

## Project Report

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### Team Members:

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Contribution: We worked on the whole project together.

### Tools used:

- 1)SqlServerManagementStudio
- 2)GitBash
- 3)MongoDB shell
- 4)MongoDB Import tool

### Languages used:

- 1)Transact-SQL
- 2)MongoDB commands
- 3)Python

### Instructions for running:

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1)Run the Script 'CreateDB\_tables&LoadData.sql' in SQLServer. This will create the schema of Company Database given in the textbook.

Database: SaiAkshay

Tables:

EMPLOYEE  
DEPARTMENT  
DEPT\_LOCATIONS  
PROJECT  
WORKS\_ON  
DEPENDENT

2)Run the Script 'ProjectsJson.sql' in SQLServer. This will convert relational data to Json format and creates a text file i.e, 'Projects.txt' in the location 'C:\Jsonfiles'

3)Run the Script 'EmployeesJson.sql' in SQLServer. This will convert relational data to Json format and creates a text file i.e, 'Employees.txt' in the location 'C:\Jsonfiles'

4)Execute the python script 'FormatJson.py'. This will format the text files created into a format suited for loading into mongodb.

command:- python FormatJson.py

5)Execute the below commands in mongodb shell,

use Project

```
db.createCollection("Projects")
```

```
db.createCollection("Employees")
```

This will create below in mongodb,

Database: Project

Collections:

Projects  
Employees

6)Download the MongoImport tool. Add the below line in the file '.bash\_profile'.  
alias mongoimport= <path of mongoimport.exe>

eg:- alias mongoimport="/e/DB2/Project2/mongodb-database-tools-windows-x86\_64-100.1.1/mongodb-database-tools-windows-x86\_64-100.1.1/bin/mongoimport.exe"

7)Run the below commands in hyperterminal. This loads text files into the collections created above,

Command:

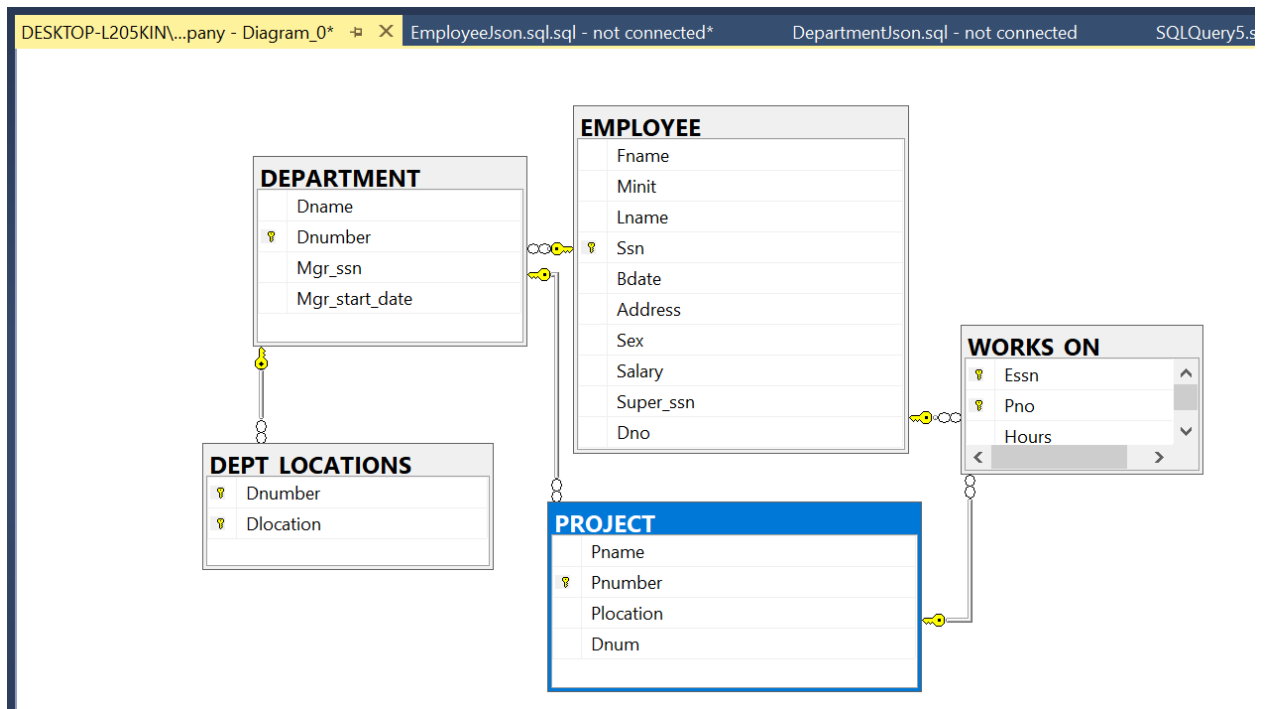
```
mongoimport --db Project --collection Projects --jsonArray < /c/Jsonfiles/projects.txt  
mongoimport --db Project --collection Employees --jsonArray < /c/Jsonfiles/Employees.txt
```

