Data Book: Part 1, The Database Narrative

Asset Management System

-By Alka Kumari

The theme of my project is Asset Management System. Here, we're attempting to arrange and maintain a record of the various assets that are available to a corporation. A corporation may benefit from an ordered database thanks to an Asset Management System. It is essential to maintain track of which devices have been given to each employee when there are more workers present. As a result, this system can assist the Asset Tracking Manager in understanding the availability of assets within the organization, purchase information pertaining to an asset, the issuance of an asset to an employee, as well as information about the employee who issued the asset.

The Management System is a condensed form of how a business could maintain the specifics of its assets to keep track of them. Ten tables provide the data that could be utilized to characterize the company's resources and personnel.

When a new employee is hired by the company, the Asset Tracking Manager must give them the necessary devices or equipment, such as a telephone and a hard drive, and must record these details in the Management System along with the issue date and the person's information. Similar to this, if an existing employee requests additional devices based on project requirements, Asset Tracking Manager must give them all necessary devices and may save information in the tracker system.

- EMPLOYEE: Contains details of an Employee
- DEPARTMENT: Contains details of the Department an Employee belongs to
- HARDDRIVE: Each Employee working in the company has access to 1 Hard drive
- TELEPHONE: Each employee has a Landline and can also have a Mobile phone along with Landline
- ASSET: Contains details regarding all the asset in the company. ASSET is a Supertype to 4 Subtype Tables – LAPTOPS, TABLETS, IPAD and HEADPHONES
- ASSET_ASSIGNMENT: Contains details about an Asset that has been issued to an Employee
- Each Employees has 1:1 relationship with the asset Hard Drive. Every employee in the company has access to one and only one Hard Drive.

Each Employee has 1:M relationship with the Asset Telecommunication. Every employee has 1 Landline available and can also have one company mobile phone along with the Landline.

Whenever an employee or group of employees is working on a project, they can be issued multiple assets from the total number of assets company offers such as – Laptops, Tablets, Headphones, and iPad.

All the aforementioned assets will be tracked via the asset management system. The system will keep a record of information such as who was issued an asset, which asset has been issued, when was it issued, and when was it returned.

The System will also store the Employee data along with the departments that employee belongs to.

Below are the further details for the Asset Management System:

1. The Data Dictionary – Table 1.1
2. The Business Rules – Table 1.2
3. Entity relationship model (ERM) components – Table 1.3

Table 1.1 - The Data Dictionary:

ENTITY	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	RANGE	REQUIRED	PK or FK
EMPLOYEE	EMP_ID	Employee Code	INT(10)	99999-99999	0000-9999	Y	PK
	EMP_TITLE	Employee Position	VARCHAR(20)	Xxxxxxxx		Y	
	EMP_LNAME	Employee Last Name	VARCHAR(20)	Xxxxxxxx		Y	
	EMP_FNAME	Employee First Name	VARCHAR(20)	Xxxxxxxx		Y	
	EMP_M_NAME	Employee Middle Name	CHAR(1)	Xxxxxxxx		Y	
	EMP_HIRE_DATE	Date of Joining	DATE	dd-mm-yyyy		Y	

ENTITY	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	RANGE	REQUIRED	PK or FK
	EMP_PHONE	Employee Telephone Number	CHAR(8)	9999-9999		Y	
	DEPT_ID	Employee Department Name	VARCHAR(10)	Xxxxxxxx		Y	
	HARDDRIVE_ID	Hard Drive ID	CHAR(10)	9999-9999	0000-9999	Y	FK
	LANDLINE_ID	Landline code	CHAR(10)	9999-9999	0000-9999	Y	FK
ASSET	ASSET_ID	Asset Code	INT(10)	9999-9999	0000-9999	Y	PK
	ASSET_NAME	Asset Name	VARCHAR(30)	Xxxxxxx		Y	
	ASSET_MODEL_NUM	Asset Model Number	VARCHAR(10)	9999-9999		Y	
	ASSET_PURCHASE_DATE	Asset Purchase Date	DATE	dd-mm-yyyy		Y	

