**E4.6 PRACTICE**

***A table with text and numbers

Description automatically generated with medium confidence***

***E4.6a Using the DOT PROJECT Table, describe an example that illustrates the insertion anomaly.***

If a project does not yet have an assigned manager, it would not be able to be inserted into the table.

***E4.6b Using the DOT PROJECT Table, describe an example that illustrates the deletion anomaly.***

If we delete the record for ProjectID 5, the existence of the record of Pony’s CountyName will cease from the database since it is the only project with that county assigned to it.

***E4.6c Using the DOT PROJECT Table, describe an example that illustrates the modification anomaly.***

If I were to modify the Manager of Project Road X, for example, I would have to modify 3 different records in the table.

***E4.6d Depict full key functional dependencies, partial functional dependencies (if any), and transitive functional dependencies (if any) in the DOT PROJECT Table.***

* Full dependencies: ProjectMilesWithinCounty -> ProjectID & CountyID
* Partial dependencies: ProjectName -> ProjectID and CountyName -> CountyID and ProjectManagerID -> ProjectID
* Transitive dependencies: ProjectManagerName -> ProjectManagerID

***E4.6e Show the result of normalizing the DOT PROJECT Table to 2NF.***

A diagram of a project

Description automatically generated

Projects

|  |  |
| --- | --- |
| ProjectID | ProjectName |
| *Data…* | … |

Counties

|  |  |
| --- | --- |
| CountyID | CountyName |
| *Data…* | … |

Project Managers

|  |  |
| --- | --- |
| ProjectManagerID | ProjectManagerName |
| *Data…* | … |

Project Info

|  |  |  |  |
| --- | --- | --- | --- |
| ProjectID | CountyID | ProjectManagerID | ProjectMilesWithinCounty |
| *Data…* | … | … | … |

***E4.6f Show the result of normalizing the DOT PROJECT Table to 3NF.***

2NF answer already normalized to 3NF in this case.

***E4.6g*** ***Using the set of tables resulting from E4.6f, describe how the anomalies shown in E4.6a, E4.6b, and E4.6c are eliminated.***

For insertion, we can now add a new project without having to associate a manager to it initially. For deletion, we can now delete projects without interfering in the deletion of counties possibly. And for modification, we can now modify the manager’s name only once and all the associated records would be updated.