**Database Management System – cs422 DE**

**Lab 2 – Week 5**

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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.

Graphical user interface

Description automatically generated

1. Find all functional dependencies.  
   ANS:

EmpNo, ProjNo -> HrsWorked

EmpEmail, ProjNo -> HrsWorked

EmpNo -> EmpName, EmpEmail, EmpGrade, HrlyRate

ProjNo -> ProjName

1. Find all Candidate Keys.  
   ANS:

EmpNo, ProjNo

EmpEmail, ProjNo

1. Find a Primary Key.  
   ANS:

EmpNo, ProjNo

1. Find all partial dependencies.  
   ANS:

EmpNo -> EmpName, EmpEmail, EmpGrade, HrlyRate

ProjNo -> ProjName

1. Normalize to 2NF.  
   ANS:

Employee\_Project relation:

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

Employee relation:

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

Project relation:

|  |  |
| --- | --- |
| ProjNo | ProjName |

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

Graphical user interface

Description automatically generated

A screenshot of a computer

Description automatically generated with medium confidence

Graphical user interface

Description automatically generated

1. Normalize to 3NF.  
   ANS:

Employee\_Project relation:

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

Employee relation:

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

PayRate relation:

|  |  |
| --- | --- |
| EmpGrade | HrlyRate |

Project relation:

|  |  |
| --- | --- |
| ProjNo | ProjName |

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

A picture containing graphical user interface

Description automatically generated

A picture containing table

Description automatically generated

A picture containing graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated