Database Management System - cs422 DE

Lab 2 - Week 5

This Lab is based on lecture 5 (chapters 14).

- o Submit your own work on time. No credit will be given if the lab is submitted after the due date.
- o Note that the completed lab should be submitted in .doc, .docx, .rtf or .pdf format only.
- o If you think that your answer needs more explanation to get credit then please write it down.

Consider a relation with following attributes:

EmpNo: Employee Number
EmpName : Employee Name
EmpEmail : Employee Email

ProjNo: Project Number

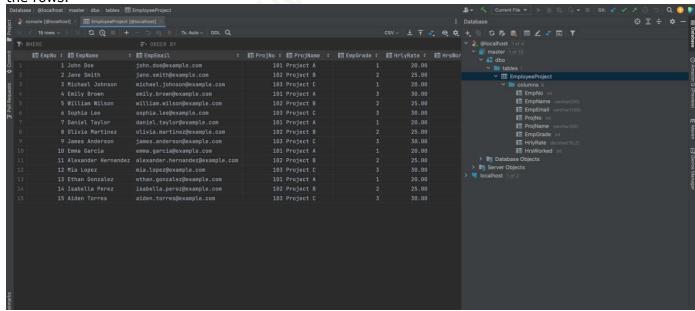
ProjName : Project Name EmpGrade : Employee Grade

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.



2. Find all functional dependencies.

ANS:

- (EmpNo) -> EmpName, EmpEmail, EmpGrade, HrlyRate
- (ProjNo) -> ProjName
- (EmpGrade) -> HrlyRate
- (EmpNo, ProjNo) -> HrsWorked

3. Find all Candidate Keys.

ANS:

- (EmpNo, ProjNo) -> uniquely identify all other attributes.
- 4. Find a Primary Key.

ANS:

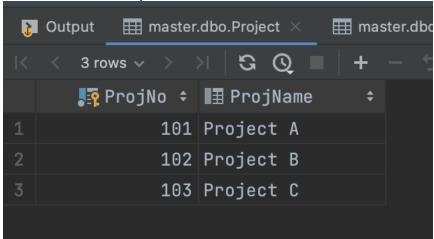
- (EmpNo, ProjNo)
- 5. Find all partial dependencies.

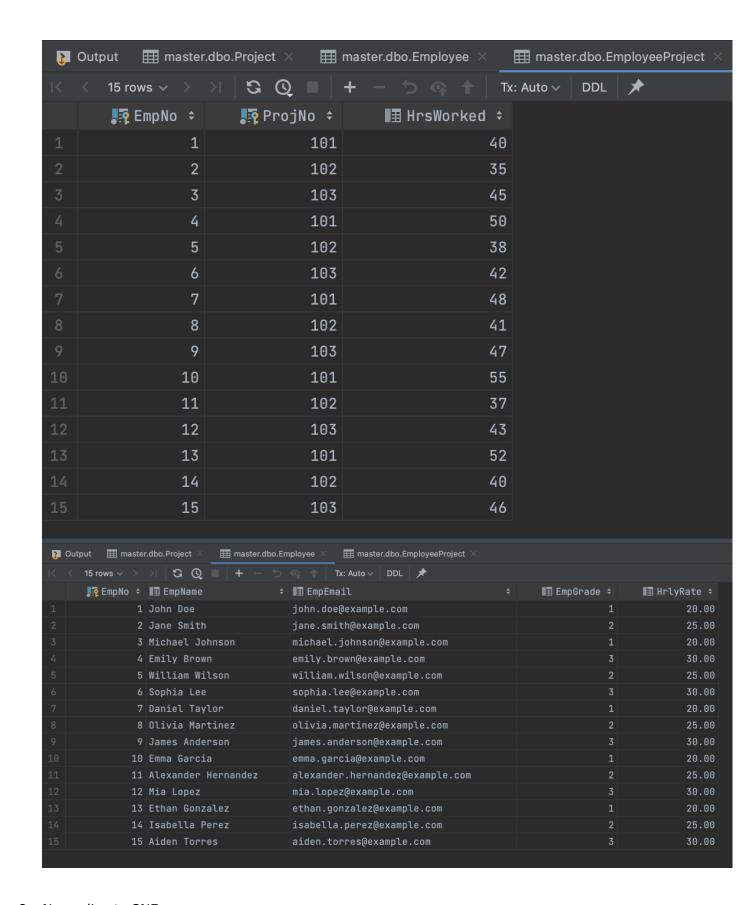
ANS:

- (EmpNo) -> EmpName, EmpEmail, EmpGrade, HrlyRate
- (ProjNo) -> ProjName
- 6. Normalize to 2NF.

ANS: Eliminate partial dependencies.

- Employee (<u>EmpNo</u>, EmpName, EmpEmail, EmpGrade, HrlyRate)
- Project (<u>ProjNo</u>, ProjName)
- EmployeeProject (<u>EmpNo</u>, <u>ProjNo</u>, HrsWorked)
- 7. Show new tables after 2NF (based on the sample data you created in 1 above). Screenshots of all the tables are required.





8. Normalize to 3NF.

ANS: Eliminate transitive dependency: (EmpGrade) -> HrlyRate

Employee (<u>EmpNo</u>, EmpName, EmpEmail, EmpGrade)

- EmpCompensation (EmpGrade, HrlyRate)
- Project (ProjNo, ProjName)
- EmployeeProject (<u>EmpNo</u>, <u>ProjNo</u>, HrsWorked)

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

