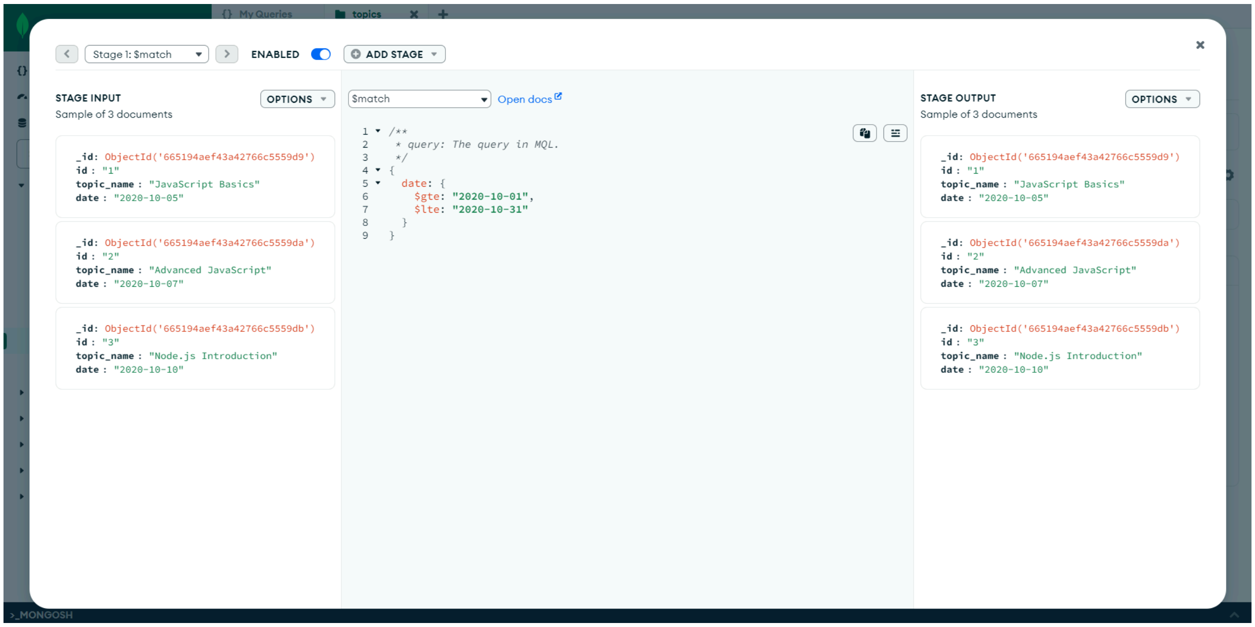
MongoDB Task - 2

1.Find all the topics and tasks which are taught in the month of October

MongoDB Compass:

Topics were taught in the month of October:



STAGE INPUT
Sample of 3 documents

```
_id: ObjectId('665194aef43a42766c5559d9')
id : "1"
topic_name : "JavaScript Basics"
date : "2020-10-05"

_id: ObjectId('665194aef43a42766c5559da')
id : "2"
topic_name : "Advanced JavaScript"
date : "2020-10-07"

_id: ObjectId('665194aef43a42766c5559db')
id : "3"
topic_name : "Node.js Introduction"
date : "2020-10-10"
```

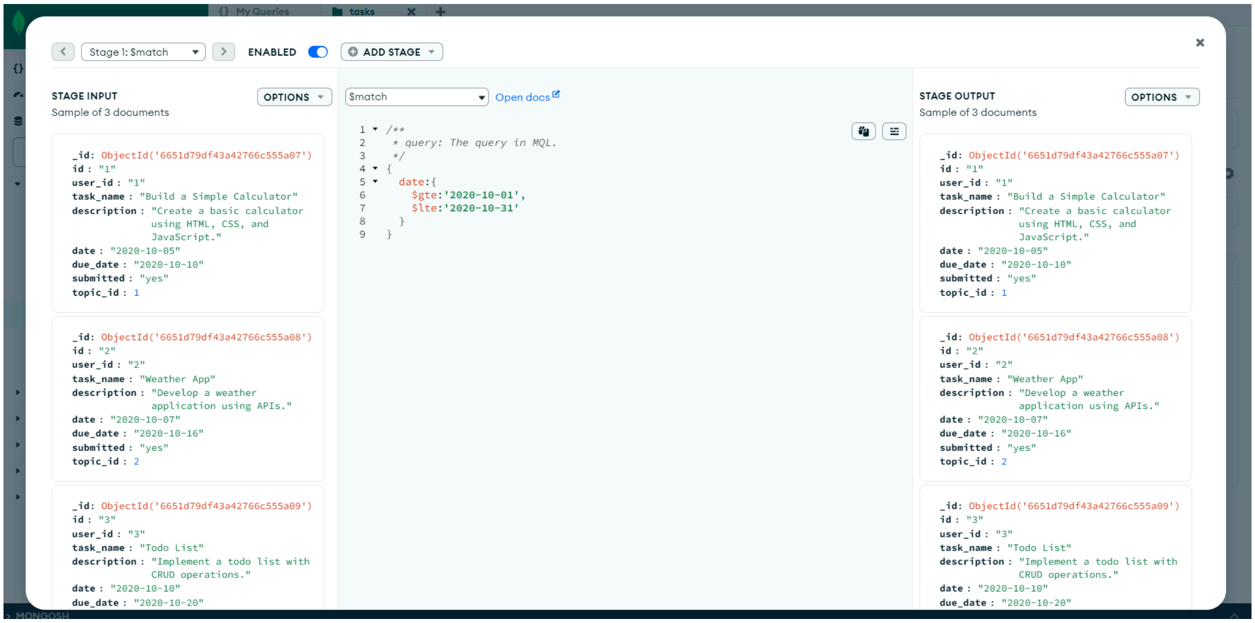
$match

```
/**
 * query: The query in MQL.
 */
{
  date: {
    $gte: "2020-10-01",
    $lte: "2020-10-31"
  }
}
```

STAGE OUTPUT
Sample of 3 documents

```
_id: ObjectId('665194aef43a42766c5559d9')
id : "1"
topic_name : "JavaScript Basics"
date : "2020-10-05"

_id: ObjectId('665194aef43a42766c5559da')
id : "2"
topic_name : "Advanced JavaScript"
date : "2020-10-07"

_id: ObjectId('665194aef43a42766c5559db')
id : "3"
topic_name : "Node.js Introduction"
date : "2020-10-10"
```

Tasks were given in the month of October



STAGE INPUT
Sample of 3 documents

```
_id: ObjectId('6651d79df43a42766c555a07')
id : "1"
user_id : "1"
task_name : "Build a Simple Calculator"
description : "Create a basic calculator
              using HTML, CSS, and
              JavaScript."
date : "2020-10-05"
due_date : "2020-10-10"
submitted : "yes"
topic_id : 1

_id: ObjectId('6651d79df43a42766c555a08')
id : "2"
user_id : "2"
task_name : "Weather App"
description : "Develop a weather
              application using APIs."
date : "2020-10-07"
due_date : "2020-10-16"
submitted : "yes"
topic_id : 2

_id: ObjectId('6651d79df43a42766c555a09')
id : "3"
user_id : "3"
task_name : "Todo List"
description : "Implement a todo list with
              CRUD operations."
date : "2020-10-10"
due_date : "2020-10-20"
```

$match

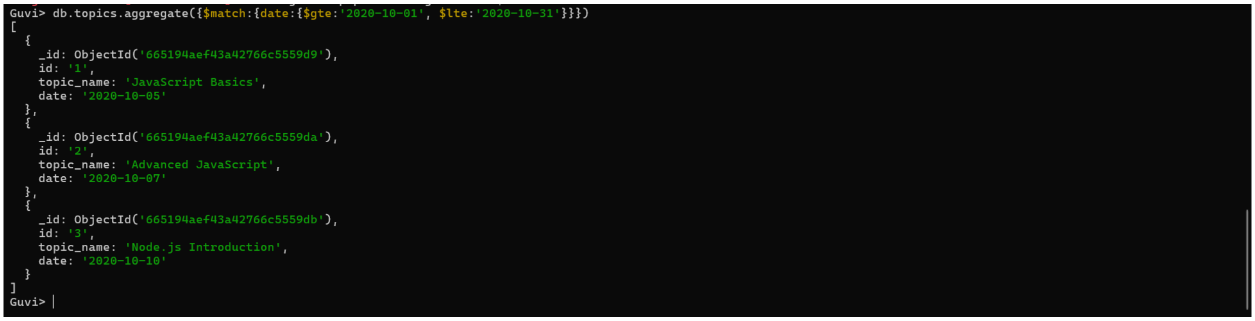
```
/**
 * query: The query in MQL.
 */
{
  date:{
    $gte:'2020-10-01',
    $lte:'2020-10-31'
  }
}
```

STAGE OUTPUT
Sample of 3 documents

```
_id: ObjectId('6651d79df43a42766c555a07')
id : "1"
user_id : "1"
task_name : "Build a Simple Calculator"
description : "Create a basic calculator
              using HTML, CSS, and
              JavaScript."
date : "2020-10-05"
due_date : "2020-10-10"
submitted : "yes"
topic_id : 1

_id: ObjectId('6651d79df43a42766c555a08')
id : "2"
user_id : "2"
task_name : "Weather App"
description : "Develop a weather
              application using APIs."
date : "2020-10-07"
due_date : "2020-10-16"
submitted : "yes"
topic_id : 2

_id: ObjectId('6651d79df43a42766c555a09')
id : "3"
user_id : "3"
task_name : "Todo List"
description : "Implement a todo list with
              CRUD operations."
date : "2020-10-10"
due_date : "2020-10-20"
```

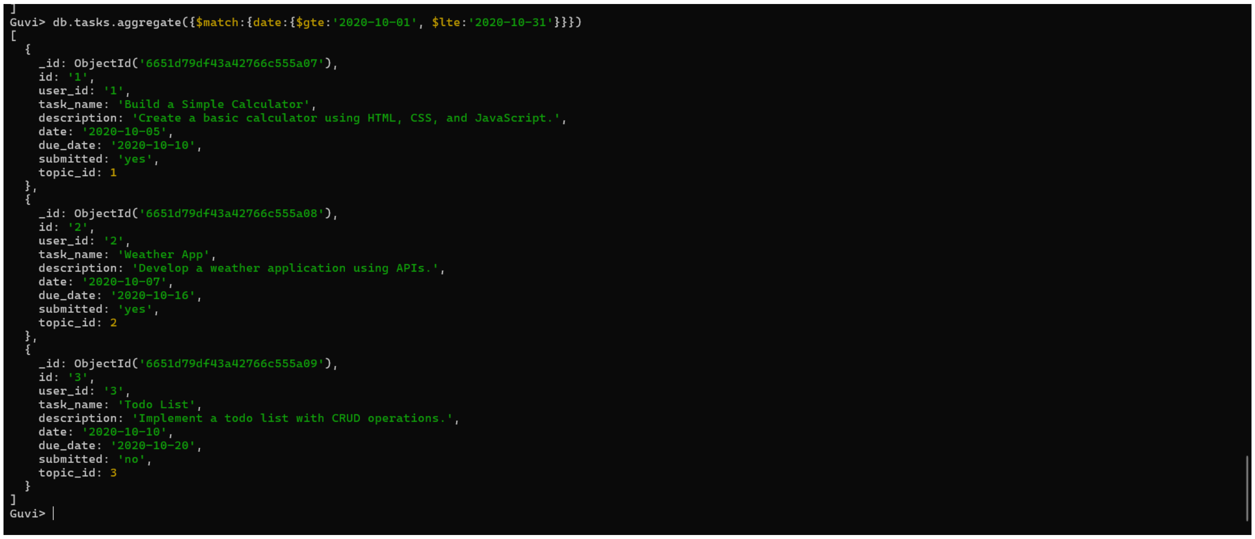
Shell:

Topics were taught in the month of October:



```
Guvi> db.topics.aggregate({$match:{date:{$gte:'2020-10-01', $lte:'2020-10-31'}}})
[
  {
    _id: ObjectId('665194aef43a42766c5559d9'),
    id: '1',
    topic_name: 'JavaScript Basics',
    date: '2020-10-05'
  },
  {
    _id: ObjectId('665194aef43a42766c5559da'),
    id: '2',
    topic_name: 'Advanced JavaScript',
    date: '2020-10-07'
  },
  {
    _id: ObjectId('665194aef43a42766c5559db'),
    id: '3',
    topic_name: 'Node.js Introduction',
    date: '2020-10-10'
  }
]
Guvi> |
```

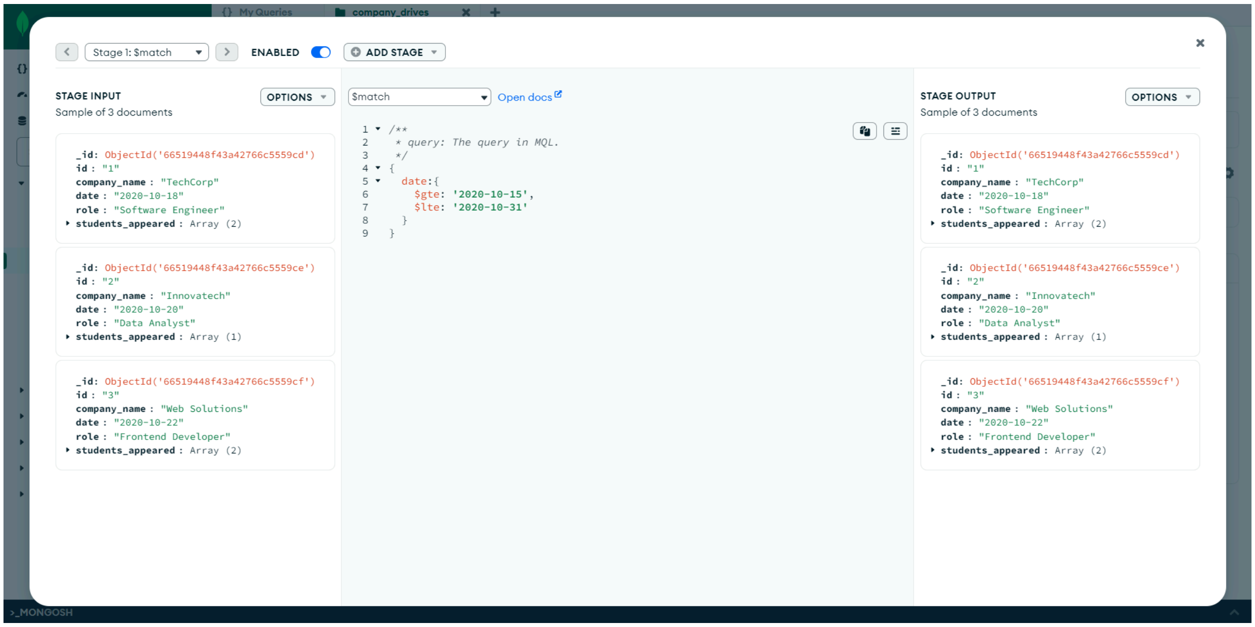
Tasks were given in the month of October



```
]
Guvi> db.tasks.aggregate({$match:{date:{$gte:'2020-10-01', $lte:'2020-10-31'}}})
[
  {
    _id: ObjectId('6651d79df43a42766c555a07'),
    id: '1',
    user_id: '1',
    task_name: 'Build a Simple Calculator',
    description: 'Create a basic calculator using HTML, CSS, and JavaScript.',
    date: '2020-10-05',
    due_date: '2020-10-10',
    submitted: 'yes',
    topic_id: 1
  },
  {
    _id: ObjectId('6651d79df43a42766c555a08'),
    id: '2',
    user_id: '2',
    task_name: 'Weather App',
    description: 'Develop a weather application using APIs.',
    date: '2020-10-07',
    due_date: '2020-10-16',
    submitted: 'yes',
    topic_id: 2
  },
  {
    _id: ObjectId('6651d79df43a42766c555a09'),
    id: '3',
    user_id: '3',
    task_name: 'Todo List',
    description: 'Implement a todo list with CRUD operations.',
    date: '2020-10-10',
    due_date: '2020-10-20',
    submitted: 'no',
    topic_id: 3
  }
]
Guvi> |
```

2.Find all the company drives which appeared between 15 oct-2020 and 31-oct-2020

MongoDB Compass:

