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Professor Dey
Database Design
7/30/2018

Database Project Part 2

RDB Translation

Student(MNumber, **DepartmentNo**, Firstname, Lastname, Dob, Gender, Category, Nationality, Current_Status, AptNo, HouseNo, Street, City, State, Zipcode, Year)

- **DepartmentNo** is a foreign key to **AcademicDepartment**

SpecialNeeds(MNumber, Needs)

- **MNumber** is a foreign key to **Student**

AdditionalComments(MNumber, Comments)

- **MNumber** is a foreign key to **Student**

AcademicDepartment(Department#, **EmployeeNoAdvisor**)

- **EmployeeNoAdvisor** is a foreign key to **Staff**

Staff(EmployeeNo, FirstName, LastName, Gender, Jobtitle, DOB, ResidenceHallName, OfficeNo)

ResidenceHall(Name, **EmployeeNoManager**, Telephone, House_No, Street, City, State, Zip)

- **EmployeeNoManager** is a foreign key to **Staff**

Room(Roomno, **Suiteno**, DoorNo, Monthly_Rate)

- **Suiteno** is a foreign key to **Suite**

Suite(UniqueSuiteNo, DoorNo, Bedrooms)

Lease(LeaseNo, **MNumber**, **UniqueSuiteNo**, **UniqueRoomNo**, **ResidenceHallName**, MoveOut, MoveIn, Duration, Academic_Year)

- **MNumber** is a foreign key to **Student**
- **UniqueSuiteNo** is a foreign key to **Suite**
- **UniqueRoomNo** is a foreign key to **Room**
- **ResidenceHallName** is a foreign key to **ResidenceHall**

Semesters(LeaseNo, Semester)

- **LeaseNo** is a foreign key to **Lease**

Populated Tables

AcademicDepartment table:

The screenshot displays the MySQL Workbench interface. The left sidebar shows the 'SCHEMAS' tree with the 'sys' database expanded, listing various tables including 'AcademicDepartment'. The main window shows a SQL query: `select * from AcademicDepartment`. Below the query editor, the 'Result Grid' displays the data from the 'AcademicDepartment' table. The table has four columns: '#', 'Departmentno', 'EmployeeNo', and 'Advisor'. The data is as follows:

#	Departmentno	EmployeeNo	Advisor
1	1	33334444	
2	4	44444444	
3	3	66664333	
4	2	77775666	

At the bottom, the 'Action Output' pane shows the execution details: 'Time: 14:07:54', 'Action: select * from AcademicDepartment LIM...', 'Message: 4 row(s) returned', and 'Duration: 0.00094 s'.

Additional_comments:

The screenshot shows the MySQL Workbench interface with a query executed on the 'additional_comments' table. The query is 'select * from additional_comments'. The results are displayed in a grid with 5 rows. The 'Action Output' pane shows the query was executed at 14:06:00, returning 5 rows in 0.00090 seconds.

#	MNumber	Comment
1	12345671	Must have extra time on tests
2	12345673	Really brilliant
3	12345679	Has learning disability
4	12345683	Has to sit in front row
5	12345684	has a tough time socializing

Lease table:

The screenshot shows the MySQL Workbench interface with a query executed on the 'lease' table. The query is 'select * from lease'. The results are displayed in a grid with 11 rows. The 'Action Output' pane shows the query was executed at 14:08:59, returning 36 rows in 0.0021 seconds.

#	Leaseno	MNumber	UniqueSuiteNo	UniqueRoomNo	Residence_Hall_Name	Move_In	Move_Out	Duration	Academic_Year
1	1	12345670	1	1	Scioto	2017-09-01	2018-04-28	2	3
2	2	12345673	1	2	Scioto	2017-09-01	2018-04-28	2	3
3	3	12345672	2	5	Scioto	2017-09-01	2018-04-28	2	5
4	4	12345674	2	4	Turner	2017-09-01	2018-04-28	2	5
5	5	12345679	2	6	Turner	2017-09-01	2018-04-28	2	4
6	6	12345680	2	7	Turner	2017-09-01	2018-04-28	2	5
7	7	12345681	2	8	Turner	2017-09-01	2018-04-28	2	5
8	8	12345675	9	9	Dabney	2017-09-01	2018-04-28	2	3
9	9	12345676	10	10	Daniels	2017-09-01	2018-04-28	2	3
10	10	12345677	11	11	Calhoun	2017-09-01	2018-04-28	2	3
11	11	12345682	12	12	Stratford	2017-09-01	2018-04-28	2	1

ResidenceHall table:

The screenshot shows the MySQL Workbench interface with the 'residence_hall' table selected. The SQL query 'select * from residence_hall' is entered in the SQL File 37 editor. The Result Grid displays 6 rows of data. The Action Output pane shows the query execution details.

#	Name	EmployeeNoManager	Telephone	House_No	Street	City	State	Zip
1	Calhoun	22266666	4565553215	32	Ravine	Cincinnati	OH	45220
2	Dabney	0	1112223333	365	Street	Cincinnati	OH	45220
3	Daniels	11122222	9876543211	56	Searching	Cincinnati	OH	45220
4	Scioto	33388888	1234567899	45	Da	Cincinnati	OH	45220
5	Stratford	33399999	6667778888	300	Baker	Cincinnati	OH	45220
6	Turner	55555	1231234444	321	Baker	Cincinnati	OH	45220

	Time	Action	Message	Duration / Fetch
1	14:10:16	select * from residence_hall LIMIT 0, 1000	6 row(s) returned	0.0010 sec / 0.0000...

Room table:

The screenshot shows the MySQL Workbench interface with the 'room' table selected. The SQL query 'select * from room' is entered in the SQL File 38 editor. The Result Grid displays 12 rows of data. The Action Output pane shows the query execution details.

#	Roomno	Suiteno	Doorno	Monthly_Rate
1	1	1	121	402
2	2	1	120	402
3	3	1	122	402
4	4	2	408	200
5	5	2	407	200
6	6	2	406	200
7	7	2	405	200
8	8	2	404	200
9	9	NULL	300	800
10	10	NULL	204	800
11	11	NULL	101	800
12	12	NULL	385	800

	Time	Action	Message	Duration / Fetch
1	14:10:52	select * from room LIMIT 0, 1000	15 row(s) returned	0.00090 sec / 0.000...

Semesters table:

The screenshot shows the MySQL Workbench interface with a query executed on the 'semesters' table. The query is 'select * from semesters'. The result grid displays 12 rows of data with columns: #, Leaseno, and Semester. The 'Leaseno' column contains values 1 through 6, and the 'Semester' column contains values FS and SS. The 'Action Output' pane at the bottom shows the query completed successfully, returning 28 rows.

#	Leaseno	Semester
1	1	FS
2	1	SS
3	2	FS
4	2	SS
5	3	FS
6	3	SS
7	4	FS
8	4	SS
9	5	FS
10	5	SS
11	6	FS
12	6	SS

	Time	Action	Message	Duration / Fetch
1	14:12:10	select * from semesters LIMIT 0, 1000	28 row(s) returned	0.0010 sec / 0.0000...

Special_needs table:

The screenshot shows the MySQL Workbench interface with a query executed on the 'special_needs' table. The query is 'select * from special_needs'. The result grid displays 5 rows of data with columns: #, MNumber, and Needs. The 'MNumber' column contains values 12345671 through 12345684, and the 'Needs' column contains values 'Needs inhaler', 'needs insulin', 'needs xanax', 'needs antacids', and 'needs Prozac'. The 'Action Output' pane at the bottom shows the query completed successfully, returning 5 rows.

#	MNumber	Needs
1	12345671	Needs inhaler
2	12345673	needs insulin
3	12345679	needs xanax
4	12345683	needs antacids
5	12345684	needs Prozac

	Time	Action	Message	Duration / Fetch
1	14:12:49	select * from special_needs LIMIT 0, 1000	5 row(s) returned	0.0019 sec / 0.0000...

Staff table:

The screenshot shows the MySQL Workbench interface with a query executed on the 'staff' table. The query is 'select * from staff'. The results are displayed in a grid with 12 rows and 9 columns. The columns are: #, EmployeeNo, Firstname, Lastname, Gender, Job_Title, DOB, Residence_Hall_Name, and Office_Num. The data includes staff members like Person Last, Joe Smith, Steve McQueen, Johnny Marr, Mike Patrick, Patrick Starr, Theodore Roosevelt, Steven Sinclair, Steph Curry, Lyle Lanley, Ken Baker, and Jane Doe.

