_id	name	hobbies
1	Akshay kumar	music,travel,painting
1	Salman khan	music,sports
3	John abraham	boosreading,sports

use school1

```
switched to db school1
```

db.createCollection("student1")

```
{ ok: 1 }
```

db.student1.find()

```
{ _id: 1, name: 'Akshay kumar', hobbies: 'music,travel,painting' },
{ _id: 2, name: 'Salman khan', hobbies: 'music,sports' },
{ _id: 3, name: 'John abraham', hobbies: 'boosreading,sports' }
```

$arrayElemAt

db.student1.aggregate([{$project:{name:1,SelectedHobby:{$arrayElemAt:["$Hobbies",1]}}}])

```
{ _id: 1, name: 'Akshay kumar', SelectedHobby: null },
{ _id: 2, name: 'Salman khan', SelectedHobby: null },
{ _id: 3, name: 'John abraham', SelectedHobby: null }
```

db.student1.aggregate([{$project:{name:1,SelectedHobby:{$arrayElemAt:["$Hobbies",2]}}}])

```
{ _id: 1, name: 'Akshay kumar', SelectedHobby: null },
{ _id: 2, name: 'Salman khan', SelectedHobby: null },
{ _id: 3, name: 'John abraham', SelectedHobby: null }
```

db.createCollection("student2")

```
{ ok: 1 }
```

db.student2.find()

```
{ _id: 1, name: 'AK', marks: [ 55, 62, 52, 81 ] },
{ _id: 2, name: 'SK', marks: [ 68, 88, 54, 51 ] }
```

db.student2.aggregate([{$project:{name:1,topMarks:{$maxN:{input:"$marks",n:1}}}}])

```
{ _id: 1, name: 'AK', topMarks: [ 81 ] },
{ _id: 2, name: 'SK', topMarks: [ 88 ] }
```

db.student2.aggregate([{$project:{name:1,topMarks:{$maxN:{input:"$marks",n:2}}}}])

```
{ _id: 1, name: 'AK', topMarks: [ 81, 62 ] },
{ _id: 2, name: 'SK', topMarks: [ 88, 68 ] }
```

db.student2.aggregate([{$project:{name:1,lowestMarks:{$minN:{input:"$marks",n:1}}}}])

```
{ _id: 1, name: 'AK', lowestMarks: [ 52 ] },
{ _id: 2, name: 'SK', lowestMarks: [ 51 ] }
```

db.student2.aggregate([{$project:{name:1,lowestMarks:{$minN:{input:"$marks",n:2}}}}])

```
{ _id: 1, name: 'AK', lowestMarks: [ 52, 55 ] },
{ _id: 2, name: 'SK', lowestMarks: [ 51, 54 ] }
```

$slice

db.student2.aggregate([{$project:{name:1,selectedHobbies:{$slice:["$Hobbies",1]}}}])

```
{ _id: 1, name: 'AK', selectedHobbies: null },
{ _id: 2, name: 'SK', selectedHobbies: null }
```

db.student2.aggregate([{$project:{name:1,selectedHobbies:{$slice:["$Hobbies",2]}}}])

```
{ _id: 1, name: 'AK', selectedHobbies: null },
{ _id: 2, name: 'SK', selectedHobbies: null }
```

db.student2.aggregate([{$project:{name:1,selectedHobbies:{$slice:["$Hobbies",1,2]}}}])

```
{ _id: 1, name: 'AK', selectedHobbies: null },
{ _id: 2, name: 'SK', selectedHobbies: null }
```

db.student2.aggregate([{$project:{name:1,selectedHobbies:{$slice:["$Hobbies",-2]}}}])

```
{ _id: 1, name: 'AK', selectedHobbies: null },
{ _id: 2, name: 'SK', selectedHobbies: null }
```

$sortArray

db.student2.aggregate([{$project:{name:1,sortedHobbies:{$sortArray:{input:"$Hobbies",sortBy:1}}}}
])

```
{ _id: 1, name: 'AK', sortedHobbies: null },
{ _id: 2, name: 'SK', sortedHobbies: null }
```

db.student2.aggregate([{$project:{name:1,sortedMarks:{$sortArray:{input:"$marks",sortBy:1}}}}])

```
{ _id: 1, name: 'AK', sortedMarks: [ 52, 55, 62, 81 ] },
{ _id: 2, name: 'SK', sortedMarks: [ 51, 54, 68, 88 ] }
```

$reverseArray

db.student2.aggregate([{$project:{name:1,reverseHobbies:{$reverseArray:"$hobbies"}}}])

```
{ _id: 1, name: 'AK', reverseHobbies: null },
{ _id: 2, name: 'SK', reverseHobbies: null }
```