7)Follow the instructions in the file 'ProjectQueries.txt' to execute four different queries on the Project collection

pseudocode:

- 1)Creates company Database in SQLServer with the required tables and load the data from the given input files using 'Insert statement'.
- 2)Joins the tables to get the required columns and loads it into a temporary table.
- 3)Convert the relational data from the above table into Json format using the inbuilt functionality in SQLServer i.e, 'FOR JSON PATH'
- 4)Export the Json output into a text file
- 5)Read the text files created and format them to load into MongoDB.
- 6)Create a database and collections in mongodb.
- 7)Imports the formatted files into MongoDB using mongoimport tool.
- 8)Run different queries on collections and verify the data.

Below is the screenshot of schema of Company Database created in SQL Server,



Screenshot of query execution in sql server which converts relational data to json format,

```

SQLQuery17.sql - (L205KIN\gsai5 (59))*  Department\json.sql - not connected  SQLQuery5.sql - not
13
14 drop table #temp
15 select P.Pname, P.Pnumber, d.Dname, e.Lname, e.Fname, w.Hours
16 into #temp from Project p
17 inner join Department d on p.Dnum = d.Dnumber
18 inner join Works_on w on p.Pnumber = w.Pno
19 inner join Employee e on w.Essn = e.Ssn
20
21 SELECT Pname, Pnumber, Dname,
22        (SELECT i.Lname,i.Fname,i.hours
23         FROM #temp i WHERE i.Pname = o.Pname FOR JSON PATH) AS employees
24 FROM #temp o GROUP BY Pname, Pnumber,Dname FOR JSON PATH
  
```

100 %

Results Messages

JSON\_F52E2B61-18A1-11d1-B105-00805F49916B

1 [{"Pname":"Advertizing","Pnumber":70,"Dname":"HR","employees":[{"Lname":"Maxfield","Fname":"Erin","hours":20.0},{...

Below are the Screenshots of query execution in MongoDB

Query on Project Document:

```
gsai5@DESKTOP-L205KIN MINGW64 ~
$ mongo
MongoDB shell version v4.4.0
connecting to: mongodb://127.0.0.1:27017/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("4306787e-8307-4415-8ea7-97b14c17ce59") }
MongoDB server version: 4.4.0
use Project
switched to db Project
db.Projects.find( { 'employees.hours': { $lte: 5 } } ).forEach(printjson)
{
  "_id" : ObjectId("5f33211c3de0e7aa353dba03"),
  "Pname" : "Advertizing",
  "Pnumber" : 70,
  "Dname" : "HR",
  "employees" : [
    {
      "Lname" : "Maxfield",
      "Fname" : "Erin",
      "hours" : 20
    },
    {
      "Lname" : "Jones",
      "Fname" : "Megan",
      "hours" : 40
    },
    {
      "Lname" : "Liang",
      "Fname" : "Percy",
      "hours" : 10
    }
  ]
}
```

Query on Employee Document

```
gsai5@DESKTOP-L205KIN MINGW64 ~
$ mongo
MongoDB shell version v4.4.0
connecting to: mongodb://127.0.0.1:27017/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("1857afd7-6c0e-432a-8837-e06eba813429") }
MongoDB server version: 4.4.0
use Project
switched to db Project
db.Employees.find( {"Projects":{"Pname":"ProductY",Pnumber:2,hours:10}} ).forEach(printjson)
{
  "_id" : ObjectId("5f332125770377e784bccdcb"),
  "Lname" : "Wong",
  "Fname" : "Franklin",
  "Dname" : "Research",
  "Projects" : [
    {
      "Pname" : "ProductY",
      "Pnumber" : 2,
      "hours" : 10
    },
    {
      "Pname" : "ProductZ",
      "Pnumber" : 3,
      "hours" : 10
    }
  ]
}
```