#	EmployeeNo	Firstname	Lastname	Gender	Job_Title	DOB	Residence_Hall_Name	Office_Num
1	0	Person	Last	F	Hall Manager	1955-01-01	Dabney	100
2	55555	Joe	Smith	M	Hall Manager	1985-01-01	Scioto	0
3	10000000	Steve	McQueen	F	Hall Manager	1950-02-05	NULL	NULL
4	11111111	Johnny	Marr	M	Hall Manager	1900-01-01	NULL	NULL
5	11122222	Mike	Patrick	F	Hall Manager	1955-01-01	Daniels	100
6	20000000	Patrick	Starr	M	Hall Manager	1900-01-01	NULL	NULL
7	22266666	Theodore	Roosevelt	F	Hall Manager	1960-01-01	Calhoun	200
8	30000000	Steven	Sinclair	M	Hall Manager	2000-05-30	NULL	NULL
9	33334444	Steph	Curry	M	Academic Advisor	1986-09-30	NULL	1100
10	33388888	Lyle	Lanley	M	Hall Manager	1990-01-01	Turner	400
11	33399999	Ken	Baker	M	Hall Manager	1985-01-01	Stratford	300
12	44444444	Jane	Doe	F	Academic Advisor	1960-06-28	NULL	1000

Student table:

The screenshot shows the MySQL Workbench interface with a query executed on the 'student' table. The query is 'select * from student'. The results are displayed in a grid with 11 rows and 13 columns. The columns are: #, MNumber, Departmentno, Firstname, Lastname, DOB, Gender, Category, Nationality, Current_Status, Apt_Num, House_Num, and Street. The data includes students like Kyle Cullion, Theodore Smythe, Joe Hirschfeld, Joe Jobs, Ken Myers, Person King, Mike Gilbert, William Klunk, Chris Johnson, George Bluthe, and Tobias Funke.

#	MNumber	Departmentno	Firstname	Lastname	DOB	Gender	Category	Nationality	Current_Status	Apt_Num	House_Num	Street
1	12345670	2	Kyle	Cullion	1997-12-04	M	G	American	placed	121	45	Da
2	12345671	2	Theodore	Smythe	1996-10-14	M	U	american	waiting	NULL	32	Ravine
3	12345672	3	Joe	Hirschfeld	1996-08-07	M	G	american	placed	407	321	Baker
4	12345673	2	Joe	Jobs	1996-09-26	M	U	american	placed	120	45	Da
5	12345674	2	Ken	Myers	1996-11-26	M	G	american	placed	408	321	Baker
6	12345675	4	Person	King	1997-01-04	M	G	american	placed	300	365	Street
7	12345676	3	Mike	Gilbert	1997-06-17	M	U	american	placed	204	56	Search
8	12345677	3	William	Klunk	1997-02-24	M	U	indian	placed	101	32	Ravine
9	12345678	4	Chris	Johnson	1997-02-24	M	U	korean	waiting	NULL	300	Baker
10	12345679	2	George	Bluthe	1996-11-27	M	G	american	placed	406	321	Baker
11	12345680	3	Tobias	Funke	1997-09-27	M	G	american	placed	405	321	Baker

Suite table:

The screenshot shows the MySQL Workbench interface. The left sidebar contains navigation panels for MANAGEMENT, INSTANCE, PERFORMANCE, and SCHEMAS. The SCHEMAS panel is expanded, showing a tree view of databases including 'business' and 'sys'. The 'sys' database is selected, and the 'suite' table is highlighted. The main query editor shows the SQL statement: `select * from suite`. The 'Limit to 1000 rows' option is set. The 'Result Grid' tab is active, displaying the query results in a table format. The table has four columns: '#', 'UniqueSuiteNo', 'Doorno', and 'Bedrooms'. The results show five rows of data. The 'Action Output' tab is also visible, showing the execution details of the query.

#	UniqueSuiteNo	Doorno	Bedrooms
1	1	100	3
2	2	400	5
3	3	300	4
4	4	500	2
5	5	700	2
*	NULL	NULL	NULL

	Time	Action	Message	Duration / Fetch
1	14:18:57	select * from suite LIMIT 0, 1000	5 row(s) returned	0.0019 sec / 0.0000...

