

CSE-5331-001 DBMS MODELS AND IMPLEMENTATION

SUMMER 2020

PROJECT 2

TEAM :

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QUESTION 1:

Combining Project with Department and storing it in ProjDept

```
db.PROJECT.aggregate(  
[  
  {  
    '$lookup': {  
      'from': 'DEPARTMENT',  
      'localField': 'Dnum',  
      'foreignField': 'Dnumber',  
      'as': 'ProjDept'  
    }  
  }, {  
    '$unwind': {  
      'path': '$ProjDept'  
    }  
  }, {  
    '$project': {  
      'Pname': 1,  
      'Pnumber': 1,  
      'ProjDept.Dname': 1  
    }  
  }, {  
    '$out': 'ProjDept'  
  }  
])
```

Combining Project with Employee and storing it in ProjEmp

```
db.PROJECT.aggregate(  

```

```
[
  {
    '$lookup': {
      'from': 'EMPLOYEE',
      'localField': 'Dnum',
      'foreignField': 'Dno',
      'as': 'ProjEmp'
    }
  }, {
    '$project': {
      'Pname': 1,
      'Pnumber': 1,
      'ProjEmp.Fname': 1,
      'ProjEmp.Lname': 1
    }
  }, {
    '$out': 'ProjEmp'
  }
])
```

Combining ProjEmp with WORKS_ON and storing it in ProjEmpWorks

```
db.ProjEmp.aggregate([
  {
    '$lookup': {
      'from': 'WORKS_ON',
      'localField': 'Pnumber',
      'foreignField': 'Pno',
```

```

        'as': 'ProjEmpWorks'
    }
}, {
    '$project': {
        'Pname': 1,
        'Pnumber': 1,
        'ProjEmp.Fname': 1,
        'ProjEmp.Lname': 1,
        'ProjEmpWorks.Hours': 1
    }
}, {
    '$out': 'ProjEmpWorks'
}
])

```

Merging ProjEmpWorks with ProjDept and storing it in ProjectFinal

```

db.ProjEmpWorks.aggregate([
    {
        '$lookup': {
            'from': 'ProjDept',
            'localField': 'Pnumber',
            'foreignField': 'Pnumber',
            'as': 'ProjectFinal'
        }
    },
    {
        '$replaceRoot': { newRoot: { $mergeObjects: [ { $arrayElemAt: [ "$ProjectFinal", 0 ] }, "$$ROOT" ] } }
    }
])

```

```

},
{ $project: { ProjectFinal: 1 } },
{$out:"ProjectFinal"}
})

```

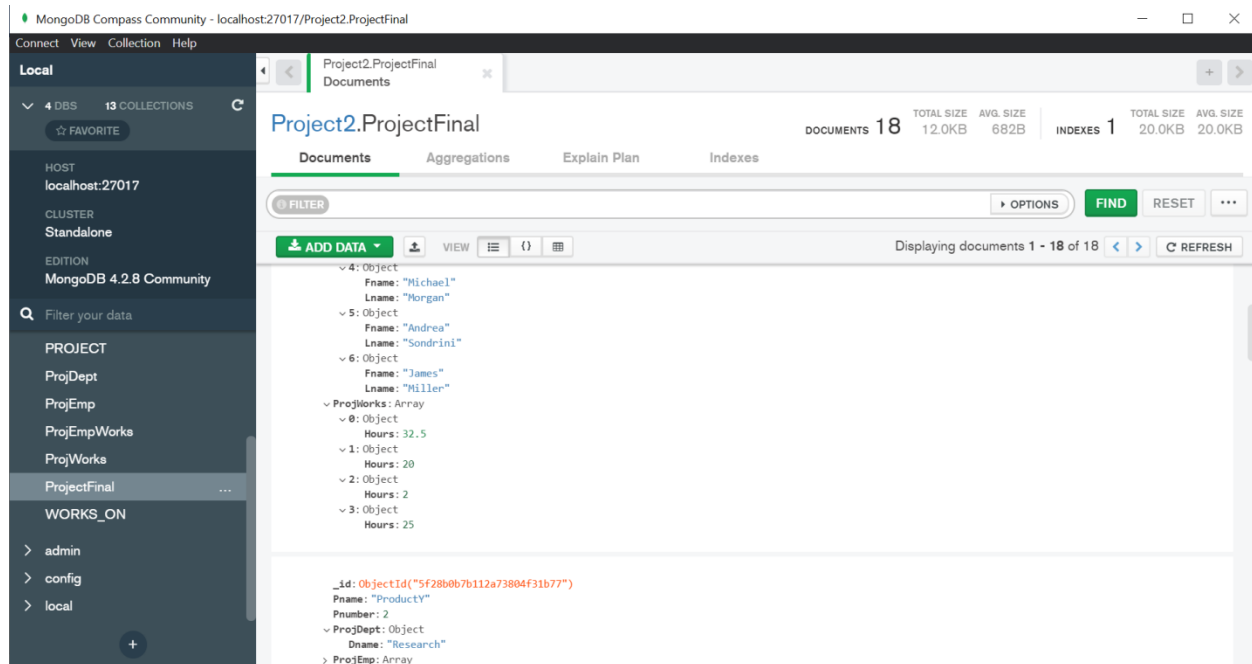
Complex Object for Project:

The screenshot shows the MongoDB Compass interface. On the left, the 'Local' sidebar displays the database 'localhost:27017' and the 'Project2' database. The 'Project2' database contains several collections, including 'ProjectFinal'. The main panel shows the 'Project2.ProjectFinal' collection with 18 documents. The document structure is as follows:

```

{
  "_id": ObjectId("5f28b0b7b112a73804f31b76"),
  "Pname": "ProductX",
  "Pnumber": 1,
  "ProjDept": Object,
  "ProjEmp": Array
    [
      0: Object
        {
          "Fname": "Franklin",
          "Lname": "Wong"
        },
      1: Object
        {
          "Fname": "John",
          "Lname": "Smith"
        },
      2: Object
        {
          "Fname": "Ramesh",
          "Lname": "Narayan"
        },
      3: Object
        {
          "Fname": "Joyce",
          "Lname": "English"
        },
      4: Object
        {
          "Fname": "Michael",
          "Lname": "Horgan"
        },
      5: Object
        {
          "Fname": "Andrea",
          "Lname": "Sondini"
        },
      6: Object
        {
          "Fname": "...",
          "Lname": "..."
        }
    ]
}

```



QUERIES FOR QUESTION 1:

QUESTION 2:

Combining Employee with Department and storing it in EmpDept

```
db.EMPLOYEE.aggregate(
```

```
[
```

```
{
```

```
  '$lookup': {
```

```
    'from': 'DEPARTMENT',
```

```
    'localField': 'Dno',
```

```
    'foreignField': 'Dnumber',
```

```
    'as': 'EmpDept'
```

```
  }
```

```

    }, {
      '$unwind': {
        'path': '$EmpDept'
      }
    }, {
      '$project': {
        'Fname': 1,
        'Lname': 1,
        'Dno': 1,
        'EmpDept.Dname': 1
      }
    }, {
      '$out': 'EmpDept'
    }
  ])

```

Combining Project and Works_on and storing it in ProjWorks

```

db.PROJECT.aggregate(
[
  {
    '$lookup': {
      'from': 'WORKS_ON',
      'localField': 'Pnumber',
      'foreignField': 'Pno',
      'as': 'ProjWorks'
    }
  }, {

```

```

'$project': {
  'Pname': 1,
  'Pnumber': 1,
  'Dnum': 1,
  'ProjWorks.Hours': 1
}, {
  '$out': 'ProjWorks'
}
])

```

Merging EmpDept with ProjWorks and storing it in EmployeeFinal

```

db.EmpDept.aggregate(
[
{
  '$lookup': {
    'from': 'ProjWorks',
    'localField': 'Dno',
    'foreignField': 'Dnum',
    'as': 'EmployeeFinal'
  }
}, {
  '$replaceRoot': {
    'newRoot': {
      '$mergeObjects': [
        {
          '$arrayElemAt': [
            '$EmployeeFinal', 0

```

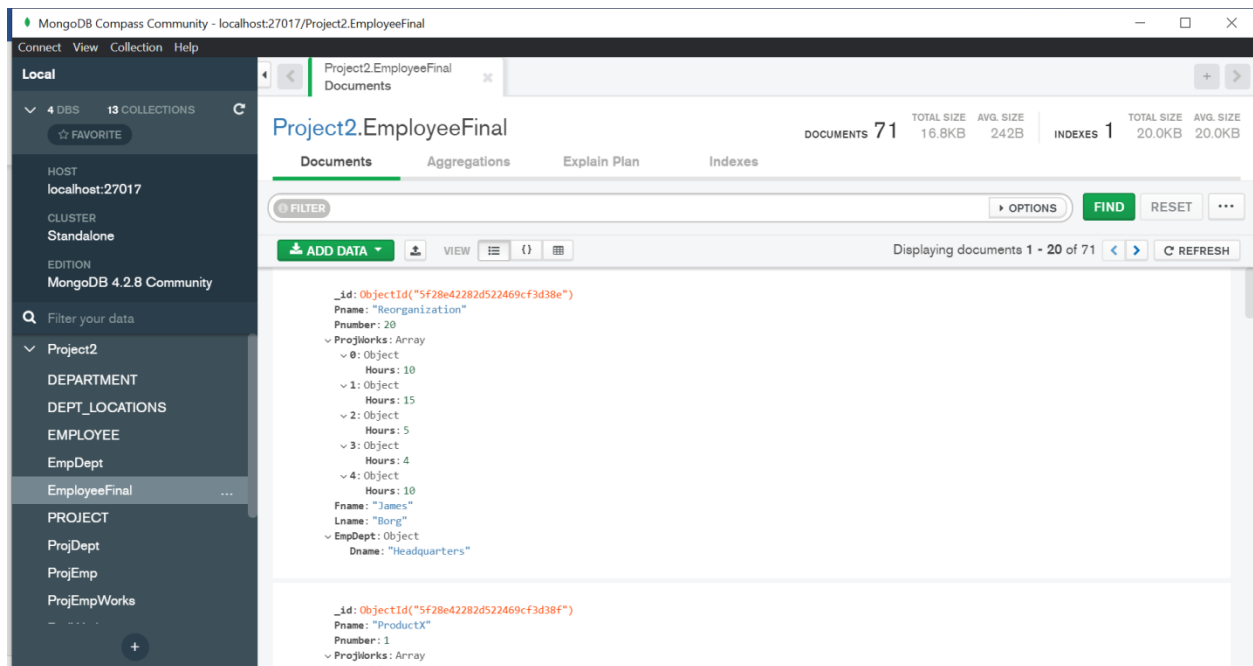


```

        ]
      }, '$$ROOT'
    ]
  }
}
}, {
  '$project': {
    'Fname': 1,
    'Lname': 1,
    'EmpDept.Dname': 1,
    'Pname': 1,
    'Pnumber': 1,
    'ProjWorks.Hours': 1
  }
}, {
  '$out': 'EmployeeFinal'
}
])

```

Complex Object for Employee



EXTRA CREDIT :

The XML files were created using an online tool .

<https://www.convertjson.com/json-to-xml.htm>