_Details.find({"Hostel":"Y"})
{ "_id" : ObjectId("602771935270e365f1db17b3"), "S_Name" : "Sanjay Kumar", "Admission_No" : 14589, "Course_Code" : "O987
6", "Course_Name" : "Oracle", "Start_Date" : ISODate("1970-01-01T00:00:00Z"), "Course_Fees" : 13800, "Duration_Months" :
 12, "Hostel" : "Y" }
{ "_id" : ObjectId("602771935270e365f1db17b6"), "S_Name" : "Gokul Krishna", "Admission_No" : 15865, "Course_Code" : "L87
6", "Course_Name" : "Linux", "Start_Date" : ISODate("1970-01-01T00:00:00Z"), "Course_Fees" : 12500, "Duration_Months" :
10, "Hostel" : "Y" }
{ "_id" : ObjectId("602771935270e365f1db17b8"), "S_Name" : "Umesh Yadav", "Admission_No" : 15489, "Course_Code" : "Dn598
", "Course_Name" : "Dotnet", "Start_Date" : ISODate("1970-01-01T00:00:00Z"), "Course_Fees" : 6800, "Duration_Months" : 6
, "Hostel" : "Y" }
{ "_id" : ObjectId("602771935270e365f1db17b9"), "S_Name" : "Sanjay Kumar", "Admission_No" : 14589, "Course_Code" : "C256
9", "Course_Name" : "C#", "Start_Date" : ISODate("1970-01-01T00:00:00Z"), "Course_Fees" : 9600, "Duration_Months" : 12,
"Hostel" : "Y" }
>
```

vii.   Display the Course code, Course name, Student Name and Admission Number for hostellers.

```
>
> db.Student_Details.find({"Hostel":"Y"},{"Course_Code":1,"Course_Name":1,"S_Name":1,"Admission_No":1})
{ "_id" : ObjectId("602771935270e365f1db17b3"), "S_Name" : "Sanjay Kumar", "Admission_No" : 14589, "Course_Code" : "O987
6", "Course_Name" : "Oracle" }
{ "_id" : ObjectId("602771935270e365f1db17b6"), "S_Name" : "Gokul Krishna", "Admission_No" : 15865, "Course_Code" : "L87
6", "Course_Name" : "Linux" }
{ "_id" : ObjectId("602771935270e365f1db17b8"), "S_Name" : "Umesh Yadav", "Admission_No" : 15489, "Course_Code" : "Dn598
", "Course_Name" : "Dotnet" }
{ "_id" : ObjectId("602771935270e365f1db17b9"), "S_Name" : "Sanjay Kumar", "Admission_No" : 14589, "Course_Code" : "C256
9", "Course_Name" : "C#" }
>
```

viii.   Update the details of student Divya Prabha with the following values

Course_name=C#, Strt_date='6th April 2000', course_fees=8750, duration_months=9, hostel=Y.

```
>
> db.Student_Details.findOneAndUpdate({S_Name:"Divya Prabha"},{$set:{Course_name:"C#",Start_Date: new Date("2000-4-06"),
Course_Fees: 8750,Duration_Months:9,Hostel: "Y"}})
{
        "_id" : ObjectId("602771935270e365f1db17b5"),
        "S_Name" : "Divya Prabha",
        "Admission_No" : 14836,
        "Course_Code" : "C2569"
}
>
```

ix.   Decrement the course fee 10% for the courses have duration less than 10 monts

```
> db.Student_Details.aggregate([{$group : {Course_Fees : {$subtract : [{"$Course_Fees"},{$multiply: ["$Course_Fees",0.01
]}]}}}])
...
...
>
> db.Student_Details.aggregate([{$group : {Course_Fees : {$subtract : [{$Course_Fees"},{$multiply: ["$Course_Fees",0.01]
}}}])
uncaught exception: SyntaxError: missing : after property id :
@(shell):1:82
>
```

x.   Find the average course fee of all the courses.

```
>
> db.Student_Details.aggregate([{$group : {_id : null, fee_avg : {$avg : "$Course_Fees"}}}])
{ "_id" : null, "fee_avg" : 9857.142857142857 }
>
```