ENTITY	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	RANGE	REQUIRED	PK or FK
	ASSET_TYPE	Asset Type	VARCHAR(20)	Xxxxxxx		Y	
ASSET_ASSIGNMENT	EMP_ID	Employee Code	CHAR(10)	99999-99999	0000-9999	Y	PK,FK
	ASSET_ID	Asset Code	CHAR(10)	9999	0000-9999	Y	PK,FK
	ISSUE_DATE	Date of Issuance of asset	DATE	dd-mm-yyyy		Y	
	RETURN_DATE	Date of return of asset	DATE	dd-mm-yyyy		Y	
	ISSUE_REASON	Reason of the issuance	VARCHAR(25)	Xxxxxxx		Y	
HARD_DRIVE	HARDDRIVE_ID	Hard Drive ID	CHAR(10)	9999-9999	0000-9999	Y	PK
	HD_MODEL_NUM	Hard Drive Model Number	CHAR(10)	9999-9999		Y	

ENTITY	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	RANGE	REQUIRED	PK or FK
	HARDDRIVE_DOP	Date of Purchase	Date	dd-mm-yyyy		Y	
	HARDDRIVE_STORAGE	Storage Size	VARCHAR(25)	Xxxxxxx		Y	
	HARDDRIVE_BRANDNAME	Brand of the Harddrive	VARCHAR(25)	Xxxxxxx		Y	
TELEPHONE	LANDLINE_ID	Landline code	CHAR(10)	9999-9999	0000-9999	Y	PK
	MOBILE_ID	Mobile Phone Code	CHAR(10)	9999-9999	0000-9999	N	
	MONILE_MODEL	Model of the mobile	VARCHAR(10)	Xxxxxxxx		N	
	MOBILE_NAME	Mobile Phone Name	VARCHAR(10)	Xxxxxxxx		N	
	MOBILE_TYPE	Software type	VARCHAR(10)	Xxxxxxxx		N	

ENTITY	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	RANGE	REQUIRED	PK or FK
DEPARTMENT	DEPT_ID	Department Code	INT(10)	99999-99999	0000-9999	Y	PK
	DEPT_NAME	Employee Department Name	VARCHAR(10)	Xxxxxxxx		Y	
	DEPT_FLOOR	Department Floor	VARCHAR(10)	Xxxxxxxx		Y	
	DEPT_HOD	Head of Department	VARCHAR(10)	Xxxxxxxx		Y	
	DEPT_COORDINATOR	Coordinator of the Department	VARCHAR(10)	Xxxxxxxx		Y	
LAPTOP	ASSET_ID	Asset Code	INT(10)	9999	0000-9999	Y	PK, FK
	LAPTOP_ID	Laptop ID	INT(10)	9999	0000-9999	Y	PK
	LLAPTOP_BRAND	Brand of Laptop	VARCHAR(20)	Xxxxxxxx		Y	

ENTITY	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	RANGE	REQUIRED	PK or FK
	LAPTOP_RAM	Ram	VARCHAR(10)	Xxxxxxxx		Y	
	LAPTOP_PROCESSOR	Processor of Laptop	VARCHAR(10)	Xxxxxxxx		Y	
	LAPTOP_SCREEN_TYPE	Screen Type	VARCHAR(10)	Xxxxxxxx		Y	
TABLET	ASSET_ID	Asset Code	INT(10)	9999	0000-9999	Y	PK, FK
	TABLET_ID	Tablet ID	INT(10)	9999	0000-9999	Y	PK
	TABLET_COLOR	Tablet color	VARCHAR(10)	Xxxxxxxx		Y	
	TABLET_SIZE	Size	VARCHAR(10)	Xxxxxxxx		Y	
	STYLUS	If stylus is there with the tablet	VARCHAR(10)	Xxxxxxxx		Y	

ENTITY	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	RANGE	REQUIRED	PK or FK
	TABLET_SLEEVE	If Sleeve is there with tablet	VARCHAR(10)	Xxxxxxxx		Y	
IPAD	ASSET_ID	Asset Code	INT(10)	9999	0000-9999	Y	PK, FK
	IPAD_ID	iPad color	INT(10)	9999	0000-9999	Y	PK
	IPAD_STORAGE	Storage	VARCHAR(10)	Xxxxxxxx		Y	
	IPAT_WARRANTY	Warranty period	VARCHAR(10)	Xxxxxxxx		Y	
	IPAD_STYLUS	If stylus is there	VARCHAR(10)	Xxxxxxxx		Y	
	IPAD_MANUFACTURED_YEAR	Manufactured Data of IPAD	VARCHAR(10)	Xxxxxxxx		Y	
HEADPHONES	ASSET_ID	Asset Code	INT(10)	9999	0000-9999	Y	PK, FK