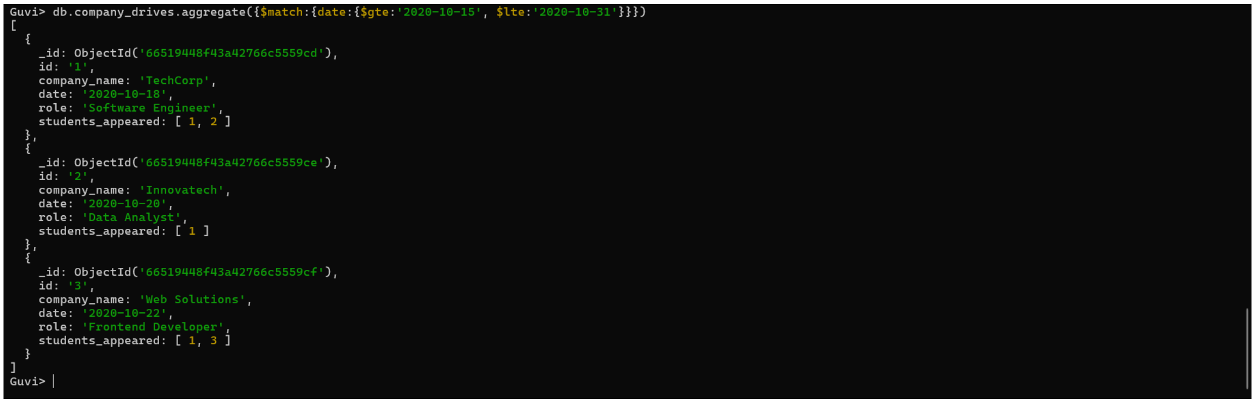


```
/**
 * query: The query in MQL.
 */
{
  date:{
    $gte: '2020-10-15',
    $lte: '2020-10-31'
  }
}
```

```
_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
students_appeared : Array (2)

_id: ObjectId('66519448f43a42766c5559ce')
id : "2"
company_name : "Innovatech"
date : "2020-10-20"
role : "Data Analyst"
students_appeared : Array (1)

_id: ObjectId('66519448f43a42766c5559cf')
id : "3"
company_name : "Web Solutions"
date : "2020-10-22"
role : "Frontend Developer"
students_appeared : Array (2)
```

```
_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
students_appeared : Array (2)

_id: ObjectId('66519448f43a42766c5559ce')
id : "2"
company_name : "Innovatech"
date : "2020-10-20"
role : "Data Analyst"
students_appeared : Array (1)

_id: ObjectId('66519448f43a42766c5559cf')
id : "3"
company_name : "Web Solutions"
date : "2020-10-22"
role : "Frontend Developer"
students_appeared : Array (2)
```

Shell:

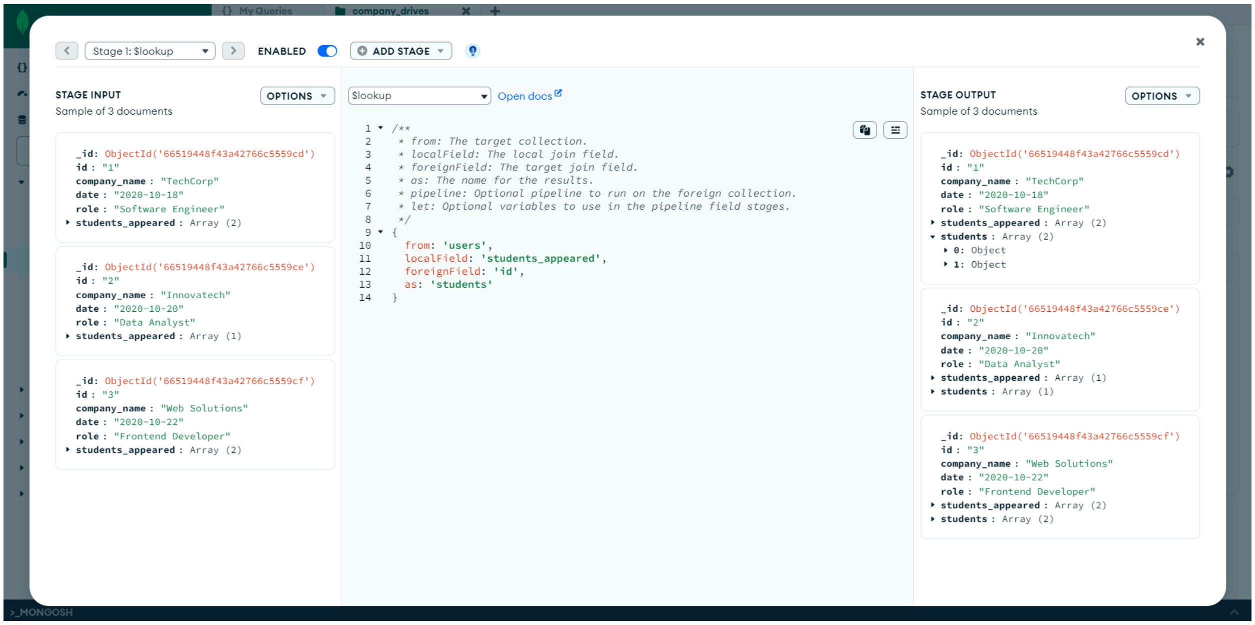


```
Guvi> db.company_drives.aggregate({$match:{date:{$gte:'2020-10-15', $lte:'2020-10-31'}}})
[
  {
    _id: ObjectId('66519448f43a42766c5559cd'),
    id: '1',
    company_name: 'TechCorp',
    date: '2020-10-18',
    role: 'Software Engineer',
    students_appeared: [ 1, 2 ]
  },
  {
    _id: ObjectId('66519448f43a42766c5559ce'),
    id: '2',
    company_name: 'Innovatech',
    date: '2020-10-20',
    role: 'Data Analyst',
    students_appeared: [ 1 ]
  },
  {
    _id: ObjectId('66519448f43a42766c5559cf'),
    id: '3',
    company_name: 'Web Solutions',
    date: '2020-10-22',
    role: 'Frontend Developer',
    students_appeared: [ 1, 3 ]
  }
]
Guvi> |
```

3.Find all the company drives and students who are appeared for the placement

MongoDB Compass:

Lookup stage:



STAGE INPUT

Sample of 3 documents

```
_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
▸ students_appeared : Array (2)

_id: ObjectId('66519448f43a42766c5559ce')
id : "2"
company_name : "Innovatech"
date : "2020-10-20"
role : "Data Analyst"
▸ students_appeared : Array (1)

_id: ObjectId('66519448f43a42766c5559cf')
id : "3"
company_name : "Web Solutions"
date : "2020-10-22"
role : "Frontend Developer"
▸ students_appeared : Array (2)
```

$lookup

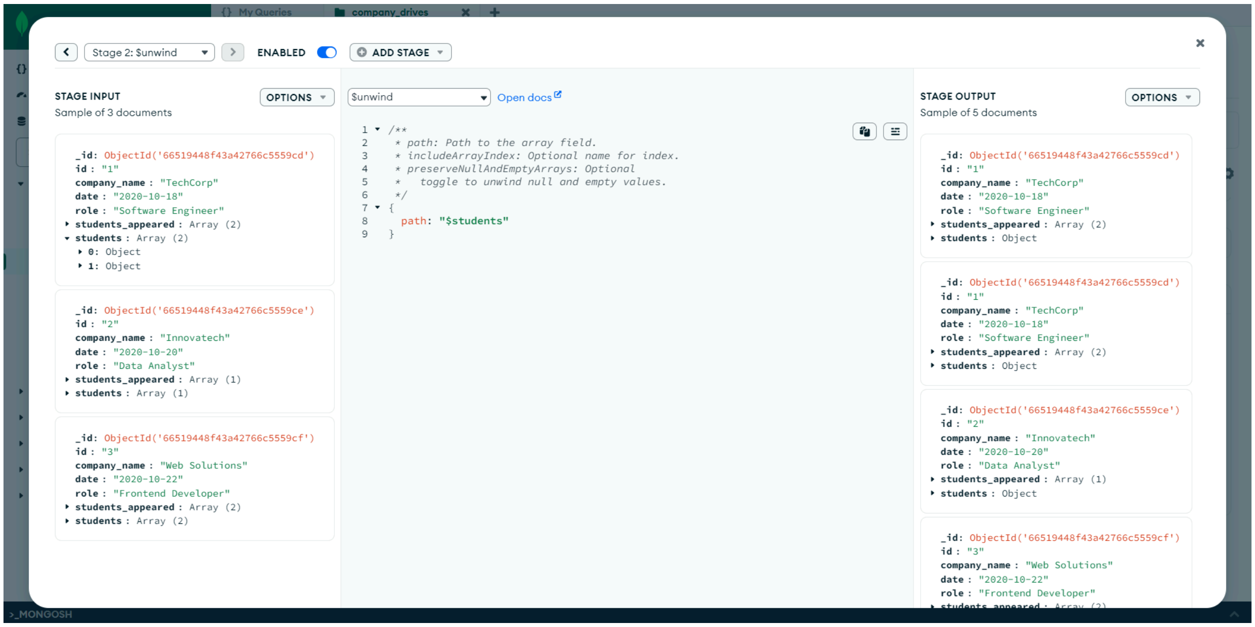
```
/**
 * from: The target collection.
 * localField: The local join field.
 * foreignField: The target join field.
 * as: The name for the results.
 * pipeline: Optional pipeline to run on the foreign collection.
 * let: Optional variables to use in the pipeline field stages.
 */
{
  from: 'users',
  localField: 'students_appeared',
  foreignField: 'id',
  as: 'students'
}
```