$indexOfArray

db.student2.aggregate([{$project:{name:1,index:{$indexOfArray:["$hobbies","football"]}}}])

```
{ _id: 1, name: 'AK', index: null },
{ _id: 2, name: 'SK', index: null }
```

db.student2.aggregate([{$project:{name:1,index:{$indexOfArray:["$hobbies","football",1,3]}}}])

```
{ _id: 1, name: 'AK', index: null },
{ _id: 2, name: 'SK', index: null }
```

db.student2.aggregate([{$project:{name:1,index:{$indexOfArray:["$hobbies","football",1,4]}}}])

```
{ _id: 1, name: 'AK', index: null },
{ _id: 2, name: 'SK', index: null }
```

$isArray

db.student2.aggregate([{$project:{isArray:{$isArray:"$hobbies"}}}])

```
[ { _id: 1, isArray: false }, { _id: 2, isArray: false } ]
```

db.student2.aggregate([{$project:{isArray:{$isArray:"$name"}}}])

```
[ { _id: 1, isArray: false }, { _id: 2, isArray: false } ]
```

$map: it is used as loop

db.student2.aggregate([{$project:{newmarks:{$map:{input:"$marks",as:"marks",in:{$add:["$$marks",2]}}}}}])

```
{ _id: 1, newmarks: [ 57, 64, 54, 83 ] },
{ _id: 2, newmarks: [ 70, 90, 56, 53 ] }
```

db.student2.aggregate([{$project:{upperCaseHobbies:{$map:{input:"$hobbies",as:"hobbies",in:{$toUpper:"$$hobbies"}}}}}])

```
{ _id: 1, upperCaseHobbies: null },
{ _id: 2, upperCaseHobbies: null }
```

$filter

db.student2.aggregate([{$project:{AboveMarks:{$filter:{input:"$marks",as:"marks",cond:{$gte:["$$marks",60]}}}}}])

```
{ _id: 1, AboveMarks: [ 62, 81 ] },
{ _id: 2, AboveMarks: [ 68, 88 ] }
```

db.student2.aggregate([{$project:{AboveMarks:{$filter:{input:"$marks",as:"marks",cond:{$gte:["$$marks",60]},limit:1}}}}])

```
[ { _id: 1, AboveMarks: [ 62 ] }, { _id: 2, AboveMarks: [ 68 ] } ]
```

$reduce

$$this:Current value

db.student2.aggregate([{$project:{totalMarks:{$reduce:{input:"$marks",initialValue:0,in:{$add:["$$value","$$this"]}}}}}])

```
[ { _id: 1, totalMarks: 250 }, { _id: 2, totalMarks: 261 } ]
```

db.student2.aggregate([{$project:{CombineHobbies:{$reduce:{input:"$hobbies",initialValue:"",in:{$concat:["$$value","$$this"]}}}}}])

```
[ { _id: 1, CombineHobbies: null }, { _id: 2, CombineHobbies: null } ]
```

Dataset3

db.student3.aggregate([{$project:{name:1,allSubjects:{$concatArrays:["$subjects","$extraSubjects"]}}}])

```
{
  _id: 1,
  name: '"AK"',
  allSubjects: [ 'Maths', 'Science', 'History', 'Geography' ]
},
{
  _id: 2,
  name: '"SK"',
  allSubjects: [ 'Maths', 'Science', 'Music', 'Civics' ]
}
```

Dataset4

db.student4.aggregate([{$project:{name:1,data:{$zip:{inputs:["$subjects", "$marks"]}}}}])

```
{
  _id: 1,
  name: '"AK"',
  data: [ [ 'Maths', 85 ], [ 'Science', 77 ], [ 'History', 82 ] ]
},
{
  _id: 2,
  name: '"SK"',
  data: [ [ 'Maths', 88 ], [ 'Science', 81 ], [ 'Music', 95 ] ]
}
```

Dataset5

db.student5.aggregate([{$project:{name:1,SubjectInfo:{$arrayToObject:"$subjects"}}}])

```
{
  _id: 1,
  name: '"AK"',
  SubjectInfo: { Maths: 85, Science: 77, History: 82 }
},
{
  _id: 2,
  name: '"SK"',
  SubjectInfo: { Maths: 88, Science: 81, History: 95 }
}
```

Dataset6

db.student6.aggregate([{$project:{name:1,SubjectInfo:{$objectToArray:"$StudentInfo"}}}])

```
{ _id: 1, name: '"AK"', SubjectInfo: null },
{ _id: 2, name: '"SK"', SubjectInfo: null }
```

Conditional Operators

db.student7.aggregate([{$project:{name:1,price:1,priceCategory:{$cond:{if:{$gt:["$price",1000]},then:"Exepensive",else:"Affordable"}}}}])

```
{
  _id: 1,
  name: '"Laptop"',
  price: 1200,
  priceCategory: 'Exepensive'
},
{ _id: 2, name: '"Phone"', price: 800, priceCategory: 'Affordable' },
{ _id: 3, name: '"Tablet"', price: 600, priceCategory: 'Affordable' }
```