ENTITY	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	RANGE	REQUIRED	PK or FK
	HP_ID	Headphone Code	INT(10)	9999	0000-9999	Y	PK
	HP_WIRED	If Headphones are wired or not	VARCHAR(10)	Xxxxxxxx		Y	
	HP_DB_RANGE	Decibel Range	VARCHAR(10)	Xxxxxxxx		Y	
	HP_NOISE_CANCEL	Noise Cancellation	VARCHAR(10)	Xxxxxxxx		Y	
	HEADPHONES_COLOR	Headphones color	VARCHAR(10)	Xxxxxxxx		Y	

Table 1.2 - The Business Rules:

	Entity #1	Verb	Entity #2	Relationship
Entity Relationship Information	EMPLOYEE	Has	TELEPHONE	1:M
Business Rule	One EMPLOYEE has many TELEPHONES, Each TELEPHONE has one EMPLOYEE.			
Entity Relationship Information	EMPLOYEE	Has	HARDDRIVE	1:1
Business Rule	One EMPLOYEE has one HARD_DRIVE, one HARDDRIVE has been given to one EMPLOYEE.			
Entity Relationship Information	EMPLOYEE	Belong	DEPARTMENT	1:1
Business Rule	One EMPLOYEE belongs to one DEPARTMENT, one DEPARTMENT is belonging to one EMPLOYEE.			
Entity Relationship Information	EMPLOYEE	Requests	ASSET	M:N
Business Rule	Each EMPLOYEE request for many ASSET, each ASSET are requested by many EMPLOYEE.			

Table 1.3 - Entity relationship model (ERM) components

COMPONENTS OF THE ERM			
ENTITY	**RELATIONSHIP**	**CONNECTIVITY**	**ENITITY**
EMPLOYEE	Belongs	1:1	DEPARTMENT
EMPLOYEE	Has	1:1	HARDDRIVE
EMPLOYEE	Has	1:M	TELEPHONE
EMPLOYEE	Requests	M:N	ASSET
***ASSET_ASSIGNMENT is the composite entity that implements the M:N relationship "EMPLOYEE requests ASSET"**			

Data Book: Part 2 – The Entity Relationship Diagram

Asset Management System

Relational Schemas

1. EMPLOYEE(**EMP_ID,** EMP_TITLE, EMP_LNAME, EMP_FNAME, EMP_M_NAME, EMP_HIRE_DATE, EMP_PHONE, DEPT_ID, HARDDRIVE_ID, LANDLINE_ID)