Queries and Output

Problem 1 query and output:

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL query:

```
1 • SELECT Lastname, MNumber, Category, Departmentno, Academic_Year
2 FROM student
3 WHERE Current_Status = 'Waiting';
4
```

The results are displayed in the Result Grid below the query editor:

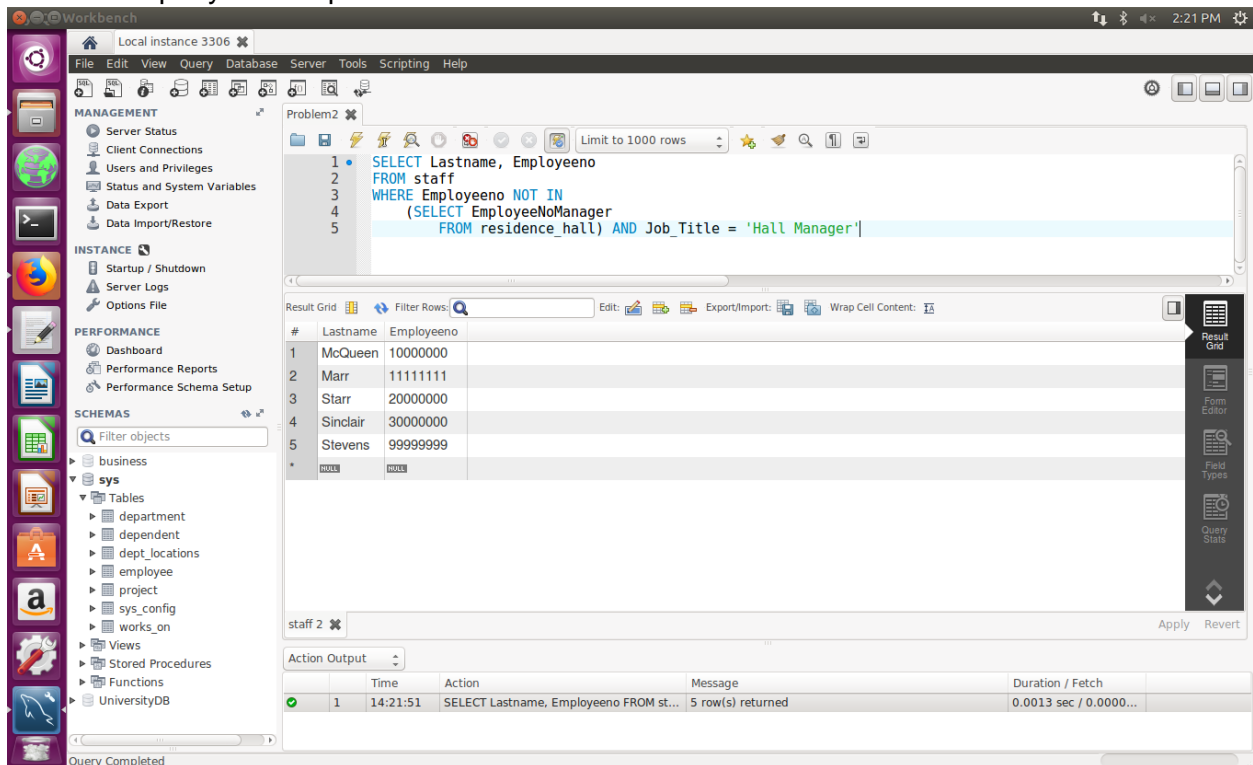
#	Lastname	MNumber	Category	Departmentno	Academic_Year
1	Smythe	12345671	U	2	3
2	Johnson	12345678	U	4	1
3	Hirschfeld	12345686	U	2	NULL
4	Lolla	12345687	G	3	NULL
*	NULL	NULL	NULL	NULL	NULL

Below the Result Grid, the Action Output pane shows the execution details:

	Time	Action	Message	Duration / Fetch
✓ 1	14:26:43	SELECT Lastname, MNumber, Category, ...	4 row(s) returned	0.0020 sec / 0.0000...

The status bar at the bottom indicates "Query Completed".

Problem 2 query and output:



The screenshot shows the MySQL Workbench interface for 'Local instance 3306'. The query editor displays the following SQL query:

```
1 • SELECT Lastname, Employeeeno
2 FROM staff
3 WHERE Employeeeno NOT IN
4 (SELECT EmployeeNoManager
5 FROM residence_hall) AND Job_Title = 'Hall Manager'
```

The 'Result Grid' shows 5 rows of data:

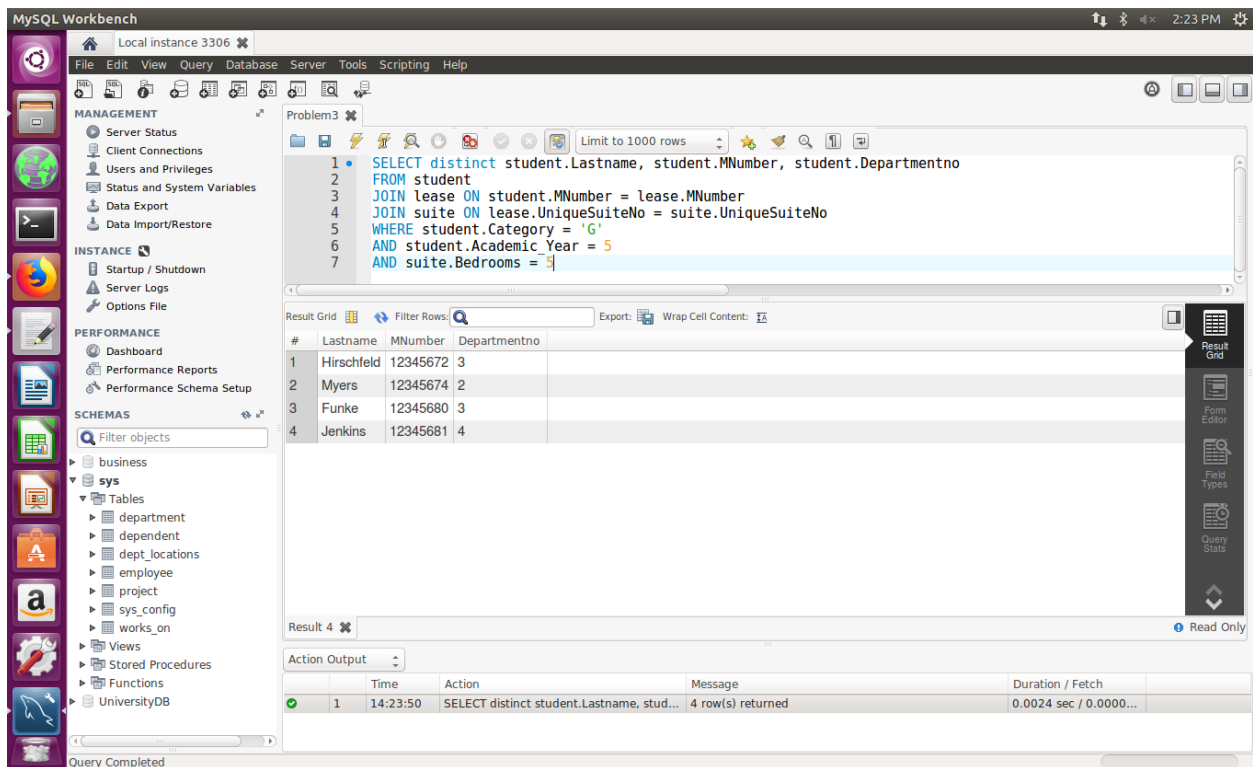
#	Lastname	Employeeeno
1	McQueen	10000000
2	Marr	11111111
3	Starr	20000000
4	Sinclair	30000000
5	Stevens	99999999

The 'Action Output' table shows the query execution details:

	Time	Action	Message	Duration / Fetch
1	14:21:51	SELECT Lastname, Employeeeno FROM staff...	5 row(s) returned	0.0013 sec / 0.0000...