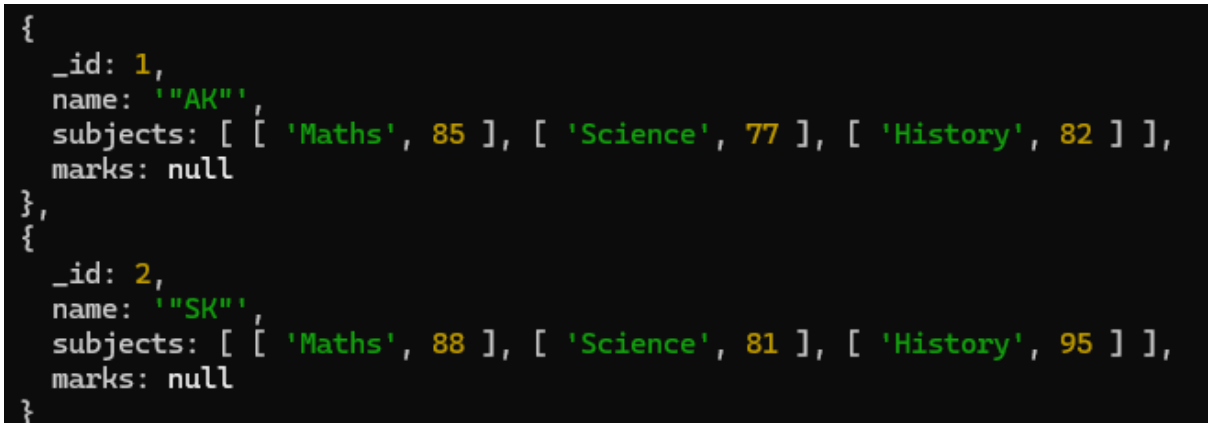
```
{ _id: 1, name: '"AK"', email: 'ak@gmail.com' },
{ _id: 2, name: '"SK"' },
{ _id: 3, name: '"JA"', email: null }
```

$fill

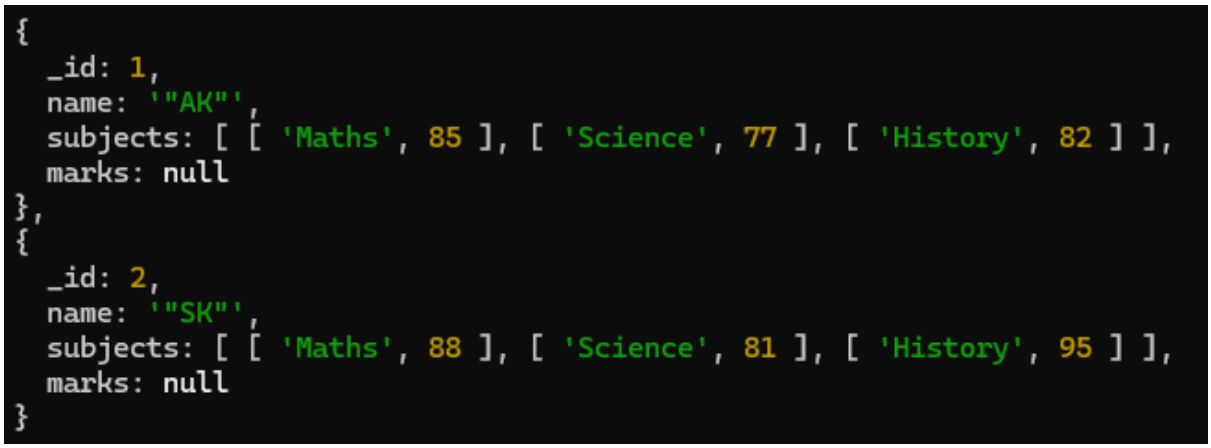
db.student8.aggregate([{$fill:{output:{"marks":{value:25}}}}])

```
{
  _id: 1,
  name: '"AK"',
  subjects: [ [ 'Maths', 85 ], [ 'Science', 77 ], [ 'History', 82 ] ],
  marks: 25
},
{
  _id: 2,
  name: '"SK"',
  subjects: [ [ 'Maths', 88 ], [ 'Science', 81 ], [ 'History', 95 ] ],
  marks: 25
}
```

db.student8.aggregate([{$fill:{output:{"marks":{method:"locf"}}}}])



db.student8.aggregate([{$fill:{sortBy:{_id:1},output:{"marks":{method:"linear"}}}}])



db.student8.aggregate([{$fill:{sortBy:{_id:1},partitionBy:{"class":"$class"},output:{"marks":{method:"linear"}}}}])