2. ASSET(**ASSET_ID**, ASSET_NAME, ASSET_MODEL_NUM, ASSET_PURCHASE_DATE, ASSET_TYPE)

3. ASSET_ASSIGNMENT(**EMP_ID**, **ASSET_ID**, ISSUE_DATE, RETURN_DATE, ISSUE_REASON)

4. HARD_DRIVE(**HARDDRIVE_ID**, HARDDRIVE_MODEL_NUM, HARDDRIVE_DOP, HARDDRIVE_STORAGE, HARDDRIVE_BRANDNAME)

5. TELEPHONE(**LANDLINE_ID**, MOBILE_ID, MOBILE_MODEL, MOBILE_NAME, MOBILE_TYPE)

6. DEPARTMENT(**DEPT_ID**, DEPT_NAME, DEPT_FLOOR, DEPT_HOD, DEPT_COORDINATOR)

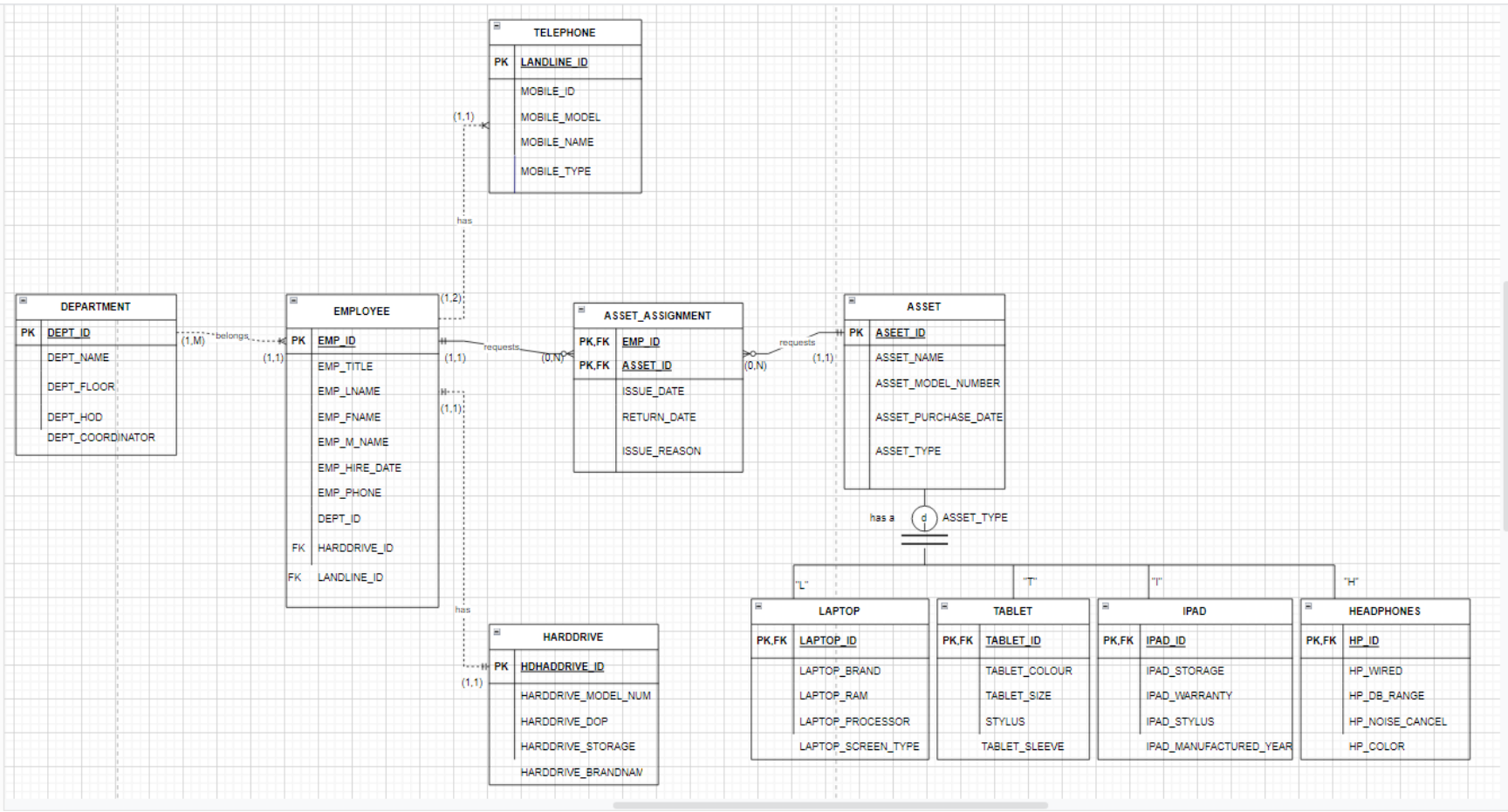
7. LAPTOP(**ASSET_ID**, **LAPTOP_ID**, LAPTOP_BRAND, LAPTOP_RAM, LAPTOP_PROCESSOR, LAPTOP_SCREEN_TYPE)

