CSC 572 – Advanced Database Concepts HW #2
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USER VIEW DBDLs

NOTE: Trivial functional dependencies are not listed.

USER VIEW 1

Entity:
Employee, OfficeLocation, Job, Group

Attributes:
EmpID, EmpFirstName, EmpLastName, OffLocID, JobID, JobTitle, GroupID, GroupName

Functional Dependencies:
EmpID --> EmpID, EmpFirstName, EmpLastName, OffLocID, JobID, GroupID
JobID --> JobID, JobTitle
GroupID --> GroupName

Primary Key:
EmpID, OffLocID, JobID, GroupID

Special Restrictions:
Unique constraint on JobTitle
Unique constraint on GroupName

DBDL 3NF:
Employee(<u>EmpID</u>, EmpFirstName, EmpLastName, OffLocID, JobID, GroupID)
OfficeLocation(<u>OffLocID</u>)
Job(<u>JobID</u>, JobTitle)
Group(<u>GroupID</u>, GroupName)
FK OffLocID --> OfficeLocation
FK JobID --> Job
FK GroupID --> Group
SK JobTitle
SK GroupName

USER VIEW 2

Entity:
Employee, Project, EmployeeProject

Attributes:
EmpID, EmpFirstName, EmpLastName, ProjID, ProjName, EmpPercentTimeAssigned, EmpTotalHoursWorked

Functional Dependencies:
EmpID --> EmpID, EmpFirstName, EmpLastName
ProjID --> ProjName
EmpID, ProjID --> EmpPercentTimeAssigned, EmpTotalHoursWorked

Primary Key:
EmpID, ProjID

Special Restrictions:
Unique constraint on ProjName

DBDL 3NF:
Employee(<u>EmpID</u>, EmpFirstName, EmpLastName)
Project(<u>ProjID</u>, ProjName)

EmployeeProject(<u>EmpID</u>, <u>ProjID</u>, EmpPercentTimeAssigned, EmpTotalHoursWorked)
FK EmpID --> Employee
FK ProjID --> Project

USER VIEW 3

Entity:
Employee, Project, Customer
Attributes:
EmpID, EmpFirstName, EmpLastName, ProjID, ProjName, ProjType, ProjStatus, ProjStartDate,
ProjEndDate, ProjFundsBudgeted, ProjPersonHoursBudgeted, ProjLeaderID, CustID, CustName,
CustContactFirstName, CustContactLastName
Functional Dependencies:
EmpID --> EmpID, EmpFirstName, EmpLastName
ProjID --> ProjName, ProjType, ProjStatus, ProjStartDate, ProjEndDate, ProjFundsBudgeted,
ProjPersonHoursBudgeted, ProjLeaderID, CustID
CustID --> CustName, CustContactFirstName, CustContactLastName
Primary Key:
EmpID, ProjID, CustID
Special Restrictions:
Unique constraint on ProjName
ProjType can only contain values 'maintenance', 'database', 'support', or 'reports'
ProjStatus can only contain values 'planning', 'in progress', 'on hold', 'completed'
Unique constraint on CustName
DBDL 3NF:
Employee(<u>EmpID</u>, EmpFirstName, EmpLastName)
Project(<u>ProjID</u>, ProjName, ProjType, ProjStatus, ProjStartDate, ProjEndDate, ProjFundsBudgeted,
ProjPersonHoursBudgeted, ProjLeaderID, CustID)
Customer(<u>CustID</u>, CustName, CustContactFirstName, CustContactLastName)
FK CustID --> Cust
FK ProjLeaderID --> Employee
SK CustName
SK ProjName

