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Subject: DBSL – Assignment B02 – Aggregation and Indexing

Code:

```
db.students.aggregate([
    {$group : {_id : "$marks", total_students: {$sum : 1}}}
])

db.students.aggregate([
    {
        $group: {
            _id:'$name',
            total:{$sum:1}
        }
    }
]).pretty()

db.students.aggregate([
    {
        $group: {
            _id:'$subject',
            total:{$sum:1}
        }
    }
]).pretty()

db.students.aggregate([
    {
        $group: {
            _id:'$name',
            total:{$sum:1}
        }
    },
    {
        $out: 'number_of_subs'
    }
]).pretty()

db.number_of_subs.find({}).pretty()

db.students.aggregate([
```

```
    {
        $match:{name:'Tony'}
    },
    {
        $project:{_id:0, name:1, subject:1, marks:1}
    },
    {
        $sort: {marks:-1}
    }
])

db.students.aggregate([
    {
        $group: {
            _id:'$name',
            avg_marks: {
                $avg : '$marks'
            }
        }
    }
]).pretty()

db.students.aggregate([
    {
        $group: {
            _id:'$subject',
            avg_marks: {
                $avg : '$marks'
            }
        }
    }
]).pretty()

db.students.createIndex(
    {name:1, subject:1}
);

db.students.getIndexes();

db.students.find({}, {_id:0})
```

Output:

```
> db.students.aggregate([
...     {
...         $match:{name:'Tony'}
...     },
...     {
...         $project:{_id:0, name:1, subject:1, marks:1}
...     },
...     {
...         $sort: {marks:-1}
...     }
... ])
{ "name" : "Tony", "subject" : "DBMS", "marks" : 98 }
{ "name" : "Tony", "subject" : "CN", "marks" : 96 }
{ "name" : "Tony", "subject" : "DSA", "marks" : 95 }
{ "name" : "Tony", "subject" : "OS", "marks" : 78 }
{ "name" : "Tony", "subject" : "OOPS", "marks" : 77 }
```

```
> db.students.aggregate([
...     {
...         $group: {
...             _id:'$name',
...             total:{$sum:1}
...         }
...     }
... ]).pretty()
{ "_id" : "Bruce", "total" : 5 }
{ "_id" : "Loki", "total" : 5 }
{ "_id" : "Vision", "total" : 5 }
{ "_id" : "Thanos", "total" : 5 }
{ "_id" : "Peter", "total" : 5 }
{ "_id" : "Wanda", "total" : 5 }
{ "_id" : "Bucky", "total" : 5 }
{ "_id" : "Natasha", "total" : 5 }
{ "_id" : "Shuri", "total" : 5 }
{ "_id" : "Stephen", "total" : 5 }
{ "_id" : "Thor", "total" : 5 }
{ "_id" : "Tony", "total" : 5 }
{ "_id" : "TChalla", "total" : 5 }
{ "_id" : "Scott", "total" : 5 }
{ "_id" : "Clint", "total" : 5 }
{ "_id" : "Steve", "total" : 5 }
```

```
> db.students.aggregate([
...     {
...         $group: {
...             _id:'$subject',
...             total:{$sum:1}
...         }
...     }
... ]).pretty()
{ "_id" : "DSA", "total" : 16 }
{ "_id" : "OOPS", "total" : 16 }
{ "_id" : "DBMS", "total" : 16 }
{ "_id" : "OS", "total" : 16 }
{ "_id" : "CN", "total" : 16 }
>
```

```
> db.students.aggregate([
...     {
...         $group: {
...             _id:'$name',
...             avg_marks: {
...                 $avg : '$marks'
...             }
...         }
...     }
... ]).pretty()
{ "_id" : "Bruce", "avg_marks" : 90 }
{ "_id" : "Loki", "avg_marks" : 87.4 }
{ "_id" : "Vision", "avg_marks" : 81.8 }
{ "_id" : "Thanos", "avg_marks" : 77 }
{ "_id" : "Peter", "avg_marks" : 86.8 }
{ "_id" : "Bucky", "avg_marks" : 88 }
{ "_id" : "Wanda", "avg_marks" : 80.2 }
{ "_id" : "Natasha", "avg_marks" : 82.4 }
{ "_id" : "Shuri", "avg_marks" : 85.8 }
{ "_id" : "Stephen", "avg_marks" : 84.8 }
{ "_id" : "Tony", "avg_marks" : 88.8 }
{ "_id" : "Thor", "avg_marks" : 78.6 }
{ "_id" : "TChalla", "avg_marks" : 85.8 }
{ "_id" : "Scott", "avg_marks" : 86.8 }
{ "_id" : "Steve", "avg_marks" : 81 }
{ "_id" : "Clint", "avg_marks" : 82.4 }
```

```
> db.students.aggregate([
...     {
...         $group: {
...             _id:'$subject',
...             avg_marks: {
...                 $avg : '$marks'
...             }
...         }
...     }
... ]).pretty()
{ "_id" : "CN", "avg_marks" : 86.5 }
{ "_id" : "OS", "avg_marks" : 82.75 }
{ "_id" : "OOPS", "avg_marks" : 83 }
{ "_id" : "DBMS", "avg_marks" : 87 }
{ "_id" : "DSA", "avg_marks" : 81.875 }
```

```
> db.students.aggregate([
...     {
...         $group: {
...             _id:'$name',
...             total:{$sum:1}
...         }
...     },
...     {
...         $out: 'number_of_subs'
...     }
... ]).pretty()
> db.number_of_subs.find({}).pretty()
{ "_id" : "Bruce", "total" : 5 }
{ "_id" : "Loki", "total" : 5 }
{ "_id" : "Vision", "total" : 5 }
{ "_id" : "Thanos", "total" : 5 }
{ "_id" : "Peter", "total" : 5 }
{ "_id" : "Wanda", "total" : 5 }
{ "_id" : "Bucky", "total" : 5 }
{ "_id" : "Natasha", "total" : 5 }
{ "_id" : "Shuri", "total" : 5 }
{ "_id" : "Stephen", "total" : 5 }
{ "_id" : "Thor", "total" : 5 }
{ "_id" : "Tony", "total" : 5 }
{ "_id" : "TChalla", "total" : 5 }
{ "_id" : "Scott", "total" : 5 }
{ "_id" : "Clint", "total" : 5 }
{ "_id" : "Steve", "total" : 5 }
```

```
> db.students.createIndex(
...     {name:1, subject:1}
... );
{
        "createdCollectionAutomatically" : false,
        "numIndexesBefore" : 1,
        "numIndexesAfter" : 2,
        "ok" : 1
}
> db.students.getIndex();
uncaught exception: TypeError: db.students.getIndex is not a function :
@(shell):1:1
> db.students.getIndexes();
[
        {
                "v" : 2,
                "key" : {
                        "_id" : 1
                },
                "name" : "_id_"
        },
        {
                "v" : 2,
                "key" : {
                        "name" : 1,
                        "subject" : 1
                },
                "name" : "name_1_subject_1"
        }
]
```