Name: Red Bora G2
Lecturer: Yann Kimhouy

Homework Database Week 4

- Perform 3rd normal form on the below table. A software contract and consultancy firm maintains details of all the various projects in which its employees are currently involved. These details comprise
  - Employee Number
  - Employee Name
  - Date of Birth
  - Department Code
  - Department Name
  - Project Code
  - Project Description
  - Project Supervisor

- Assume the following:
  - Each employee number is unique
  - Each department has a single department code.
  - Each project has a single code and supervisor.
  - Each employee may work on one or more projects
  - Employee names need not necessarily be unique.
  - Project Code, Project Description, and Project Supervisor are repeating fields.
  - Normalize this data to the Third Normal Form.

-Before Normalization

EmployeeNumber	EmployeeName	DateOfBirth	DeptCode	DeptName	ProjectCode	ProjectDescription	ProjectSupervisor
001	Red Bora	1995-03-12	D01	IT	P100	Payroll System	Mr. Brown
002	Red Bora	1995-03-12	D01	IT	P200	Mobile App	Ms. Davis
003	Adam Warlock	1998-07-21	D02	HR	P300	Recruitment System	Mr. White
004	Peter Parker	1997-01-05	D01	IT	P100	Web Development	Mr. Brown

⇨ This is already in 1NF because in each cell has single value (Atomic Value).

-2NF Performance

Rule: - Must be in 1NF and remove partial dependency.

EmployeeNumber	EmployeeName	DateOfBirth	DeptCode
001	Red Bora	1995-03-12	D01
002	Steve Roger	1995-03-12	D01
003	Adam Warlock	1998-07-21	D02
004	Peter Parker	1997-01-05	D01

ProjectCode	ProjectDescription	ProjectSupervisor
P100	Payroll System	Mr. Brown
P200	Mobile App	Ms. Davis
P300	Recruitment System	Mr. White
P400	Web Development	Mr. Brown

EmployeeNumber	ProjectCode
001	P100
002	P200
003	P300
004	P100

⇨ 2NF performance is accepted because we have remove partial dependency
⇨ And it is 1NF performance

-3NF Performance

Rule: -Must be in 2NF

-Remove transitive dependency

EmployeeNumber	EmployeeName	DateOfBirth	DeptCode
001	Red Bora	1995-03-12	D01
002	Steve Roger	1995-03-12	D01
003	Adam Warlock	1998-07-21	D02
004	Peter Parker	1997-01-05	D01

ProjectCode	ProjectDescription	ProjectSupervisor
P100	Payroll System	Mr. Brown
P200	Mobile App	Ms. Davis
P300	Recruitment System	Mr. White
P400	Web Development	Mr. Brown

EmployeeNumber	ProjectCode
001	P100
002	P200
003	P300
004	P400

EmployeeNo → DeptCode
DeptCode → DeptName

⇨ DeptName depends on DeptCode and DeptCode depends on EmployeeNo
⇨ So this is transitive dependency

-Separate Transitive Dependency

DeptCode	DeptName
D01	IT
D01	IT
D02	HR
D01	IT