Query Completed

Problem 3 query and output:



The screenshot shows the MySQL Workbench interface for 'Local instance 3306'. The query editor displays the following SQL query:

```
1 • SELECT distinct student.Lastname, student.MNumber, student.Departmentno
2 FROM student
3 JOIN lease ON student.MNumber = lease.MNumber
4 JOIN suite ON lease.UniqueSuiteNo = suite.UniqueSuiteNo
5 WHERE student.Category = 'G'
6 AND student.Academic Year = 5
7 AND suite.Bedrooms = 3
```

The 'Result Grid' shows 4 rows of data:

#	Lastname	MNumber	Departmentno
1	Hirschfeld	12345672	3
2	Myers	12345674	2
3	Funke	12345680	3
4	Jenkins	12345681	4

The 'Action Output' table shows the query execution details:

	Time	Action	Message	Duration / Fetch
1	14:23:50	SELECT distinct student.Lastname, stud...	4 row(s) returned	0.0024 sec / 0.0000...

Query Completed

Problem 4 query and output (Assumption: Total_rent wanted is just for first 4 years):

The screenshot shows the MySQL Workbench interface for 'Local instance 3306'. The query editor displays the following SQL code:

```

1 • SELECT COUNT(x.MNumber) AS num_students, x.Departmentno, SUM(x.total_rent) AS total_rent
2 FROM
3 (SELECT student.MNumber, student.Departmentno, y.total_rent
4 FROM student
5 JOIN (
6     select lease.MNumber AS MNumber, SUM(lease.duration*room.Monthly_Rate*3) AS total_rent
7     from lease
8     JOIN room ON lease.UniqueRoomno = room.Roomno
9     where lease.Academic_Year in (1,2,3,4)
10    group by MNumber
11    having count(distinct Academic_Year) >= 4
12 ) AS y ON y.MNumber = student.MNumber
13 GROUP BY y.MNumber) AS x
14 GROUP BY x.Departmentno

```

The result grid shows the following data:

#	num_students	Departmentno	total_rent
1	1	1	19200
2	2	2	9600
3	2	3	9600
4	1	4	4800

The Action Output pane shows the execution details:

	Time	Action	Message	Duration / Fetch
1	14:24:54	SELECT COUNT(x.MNumber) AS num_stu...	4 row(s) returned	0.0028 sec / 0.0000...

Problem 5 query and output:

The screenshot shows the MySQL Workbench interface for 'Local instance 3306'. The query editor displays the following SQL code:

```

1 • SELECT student.Firstname, student.Lastname
2 FROM student
3 JOIN lease ON lease.MNumber = student.MNumber
4 JOIN residence hall ON residence hall.Name = lease.Residence_Hall_Name
5 JOIN staff ON lease.Residence_Hall_Name = staff.Residence_Hall_Name
6 JOIN semesters ON lease.Leaseno = semesters.Leaseno
7 WHERE semesters.Semester = 'FS'
8 AND staff.Firstname = student.Firstname
9 AND YEAR(lease.Move_In) = 2017
10

```

The result grid shows the following data:

#	Firstname	Lastname
1	Person	King
2	Joe	Jobs
3	Joe	Hirschfeld
4	Mike	Gilbert

The Action Output pane shows the execution details:

	Time	Action	Message	Duration / Fetch
1	14:25:22	SELECT student.Firstname, student.Last...	4 row(s) returned	0.0029 sec / 0.0000...

Log

Names:

Joe Hirschfeld, Kyle Cullion

Time, Location, Duration:

17:45, Langsam Library, Thursday, July 26, 4.5 hours

Topics of Discussion:

Finalizing Schema and setting up database in MySQL

Action Items:

Kyle – Setting up instance of MySQL and populating data

Joe – Assisting with population and finalizing of RDB

Names:

Joe Hirschfeld, Kyle Cullion

Time, Location, Duration:

2:00, Langsam Library, Friday, July 27, 3 hours

Topics of Discussion:

Finalizing Queries

Action Items:

Kyle – Finished Queries 3, 4, and 5

Joe – Wrote queries 1 and 2, and also helped on queries 4 and 5

Names:

Joe Hirschfeld, Kyle Cullion

Time, Location, Duration:

1:00, Langsam Library, Saturday, July 28, 2 hour

Topics of Discussion:

Checking queries and compiling screenshots and information for later submission

Action Items:

Kyle – Executed queries and collected screenshots

Joe – Compiled information for later submission

Total Hours: 9.5 Hours (3 hours solo work for each, 6.5 hours team work)