

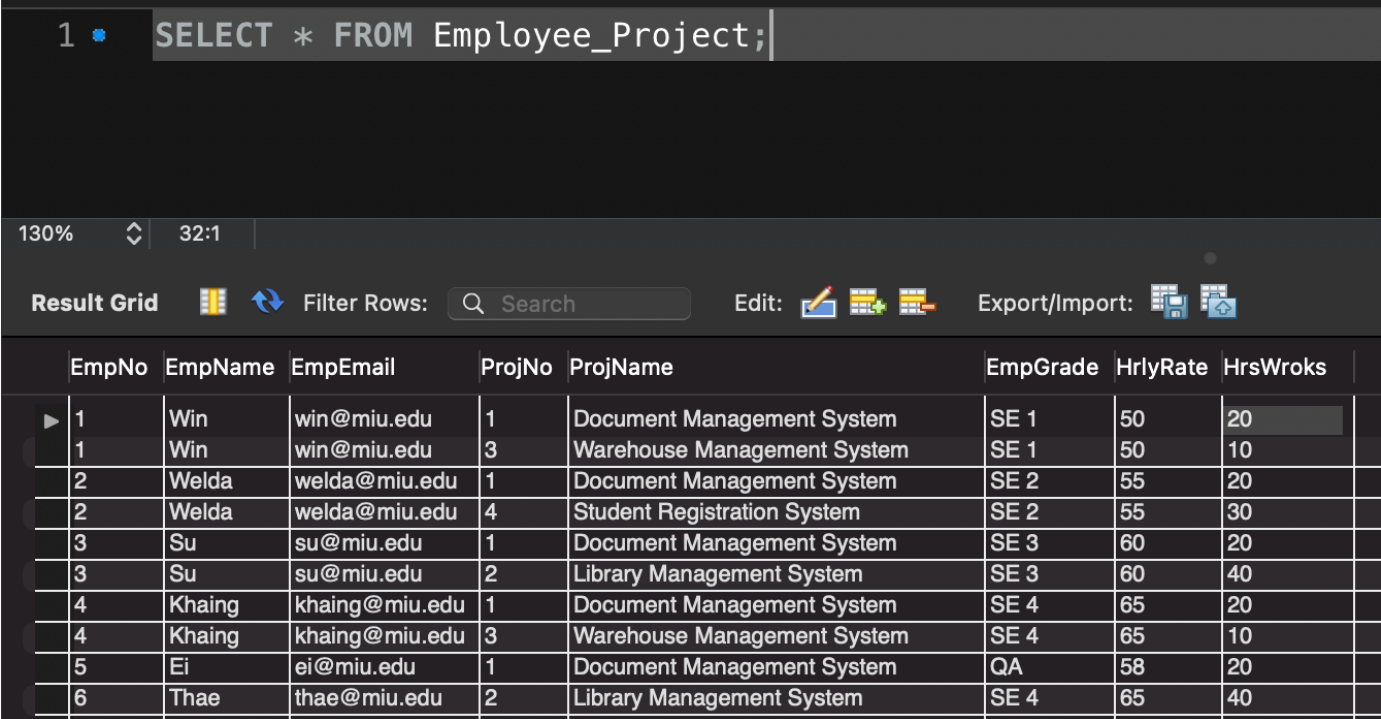
Database Management System – cs422 DE

Lab 2 – Week 5

Consider a relation with following attributes:

EmpNo: Employee Number
EmpName : Employee Name
EmpEmail : Employee Email
ProjNo : Project Number
ProjName : Project Name
EmpGrade : Employee Grade
HrlyRate : Hourly rate of compensation
Employees of the same grade receive the same hourly compensation
HrsWorked : Hours a particular employee worked on a particular project

1. Create this table and sample data in SQL Server. There must be at least 10 rows. There must be 3 to 6 Employees and 3 to 6 projects. You need to add the screenshot of the table showing all the rows.



The screenshot shows a SQL query window with the following query: `SELECT * FROM Employee_Project;` The result grid displays 10 rows of data. The columns are: EmpNo, EmpName, EmpEmail, ProjNo, ProjName, EmpGrade, HrlyRate, and HrsWroks. The data is as follows:

	EmpNo	EmpName	EmpEmail	ProjNo	ProjName	EmpGrade	HrlyRate	HrsWroks
▶	1	Win	win@miu.edu	1	Document Management System	SE 1	50	20
	1	Win	win@miu.edu	3	Warehouse Management System	SE 1	50	10
	2	Welda	welda@miu.edu	1	Document Management System	SE 2	55	20
	2	Welda	welda@miu.edu	4	Student Registration System	SE 2	55	30
	3	Su	su@miu.edu	1	Document Management System	SE 3	60	20
	3	Su	su@miu.edu	2	Library Management System	SE 3	60	40
	4	Khaing	khaing@miu.edu	1	Document Management System	SE 4	65	20
	4	Khaing	khaing@miu.edu	3	Warehouse Management System	SE 4	65	10
	5	Ei	ei@miu.edu	1	Document Management System	QA	58	20
	6	Thae	thae@miu.edu	2	Library Management System	SE 4	65	40