8. TABLET(**ASSET_ID**, **TABLET_ID**, TABLET_COLOR, TABLET_SIZE, STYLUS, TABLET_SLEEVE)

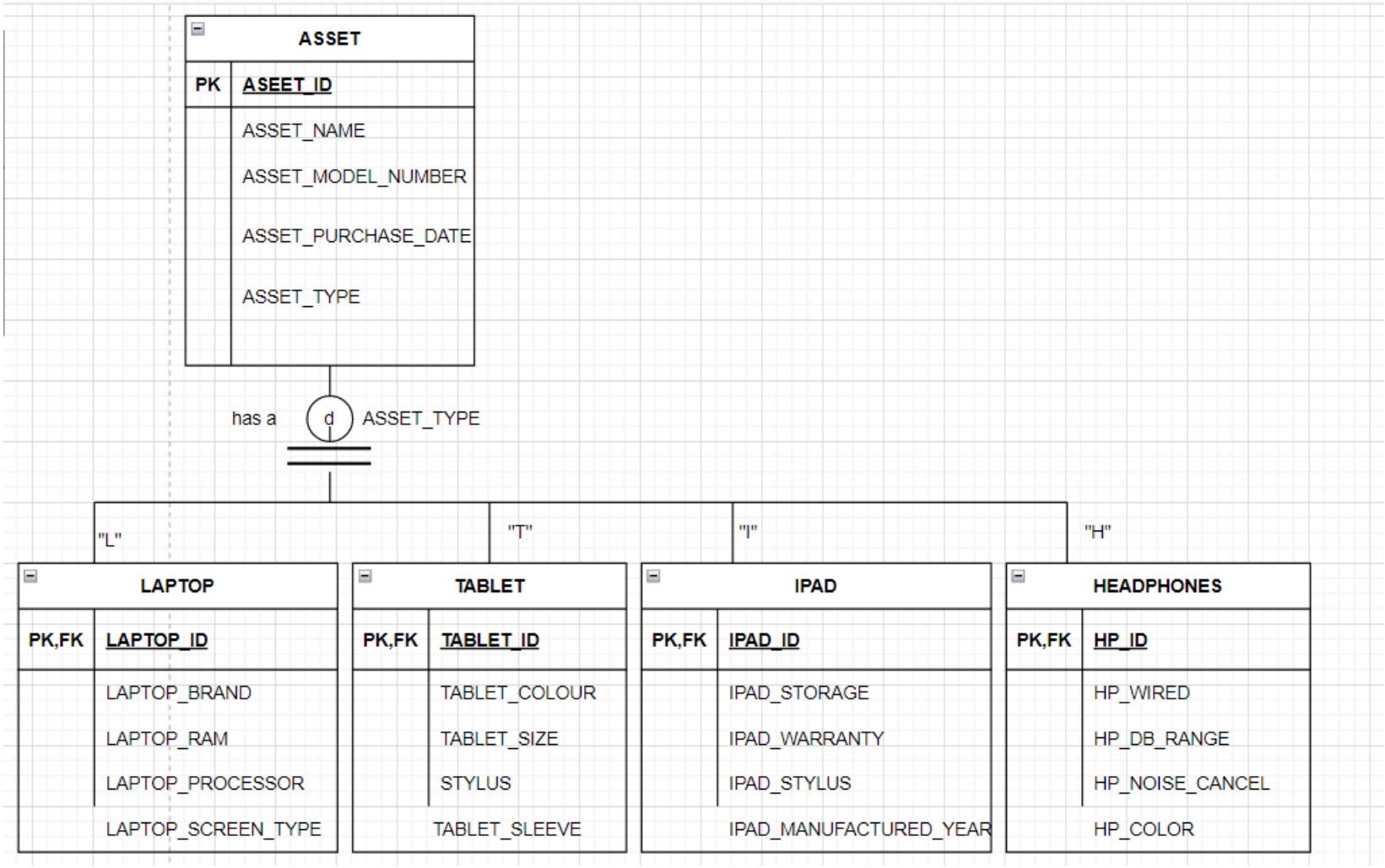
9. IPAD(**ASSET_ID**, **IPAD_ID**, IPAD_STORAGE, IPAD_WARRANTY, IPAD_STYLUS, IPAD_MANUFACTURED_YEAR)