STAGE OUTPUT

Sample of 3 documents

```
_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
▸ students_appeared : Array (2)
▾ students : Array (2)
  ▸ 0: Object
  ▸ 1: Object

_id: ObjectId('66519448f43a42766c5559ce')
id : "2"
company_name : "Innovatech"
date : "2020-10-20"
role : "Data Analyst"
▸ students_appeared : Array (1)
▸ students : Array (1)

_id: ObjectId('66519448f43a42766c5559cf')
id : "3"
company_name : "Web Solutions"
date : "2020-10-22"
role : "Frontend Developer"
▸ students_appeared : Array (2)
▸ students : Array (2)
```

Unwind:



STAGE INPUT

Sample of 3 documents

```
_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
▸ students_appeared : Array (2)
▾ students : Array (2)
  ▸ 0: Object
  ▸ 1: Object

_id: ObjectId('66519448f43a42766c5559ce')
id : "2"
company_name : "Innovatech"
date : "2020-10-20"
role : "Data Analyst"
▸ students_appeared : Array (1)
▸ students : Array (1)

_id: ObjectId('66519448f43a42766c5559cf')
id : "3"
company_name : "Web Solutions"
date : "2020-10-22"
role : "Frontend Developer"
▸ students_appeared : Array (2)
▸ students : Array (2)
```

$unwind

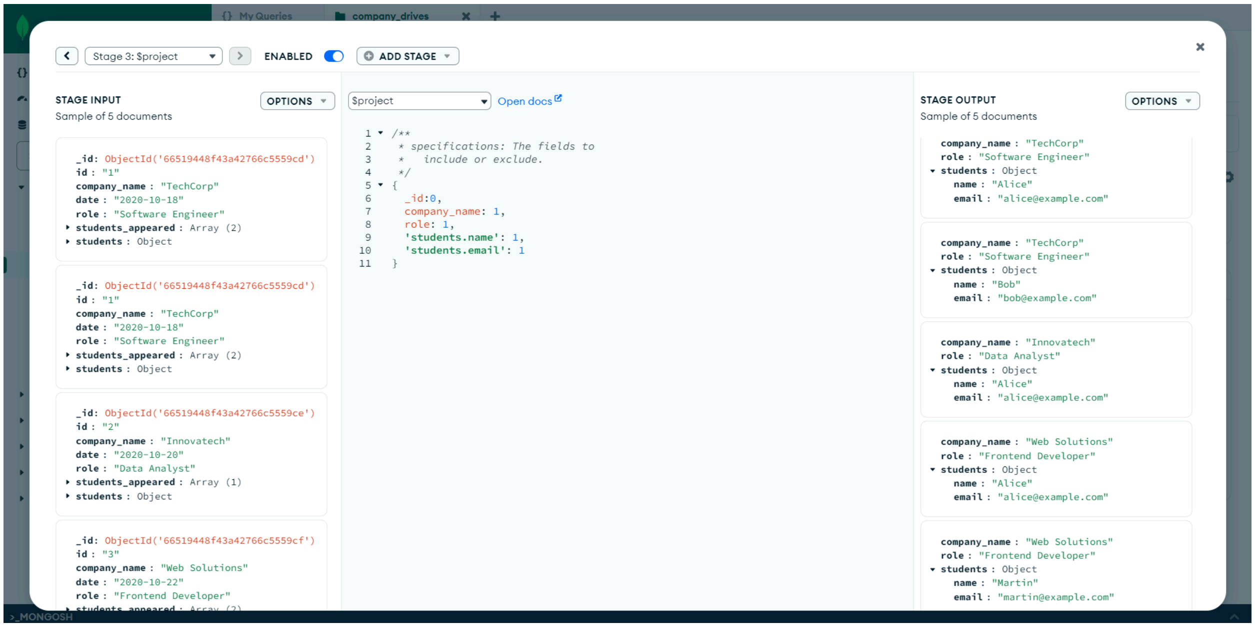
```
/**
 * path: Path to the array field.
 * includeArrayIndex: Optional name for index.
 * preserveNullAndEmptyArrays: Optional
 *   toggle to unwind null and empty values.
 */
{
  path: "$students"
}
```

STAGE OUTPUT

Sample of 5 documents

```
_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
▸ students_appeared : Array (2)
▸ students : Object

_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
▸ students_appeared : Array (2)
▸ students : Object

_id: ObjectId('66519448f43a42766c5559ce')
id : "2"
company_name : "Innovatech"
date : "2020-10-20"
role : "Data Analyst"
▸ students_appeared : Array (1)
▸ students : Object

_id: ObjectId('66519448f43a42766c5559cf')
id : "3"
company_name : "Web Solutions"
date : "2020-10-22"
role : "Frontend Developer"
▸ students_appeared : Array (2)
```

Project:



STAGE INPUT
Sample of 5 documents

```
_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
students_appeared : Array (2)
students : Object

_id: ObjectId('66519448f43a42766c5559cd')
id : "1"
company_name : "TechCorp"
date : "2020-10-18"
role : "Software Engineer"
students_appeared : Array (2)
students : Object

_id: ObjectId('66519448f43a42766c5559ce')
id : "2"
company_name : "Innovatech"
date : "2020-10-20"
role : "Data Analyst"
students_appeared : Array (1)
students : Object

_id: ObjectId('66519448f43a42766c5559cf')
id : "3"
company_name : "Web Solutions"
date : "2020-10-22"
role : "Frontend Developer"
students_appeared : Array (2)
```

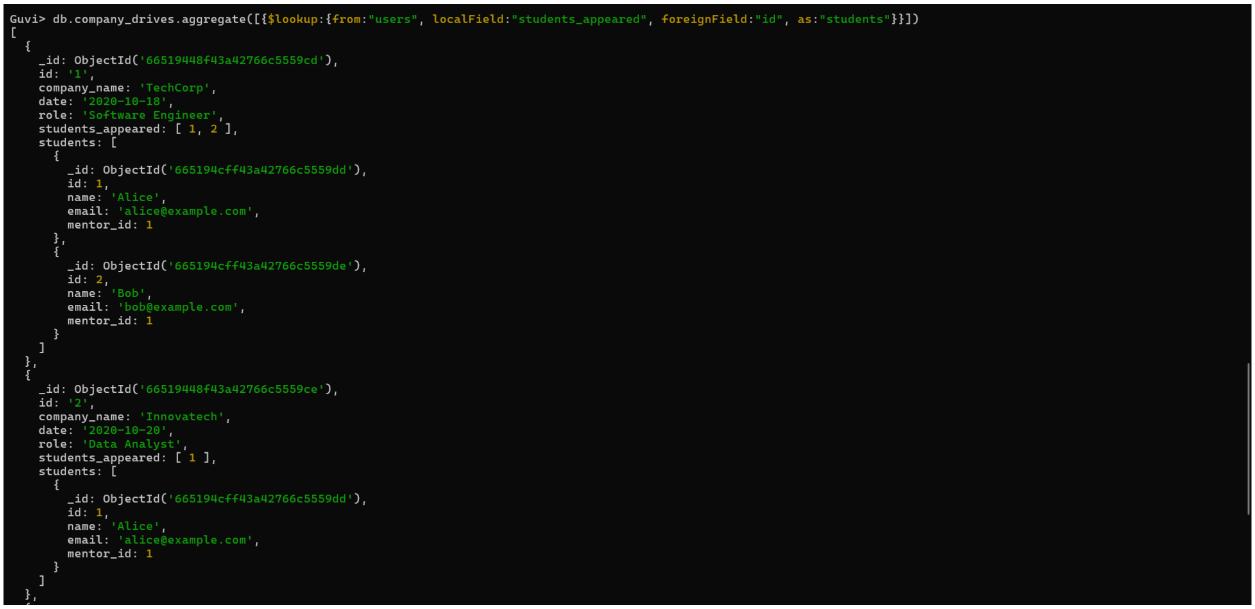
$project

```
/**
 * specifications: The fields to
 *   include or exclude.
 */
{
  _id:0,
  company_name: 1,
  role: 1,
  'students.name': 1,
  'students.email': 1
}
```

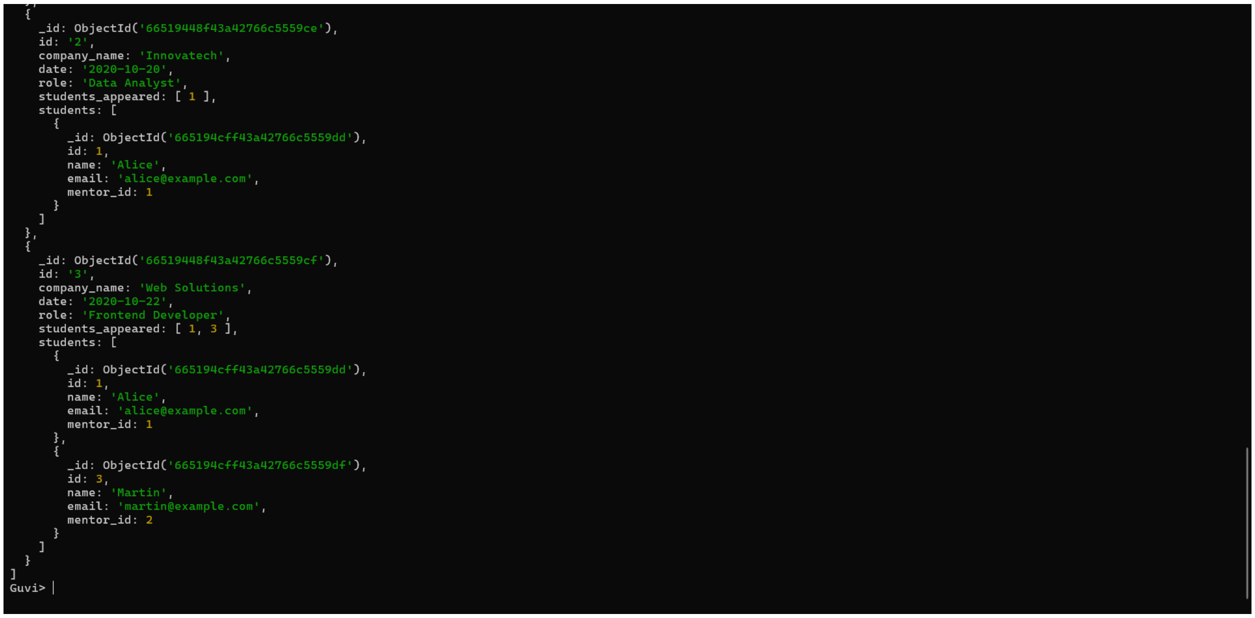
STAGE OUTPUT
Sample of 5 documents

```
company_name : "TechCorp"
role : "Software Engineer"
students : Object
  name : "Alice"
  email : "alice@example.com"

company_name : "TechCorp"
role : "Software Engineer"
students : Object
  name : "Bob"
  email : "bob@example.com"

company_name : "Innovatech"
role : "Data Analyst"
students : Object
  name : "Alice"
  email : "alice@example.com"

company_name : "Web Solutions"
role : "Frontend Developer"
students : Object
  name : "Alice"
  email : "alice@example.com"

company_name : "Web Solutions"
role : "Frontend Developer"
students : Object
  name : "Martin"
  email : "martin@example.com"
```

Shell:



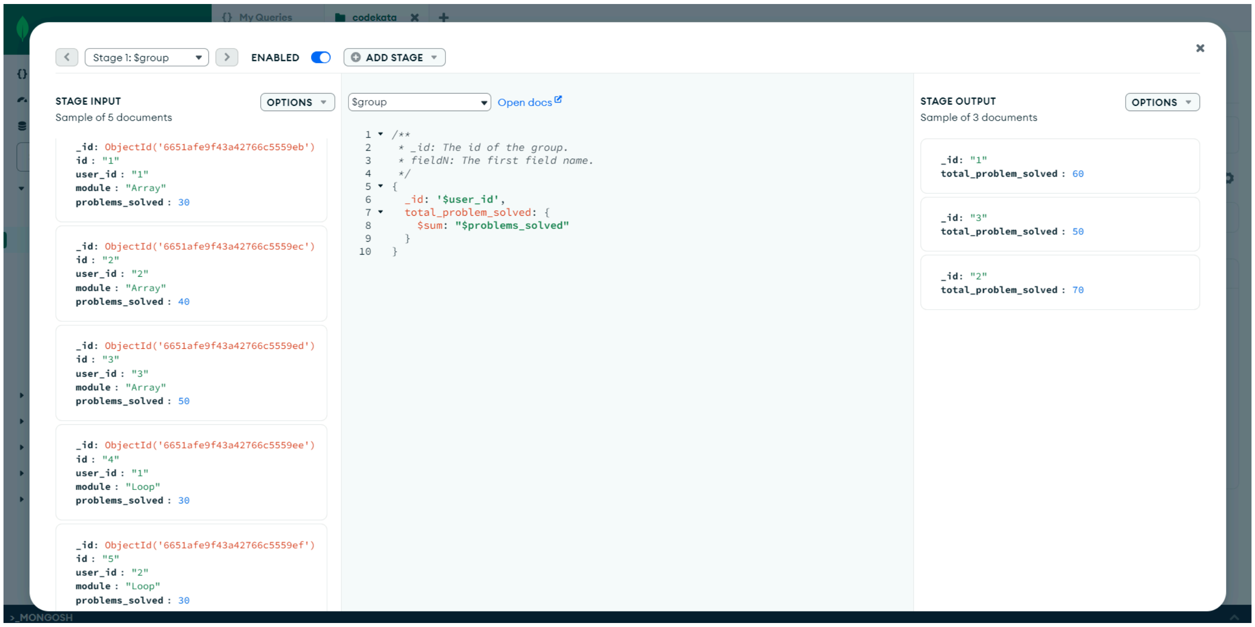
```
Guvi> db.company_drives.aggregate([{$lookup:{from:"users", localField:"students_appeared", foreignField:"id", as:"students"}}])
[
  {
    _id: ObjectId('66519448f43a42766c5559cd'),
    id: '1',
    company_name: 'TechCorp',
    date: '2020-10-18',
    role: 'Software Engineer',
    students_appeared: [ 1, 2 ],
    students: [
      {
        _id: ObjectId('665194cff43a42766c5559dd'),
        id: 1,
        name: 'Alice',
        email: 'alice@example.com',
        mentor_id: 1
      },
      {
        _id: ObjectId('665194cff43a42766c5559de'),
        id: 2,
        name: 'Bob',
        email: 'bob@example.com',
        mentor_id: 1
      }
    ]
  },
  {
    _id: ObjectId('66519448f43a42766c5559ce'),
    id: '2',
    company_name: 'Innovatech',
    date: '2020-10-20',
    role: 'Data Analyst',
    students_appeared: [ 1 ],
    students: [
      {
        _id: ObjectId('665194cff43a42766c5559dd'),
        id: 1,
        name: 'Alice',
        email: 'alice@example.com',
        mentor_id: 1
      }
    ]
  },
```



```
  {
    _id: ObjectId('66519448f43a42766c5559ce'),
    id: '2',
    company_name: 'Innovatech',
    date: '2020-10-20',
    role: 'Data Analyst',
    students_appeared: [ 1 ],
    students: [
      {
        _id: ObjectId('665194cff43a42766c5559dd'),
        id: 1,
        name: 'Alice',
        email: 'alice@example.com',
        mentor_id: 1
      }
    ]
  },
  {
    _id: ObjectId('66519448f43a42766c5559cf'),
    id: '3',
    company_name: 'Web Solutions',
    date: '2020-10-22',
    role: 'Frontend Developer',
    students_appeared: [ 1, 3 ],
    students: [
      {
        _id: ObjectId('665194cff43a42766c5559dd'),
        id: 1,
        name: 'Alice',
        email: 'alice@example.com',
        mentor_id: 1
      },
      {
        _id: ObjectId('665194cff43a42766c5559df'),
        id: 3,
        name: 'Martin',
        email: 'martin@example.com',
        mentor_id: 2
      }
    ]
  }
]
Guvi> |
```

4.Find the number of problems solved by the user in codekata

MongoDB Compass:



STAGE INPUT
Sample of 5 documents

```
_id: ObjectId('6651afe9f43a42766c5559eb')
id : "1"
user_id : "1"
module : "Array"
problems_solved : 30

_id: ObjectId('6651afe9f43a42766c5559ec')
id : "2"
user_id : "2"
module : "Array"
problems_solved : 40

_id: ObjectId('6651afe9f43a42766c5559ed')
id : "3"
user_id : "3"
module : "Array"
problems_solved : 50

_id: ObjectId('6651afe9f43a42766c5559ee')
id : "4"
user_id : "1"
module : "Loop"
problems_solved : 30

_id: ObjectId('6651afe9f43a42766c5559ef')
id : "5"
user_id : "2"
module : "Loop"
problems_solved : 30
```

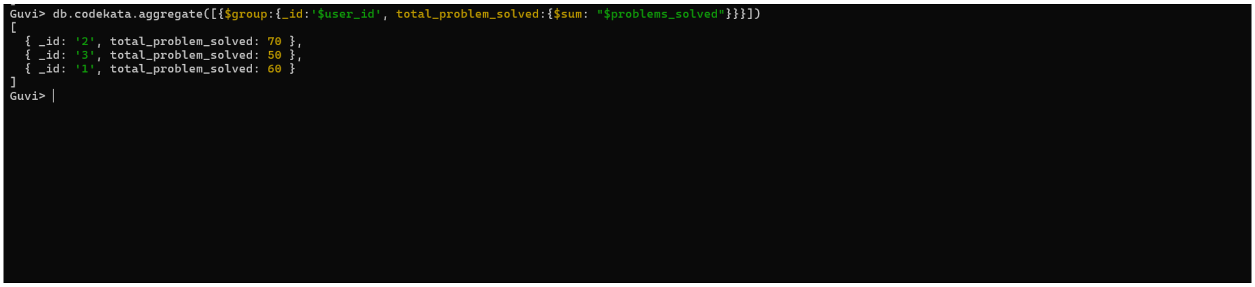
$group

```
/**
 * _id: The id of the group.
 * fieldN: The first field name.
 */
{
  _id: '$user_id',
  total_problem_solved: {
    $sum: "$problems_solved"
  }
}
```

STAGE OUTPUT
Sample of 3 documents

```
_id: "1"
total_problem_solved : 60

_id: "3"
total_problem_solved : 50

_id: "2"
total_problem_solved : 70
```

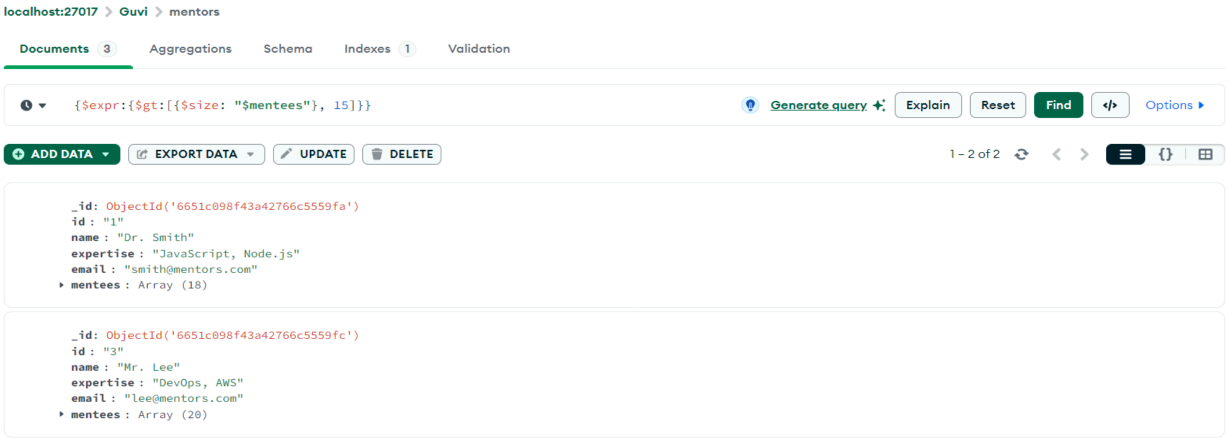
Shell:



```
Guvi> db.codekata.aggregate([{$group:{_id:'$user_id', total_problem_solved:{$sum: "$problems_solved"}}}])
[
  { _id: '2', total_problem_solved: 70 },
  { _id: '3', total_problem_solved: 50 },
  { _id: '1', total_problem_solved: 60 }
]
Guvi> |
```

5.Find all the mentors with who has the mentee's count more than 15

MongoDB Compass:

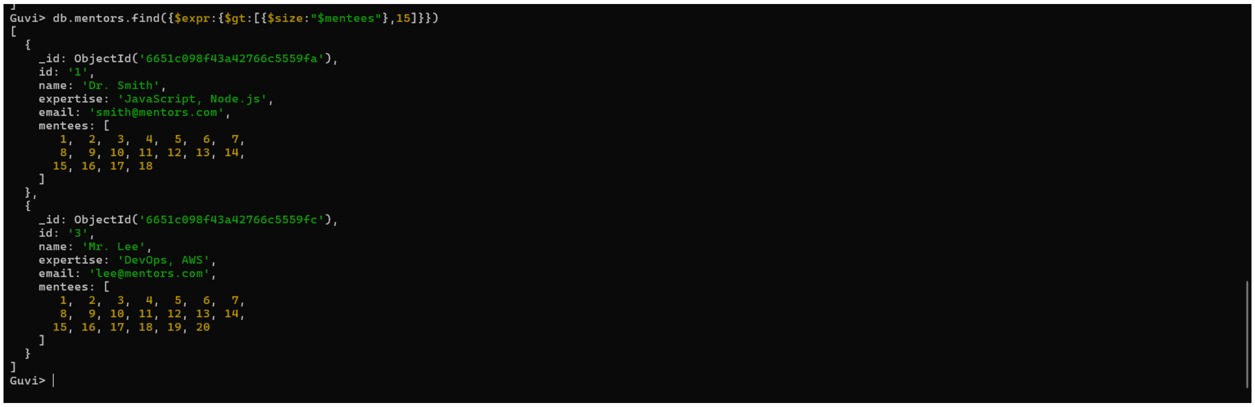


```
{$expr:{$gt:[{$size: "$mentees"}, 15]}}
```

```
_id: ObjectId('6651c098f43a42766c5559fa')
id : "1"
name : "Dr. Smith"
expertise : "JavaScript, Node.js"
email : "smith@mentors.com"
mentees : Array (18)
```

```
_id: ObjectId('6651c098f43a42766c5559fc')
id : "3"
name : "Mr. Lee"
expertise : "DevOps, AWS"
email : "lee@mentors.com"
mentees : Array (20)
```

Shell:

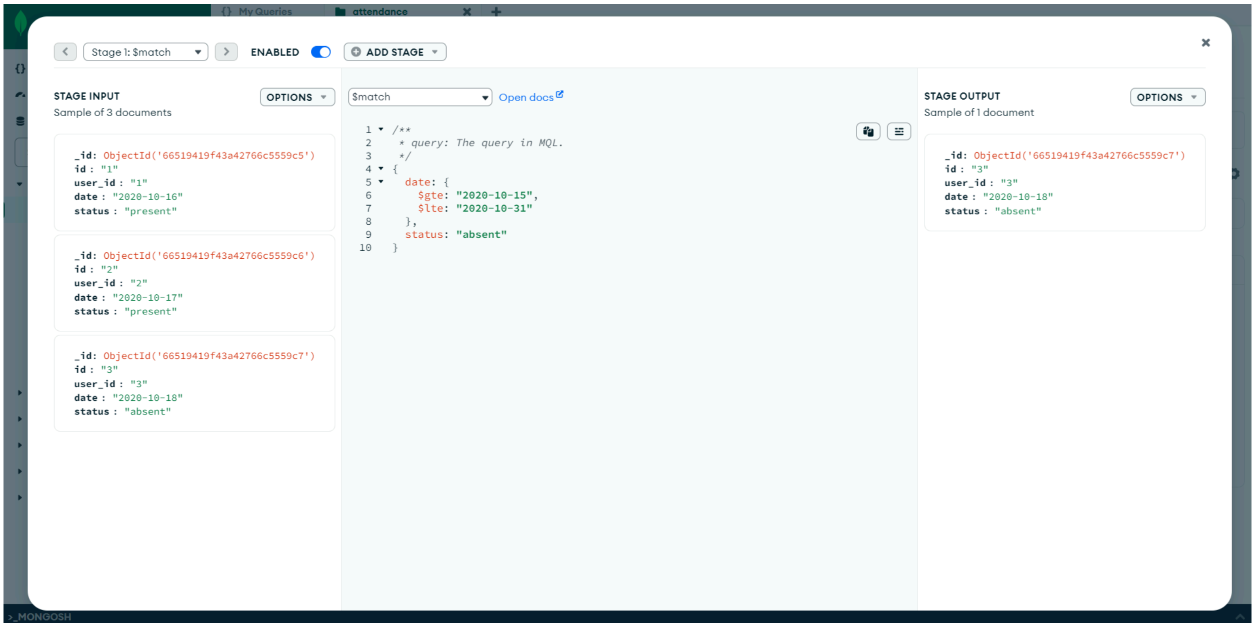


```
Guvi> db.mentors.find({$expr:{$gt:[{$size:"$mentees"},15]}})
[
  {
    _id: ObjectId('6651c098f43a42766c5559fa'),
    id: '1',
    name: 'Dr. Smith',
    expertise: 'JavaScript, Node.js',
    email: 'smith@mentors.com',
    mentees: [
       1,  2,  3,  4,  5,  6,  7,
       8,  9, 10, 11, 12, 13, 14,
      15, 16, 17, 18
    ]
  },
  {
    _id: ObjectId('6651c098f43a42766c5559fc'),
    id: '3',
    name: 'Mr. Lee',
    expertise: 'DevOps, AWS',
    email: 'lee@mentors.com',
    mentees: [
       1,  2,  3,  4,  5,  6,  7,
       8,  9, 10, 11, 12, 13, 14,
      15, 16, 17, 18, 19, 20
    ]
  }
]
Guvi> |
```

6.Find the number of users who are absent and task is not submitted between 15 oct-2020 and 31-oct-2020

MongoDB Compass:

1.$match Stage



STAGE INPUT
Sample of 3 documents

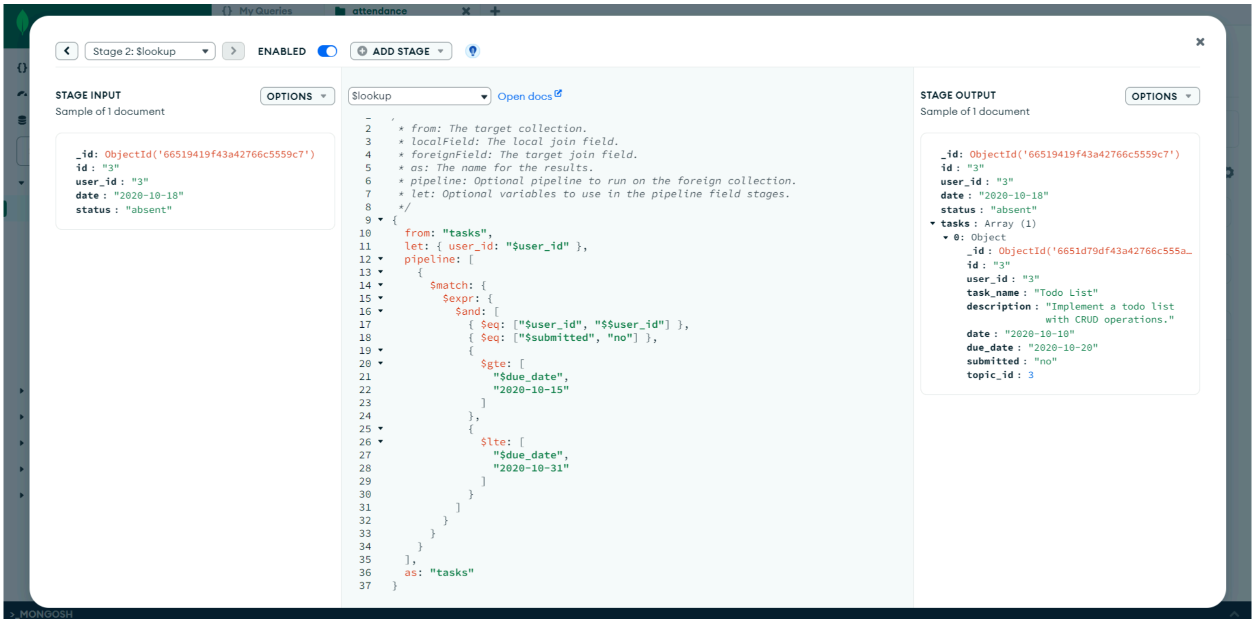
```
_id: ObjectId('66519419f43a42766c5559c5')
id : "1"
user_id : "1"
date : "2020-10-16"
status : "present"

_id: ObjectId('66519419f43a42766c5559c6')
id : "2"
user_id : "2"
date : "2020-10-17"
status : "present"

_id: ObjectId('66519419f43a42766c5559c7')
id : "3"
user_id : "3"
date : "2020-10-18"
status : "absent"
```

```
/**
 * query: The query in MQL.
 */
{
  date: {
    $gte: "2020-10-15",
    $lte: "2020-10-31"
  },
  status: "absent"
}
```

STAGE OUTPUT
Sample of 1 document

```
_id: ObjectId('66519419f43a42766c5559c7')
id : "3"
user_id : "3"
date : "2020-10-18"
status : "absent"
```

2.$lookup Stage:



STAGE INPUT
Sample of 1 document

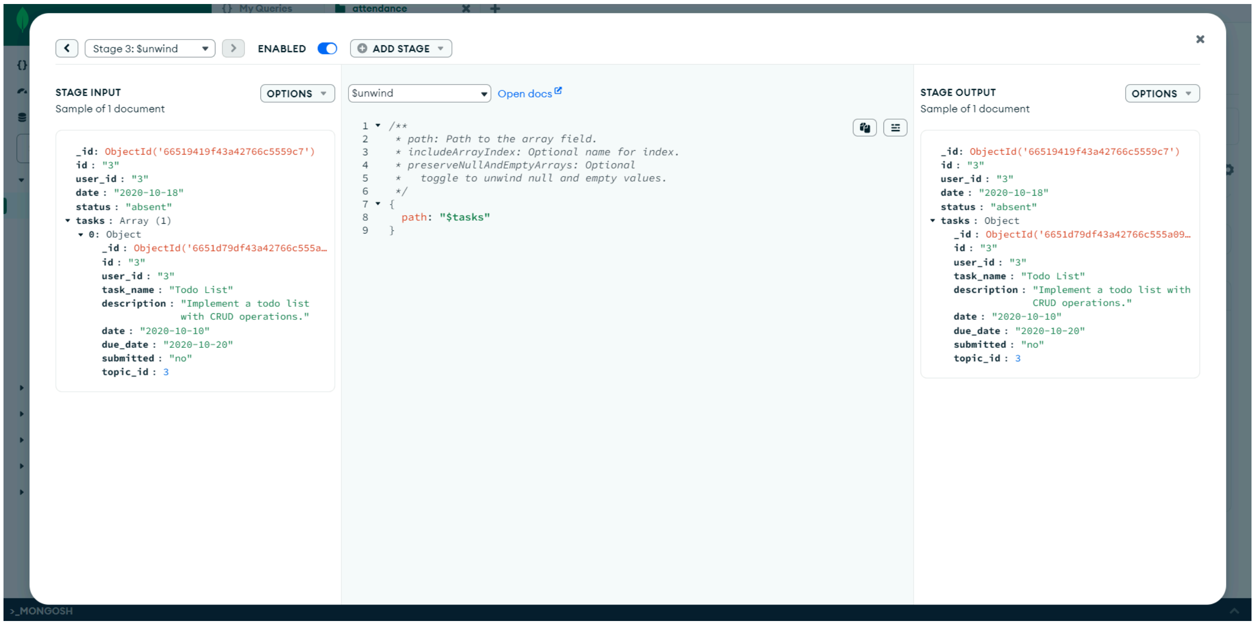
```
_id: ObjectId('66519419f43a42766c5559c7')
id : "3"
user_id : "3"
date : "2020-10-18"
status : "absent"
```

```
 * from: The target collection.
 * localField: The local join field.
 * foreignField: The target join field.
 * as: The name for the results.
 * pipeline: Optional pipeline to run on the foreign collection.
 * let: Optional variables to use in the pipeline field stages.
 */
{
  from: "tasks",
  let: { user_id: "$user_id" },
  pipeline: [
    {
      $match: {
        $expr: {
          $and: [
            { $eq: ["$user_id", "$$user_id"] },
            { $eq: ["$submitted", "no"] },
            {
              $gte: [
                "$due_date",
                "2020-10-15"
              ]
            },
            {
              $lte: [
                "$due_date",
                "2020-10-31"
              ]
            }
          ]
        }
      }
    }
  ],
  as: "tasks"
}
```

