**Class: Computer Science 303: Database Management**

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**Assignment 2**

**Identifying Functional and Transitive Dependencies**

To determine which columns are functional dependencies I need to consider what columns are completely dependent on the primary identifier of the row. For example, if we have a primary key column called one and we have another column called two, if that column one was to appear again in the table they would have the same exact value in column two in both rows. In this table I can come to the conclusion that the primary key is the EmployeeID column, as there is one row per unique EmployeeID. When I take a look at the provided table, I can see that the columns Employee Last Name, Employee First Name, Street Address, Zip Code, Department, Position and Salary are completely dependent upon the value in the Employee ID columns. If that employee ID were to be added to the table again, you would expect that all of these columns would be exactly the same, because they are all attributes of the employee identified in the Employee ID column. An employee can only have one first and last name, one current address, one current zip code, and one current salary at any given point and time. You would also imagine that an individual employee would only have one current department and position. Due to all of these columns being dependent on the employee that the row is identifying, I can come to the conclusion that these are all functional dependencies.

Next, I need to determine which columns are transitive dependencies. Transitive dependencies can be identified as columns that are dependent on another column that is not the primary identifier of the row. In this table I already determined the primary identifier is the EmployeeID column. Looking into the rows further, I can see that the City, State, and ManagerID columns are completely dependent upon other columns in the table that are not the Primary Key, and the columns they are dependent on have functional dependencies on the Primary Key column. The City and State columns are dependent upon the Zip Code column. If any rows in the table would have a certain Zip Code value displayed, those rows would also have the exact same City and State values displayed. This isn’t always accurate for the City column, as there are some Zip Codes that span multiple City boarders, but for the sake of simplicity I will assume they are all exact matches. The ManagerID columns is completely dependent on the Department column, at least in the example data given. If any row in the table were to have a certain Department value listed, they would also have the same values in the ManagerID column. In the real world this may not always be the case, but in the example data given it appears there is only one manager per department.

In conclusion, I have determined that the functional dependencies in this table are the Employee Last Name, Employee First Name, Street Address, Zip Code, Department, Position and Salary columns which are all dependent on the primary key column EmployeeID. I have also determined that the transitive dependencies in this table are the City, State, and ManagerID columns. City and State are dependent on the Zip Code column, which has a functional dependency on the EmployeeID column. ManagerID is dependent on the Department column, which has a functional dependency on the EmployeeID column.

**Identifying a Primary Key**

**Explain Why Table is Not In 3NF**

**Explain the Current Normalization Status**

**Create the Tables in MySQL**