

4.

a. There are 4 entities; they are Department, Employee, Job, and Dependent.

b.

i). EMP_NUM

EMP_FIRSTNAME

EMP_LASTNAME

EMP_STREET

EMP_STATE

EMP_POSITION

EMP_DOB

DEPT_CODE

JOB_CODE.

ii). EMP_NUM is the primary key because every employee must have a distinctive ID to uniquely identify them. In a database, the Primary Key is the one that makes the attribute distinctive in the field that it is assigned.

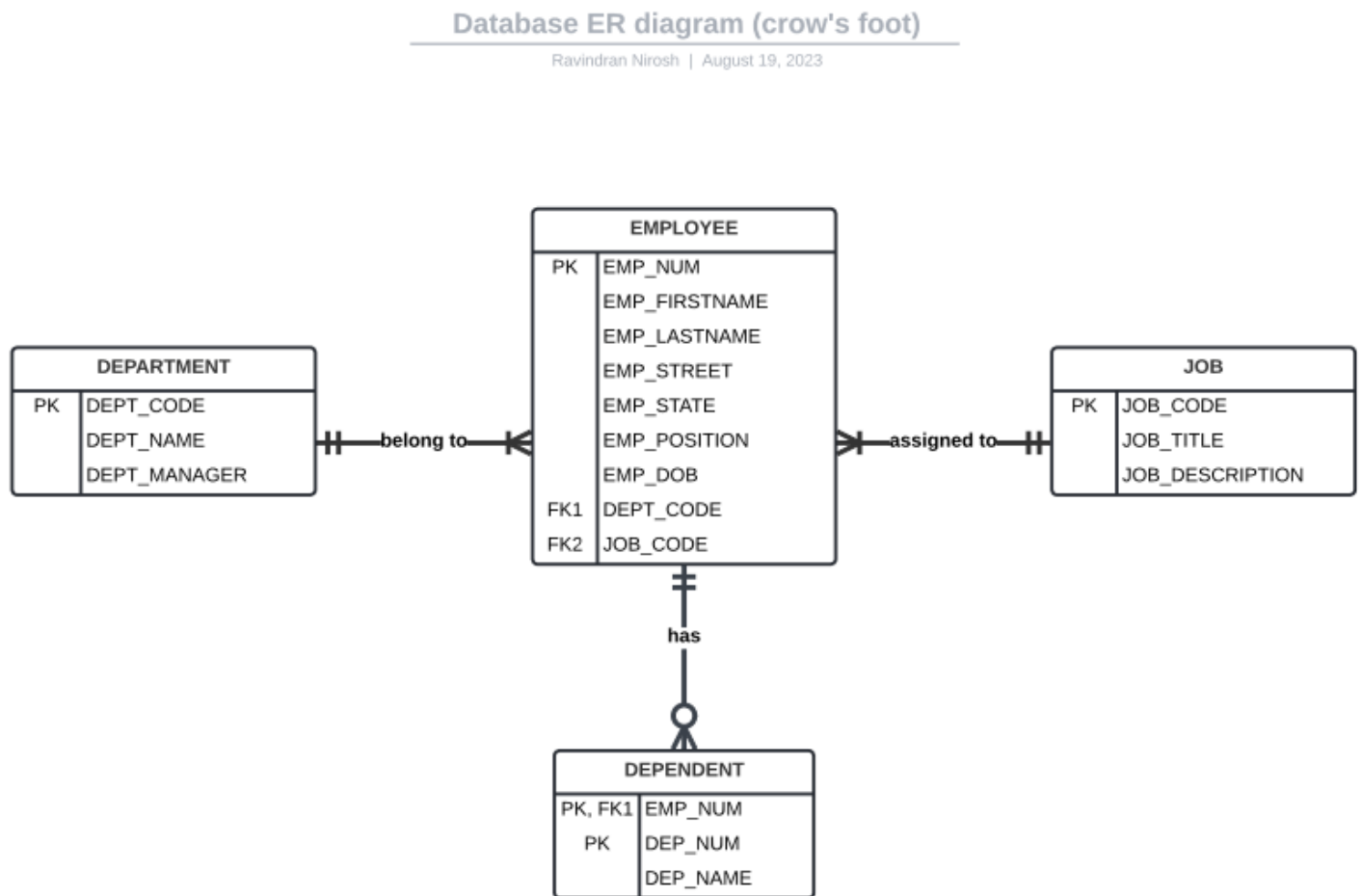
iii). There are 2 foreign keys, DEBT_CODE and JOB_CODE. These foreign keys refer to the primary key values in the Job and Department table. Foreign keys link together two or more tables in a relational database.

c. The EMPLOYEE entity is having a 1 to many relationships with the DEPENDENT and the DEPENDENT entity is having a 1 to-1 relationship with the EMPLOYEE. The 1 to many relationships between employee and dependent is optional because it is not necessary for all the employees to have dependencies or for one employee to have more than one dependent. But the 1 to 1 relationship between the dependent and employee is mandatory because if there is a dependency then there will be an employee associated with it. The dependent can't simply exist without an employee.

The dependent and employee entities would have their own set of attributes. If there is an attribute that is a foreign key in one table and is a primary key in another table, then the foreign key will establish a relationship between the two tables. So likewise, the EMP_NUM in the dependent table is assigned as the foreign and primary key and the same attribute is assigned to be the primary key of the employee table, now there is a relationship between these two tables. This allows us to run queries in the database to retrieve information about an employee's dependents or to find out which employee has certain dependents.

d. There are two primary keys in this table; EMP_NUM and DEP_NUM. They are called candidate keys. Primary keys are usually one attribute that is distinctive. But when there are multiple attributes that uniquely identify each individual row in a table, they are called candidate keys. So, they are essential for maintaining data integrity and establishing relationships between tables.

3. The screenshot of the Entity Relationship Diagram.



5. The screenshot of the context diagram.