USER VIEW 4

Entity:
Employee, Job, Group, Project, EmployeeProject
Attributes:
EmpID, EmpFirstName, EmpLastName, EmpWorkPhone, JobID, JobTitle, GroupID, GroupName, ProjID,
EmpPercentTimeAssigned, EmpTotalHoursWorked
Functional Dependencies:
EmpID --> EmpID, EmpFirstName, EmpLastName, EmpWorkPhone, JobID, GroupID
JobID --> JobID, JobTitle
GroupID --> GroupName
EmpID, ProjID --> EmpPercentTimeAssigned, EmpTotalHoursWorked
Primary Key:
EmpID, JobID, GroupID, ProjID
Special Restrictions:
Unique constraint on EmpWorkPhone
Unique constraint on JobTitle
Unique constraint on GroupName
DBDL 3NF:

Employee(<u>EmpID</u>, EmpFirstName, EmpLastName, EmpWorkPhone, JobID, GroupID)
Job(<u>JobID</u>, JobTitle)
Group(<u>GroupID</u>, GroupName)
Project(<u>ProjID</u>)
EmployeeProject(<u>EmpID</u>, <u>ProjID</u>, EmpPercentTimeAssigned, EmpTotalHoursWorked)
FK EmpID --> Employee
FK JobID --> Job
FK GroupID --> Group
FK ProjID --> Project
SK EmpWorkPhone
SK JobTitle
SK GroupName

CUMULATIVE DBDL

NOTE: Trivial functional dependencies are not listed.

Entity:
Employee, OfficeLocation, Job, Group, Project, Customer, EmployeeProject
Attributes:
EmpID, EmpFirstName, EmpLastName, EmpWorkPhone, OffLocID, JobID, JobTitle, GroupID, GroupName, ProjID, ProjName, ProjType, ProjStatus, ProjStartDate, ProjEndDate, ProjFundsBudgeted, ProjPersonHoursBudgeted, ProjLeaderID, CustID, CustName, CustContactFirstName, CustContactLastName, EmpPercentTimeAssigned, EmpTotalHoursWorked
Functional Dependencies:
EmpID --> EmpID, EmpFirstName, EmpLastName, EmpWorkPhone, OffLocID, JobID, GroupID
JobID --> JobID, JobTitle
GroupID --> GroupName
ProjID --> ProjName, ProjType, ProjStatus, ProjStartDate, ProjEndDate, ProjFundsBudgeted,
        ProjPersonHoursBudgeted, ProjLeaderID, CustID
CustID --> CustName, CustContactFirstName, CustContactLastName
EmpID, ProjID --> EmpPercentTimeAssigned, EmpTotalHoursWorked
Primary Key:
EmpID, OffLocID, JobID, GroupID, ProjID, CustID
Special Restrictions:
Unique constraint on EmpWorkPhone
Unique constraint on JobTitle
Unique constraint on GroupName
Unique constraint on ProjName
ProjType can only contain values 'maintenance', 'database', 'support', or 'reports'
ProjStatus can only contain values 'planning', 'in progress', 'on hold', 'completed'
Unique constraint on CustName
DBDL 3NF:
Employee(<u>EmpID</u>, EmpFirstName, EmpLastName, EmpWorkPhone, OffLocID, JobID, GroupID)
OfficeLocation(<u>OffLocID</u>)
Job(<u>JobID</u>, JobTitle)
Group(<u>GroupID</u>, GroupName)
Project(<u>ProjID</u>, ProjName, ProjType, ProjStatus, ProjStartDate, ProjEndDate, ProjFundsBudgeted,
        ProjPersonHoursBudgeted, ProjLeaderID, CustID)
Customer(<u>CustID</u>, CustName, CustContactFirstName, CustContactLastName)
EmployeeProject(<u>EmpID</u>, <u>ProjID</u>, EmpPercentTimeAssigned, EmpTotalHoursWorked)
FK OffLocID --> OfficeLocation

FK JobID --> Job
FK GroupID --> Group
FK ProjLeaderID --> Employee
FK CustID --> Customer
FK EmpID --> Employee
FK ProjID --> Project
SK EmpWorkPhone
SK JobTitle
SK GroupName
SK ProjName
SK CustName

DATA STRUCTURE DIAGRAM

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  Job
                    Employee    EmployeeProject    Project    Customer
OfficeLocation


  Group
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