STAGE OUTPUT
Sample of 1 document

```
_id: ObjectId('66519419f43a42766c5559c7')
id : "3"
user_id : "3"
date : "2020-10-18"
status : "absent"
▾ tasks : Array (1)
  ▾ 0: Object
      _id : ObjectId('6651d79df43a42766c555a…
      id : "3"
      user_id : "3"
      task_name : "Todo List"
      description : "Implement a todo list
                     with CRUD operations."
      date : "2020-10-10"
      due_date : "2020-10-20"
      submitted : "no"
      topic_id : 3
```

3.$unwid stage



STAGE INPUT
Sample of 1 document

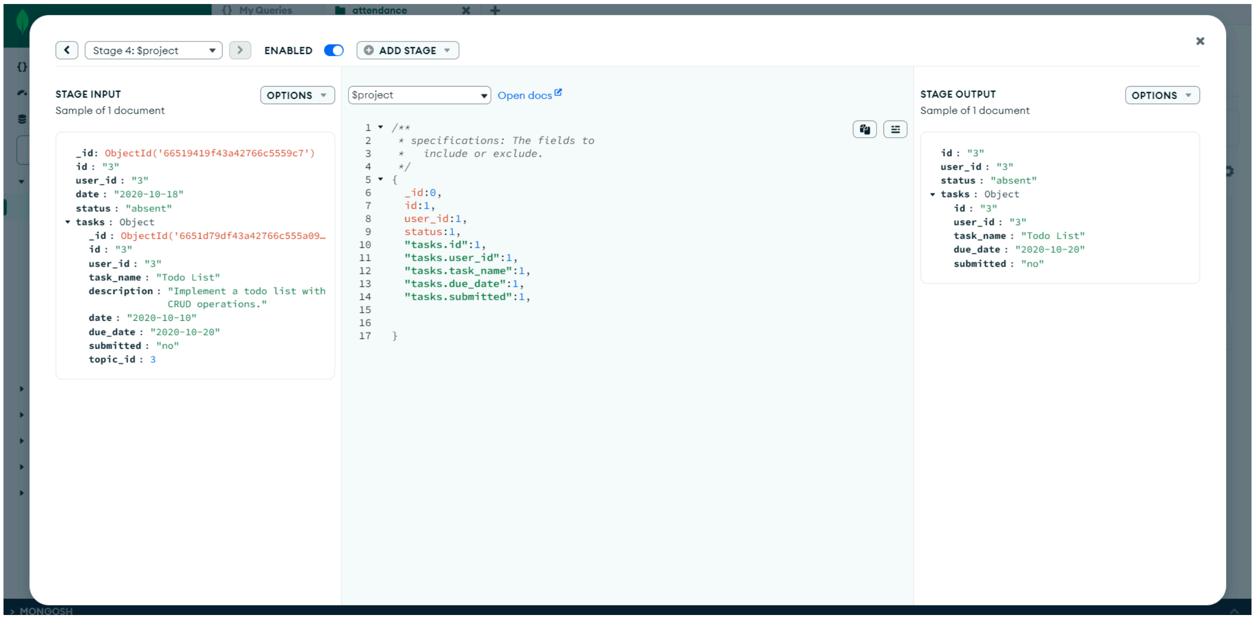
```
_id: ObjectId('66519419f43a42766c5559c7')
id : "3"
user_id : "3"
date : "2020-10-18"
status : "absent"
tasks : Array (1)
  0: Object
    _id : ObjectId('6651d79df43a42766c555a…
    id : "3"
    user_id : "3"
    task_name : "Todo List"
    description : "Implement a todo list
                   with CRUD operations."
    date : "2020-10-10"
    due_date : "2020-10-20"
    submitted : "no"
    topic_id : 3
```

```
/**
 * path: Path to the array field.
 * includeArrayIndex: Optional name for index.
 * preserveNullAndEmptyArrays: Optional
 *   toggle to unwind null and empty values.
 */
{
  path: "$tasks"
}
```

STAGE OUTPUT
Sample of 1 document

```
_id: ObjectId('66519419f43a42766c5559c7')
id : "3"
user_id : "3"
date : "2020-10-18"
status : "absent"
tasks : Object
  _id : ObjectId('6651d79df43a42766c555a09…
  id : "3"
  user_id : "3"
  task_name : "Todo List"
  description : "Implement a todo list with
                 CRUD operations."
  date : "2020-10-10"
  due_date : "2020-10-20"
  submitted : "no"
  topic_id : 3
```

4.$project stage:



STAGE INPUT
Sample of 1 document

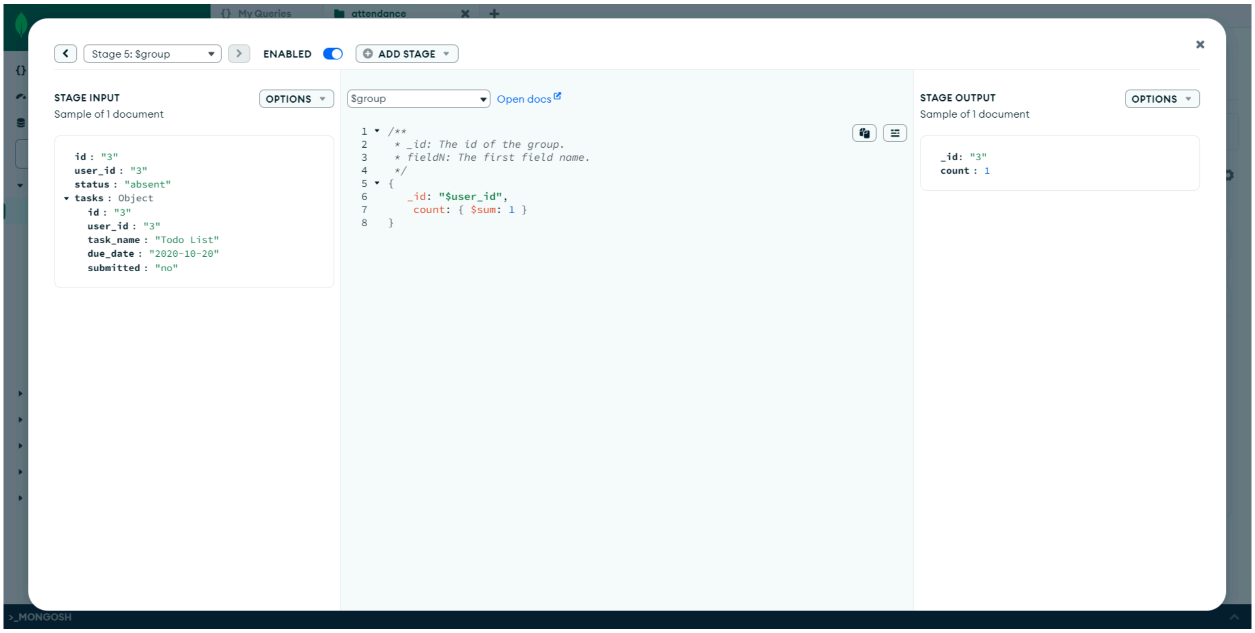
```
_id: ObjectId('66519419f43a42766c5559c7')
id : "3"
user_id : "3"
date : "2020-10-18"
status : "absent"
tasks : Object
  _id : ObjectId('6651d79df43a42766c555a09…
  id : "3"
  user_id : "3"
  task_name : "Todo List"
  description : "Implement a todo list with
                 CRUD operations."
  date : "2020-10-10"
  due_date : "2020-10-20"
  submitted : "no"
  topic_id : 3
```

```
/**
 * specifications: The fields to
 *   include or exclude.
 */
{
  _id:0,
  id:1,
  user_id:1,
  status:1,
  "tasks.id":1,
  "tasks.user_id":1,
  "tasks.task_name":1,
  "tasks.due_date":1,
  "tasks.submitted":1,


}
```

STAGE OUTPUT
Sample of 1 document

```
id : "3"
user_id : "3"
status : "absent"
tasks : Object
  id : "3"
  user_id : "3"
  task_name : "Todo List"
  due_date : "2020-10-20"
  submitted : "no"
```

5.$group stage:



STAGE INPUT
Sample of 1 document

```
  id : "3"
  user_id : "3"
  status : "absent"
▾ tasks : Object
    id : "3"
    user_id : "3"
    task_name : "Todo List"
    due_date : "2020-10-20"
    submitted : "no"
```

```
/**
 * _id: The id of the group.
 * fieldN: The first field name.
 */
{
   _id: "$user_id",
    count: { $sum: 1 }
}
```

STAGE OUTPUT
Sample of 1 document

```
_id: "3"
count : 1
```

User ID 3 who was absent and who did not submit the task between 15 oct-2020 and 31-oct-2020.