2. Find all functional dependencies.

ANS:

EmpNo, ProjNo -> HrsWorked

EmpEmail, ProjNo -> HrsWorked

EmpNo -> EmpName, EmpEmail, EmpGrade, HrlyRate

ProjNo -> ProjName

3. Find all Candidate Keys.

ANS:

EmpNo, ProjNo

EmpEmail, ProjNo

4. Find a Primary Key.

ANS:

EmpNo, ProjNo

5. Find all partial dependencies.

ANS:

EmpNo -> EmpName, EmpEmail, EmpGrade, HrlyRate

ProjNo -> ProjName

6. Normalize to 2NF.

ANS:

Employee_Project relation:

EmpNo	ProjNo	HrsWorked
-------	--------	-----------

Employee relation:

EmpNo	EmpName	EmpEmail	EmpGrade	HrlyRate
-------	---------	----------	----------	----------

Project relation:

ProjNo	ProjName
--------	----------

7. Show new tables after 2NF (based on the sample data you created in 1 above). Screenshots of all the tables are required.

1 • SELECT * FROM Employee_Project_2NF;

130% 36:1

Result Grid Filter Rows: Search Edit: Export/Import:

	EmpNo	ProjNo	HrsWorked
▶	1	1	20
	1	3	10
	2	1	20
	2	4	30
	3	1	20
	3	2	40
	4	1	20
	4	3	10
	5	1	20
	6	2	40

1 SELECT * FROM Employee_2NF;

130% 28:1

Result Grid Filter Rows: Edit:

	EmpNo	EmpName	EmpEmail	EmpGrade	HrlyRate	
	1	Win	win@miu.edu	SE 1	50	
	2	Welda	welda@miu.edu	SE 2	55	
	3	Su	su@miu.edu	SE 3	60	
	4	Khaing	khaing@miu.edu	SE 4	65	
	5	Ei	ei@miu.edu	QA	58	
	6	Thae	thae@miu.edu	SE 4	65	

1 SELECT * FROM Project_2NF;

130% 1:1

Result Grid Filter Rows: Edit:

	ProjNo	ProjName	
	1	Document Management System	
	2	Library Management System	
	3	Warehouse Management System	
	4	Student Registration System	

8. Normalize to 3NF.

ANS:

Employee_Project relation:

EmpNo	ProjNo	HrsWorked
-------	--------	-----------

Employee relation:

EmpNo	EmpName	EmpEmail	EmpGrade
-------	---------	----------	----------

PayRate relation:

EmpGrade	HrlyRate
----------	----------

Project relation:

ProjNo	ProjName
--------	----------

9. Show new tables after 3NF (based on the sample data you created in 1 above). Screenshots of all the tables are required.

1
SELECT * FROM Employee_Project_3NF;

130%
35:1

Result Grid
Filter Rows:
Search
Edit:

	EmpNo	ProjNo	HrsWorked
▶	1	1	20
●	1	3	10
●	2	1	20
●	2	4	30
●	3	1	20
●	3	2	40
●	4	1	20
●	4	3	10
●	5	1	20
●	6	2	40

```
1 • SELECT * FROM Employee_3NF;
```

130% 23:1

Result Grid



Filter Rows:



Search

	EmpNo	EmpName	EmpEmail	EmpGrade
▶	1	Win	win@miu.edu	SE 1
	2	Welda	welda@miu.edu	SE 2
	3	Su	su@miu.edu	SE 3
	4	Khaing	khaing@miu.edu	SE 4
	5	Ei	ei@miu.edu	QA
	6	Thae	thae@miu.edu	SE 4

```
1 • SELECT * FROM PayRate;
```

130% 23:1

Result Grid



Filter Rows:



Search

	EmpGrade	HrlyRate
▶	QA	58
	SE 1	50
	SE 2	55
	SE 3	60
	SE 4	65

1  SELECT * FROM Project_3NF;

130%



27:1

Result Grid



Filter Rows:



Search

	ProjNo	ProjName	
▶	1	Document Management System	
▶	2	Library Management System	
▶	3	Warehouse Management System	
▶	4	Student Registration System	



1

Document Management System

2

Library Management System

3

Warehouse Management System

4

Student Registration System

MUM-DBMS