10. HEADPHONES(**ASSET_ID**, HP_ID, HP_WIRED, HP_DB_RANGE, HP_NOISE_CANCEL, HP_COLOR)

Crow’s Foot notation



Crow's Foot Notation: Subtype/Supertype diagram



Documented Walk-through of One Normalized Table

EMP_ID	102	104	101	105	108
DEPARTMENT_ID	201	202	201	201	202
DEPARTMENT_NAME	Testing	Developer	Testing	Testing	Developer
ASSET_ID	1001	1002	1003	1004	1005
ASSET_NAME	Dell XPS	ipad1	Samsung	Samsung headphone	Samsung galaxy
EMP_FNAME	Rakesh	Rohit	Virat	Hardik	Saurabh
EMP_LNAME	Verma	Sharma	Kohli	Pandya	Ganguly
EMP_M	K	P	R	B	N
DEPARTMENT_FLOOR	First Floor	Second Floor	First Floor	First Floor	Second Floor
ASSET_TYPE	Laptop	IPAD	Tablet	Headphone	Mobile
ADVISOR_FNAME	Rohit	Pawan	Arun	Mohit	Akshay
ADVISOR_LNAME	Sharma	Sharma	Tomar	Bafna	Thorat
ADVISOR_PHONE	0000-9999	0000-1111	0000-2222	0000-3333	0000-444

EMP_ID	DEPARTMENT_ID	DEPARTMENT_NAME	ASSET_ID	ASSET_NAME	EMP_FNAME	EMP_LNAME	EMP_M	DEPARTMENT_FLOOR	ASSET_TYPE	ADVISOR_FNAME	ADVISOR_LNAME	ADVISOR_PHONE

The above table is not in any Normal Form and hence there is no Primary Key is defined yet.

First Normal Form

Relational Schema:

1NF: EMPLOYEE (**EMP_ID, DEPARTMENT_ID, ASSET_ID**, DEPARTMENT_NAME, ASSET_NAME, EMP_FNAME, EMP_LNAME, EMP_M, DEPARTMENT_FLOOR, ASSET_TYPE, ADVISOR_FNAME, ADVISOR_LNAME, ADVISOR_PHONE)

Partial Dependencies:

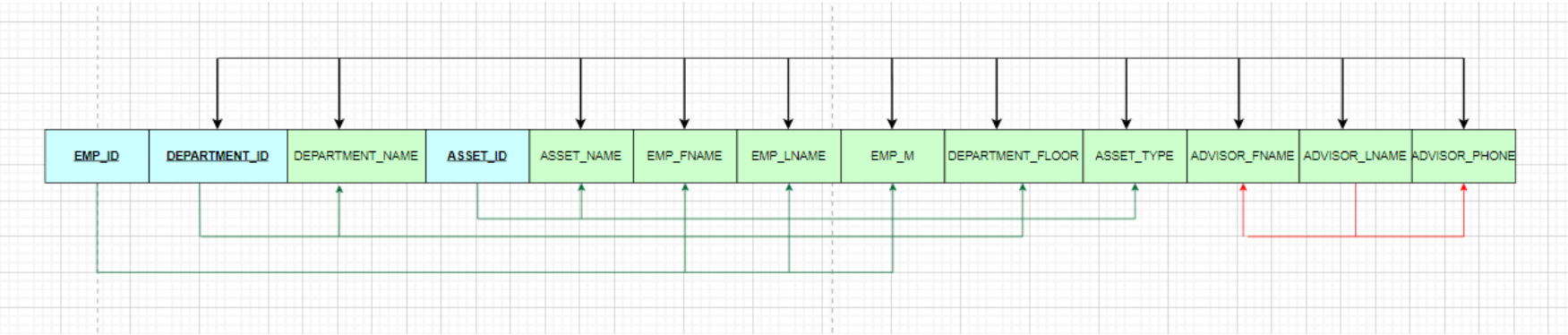
(EMP_ID→ EMP_FNAME, EMP_LNAME, EMP_M, ADVISOR_LNAME, ADVISOR_FNAME, ADVISOR_PHONE),

(DEPARTMENT_ID → DEPARTMENT_NAME, DEPARTMENT_FLOOR)

(ASSET_ID)→ ASSET_NAME, ASSET_TYPE)

Transitive Dependencies:

(ADVISOR_LNAME → ADVISOR_FNAME, ADVISOR_PHONE)



Second Normal Form

Relational Schema:

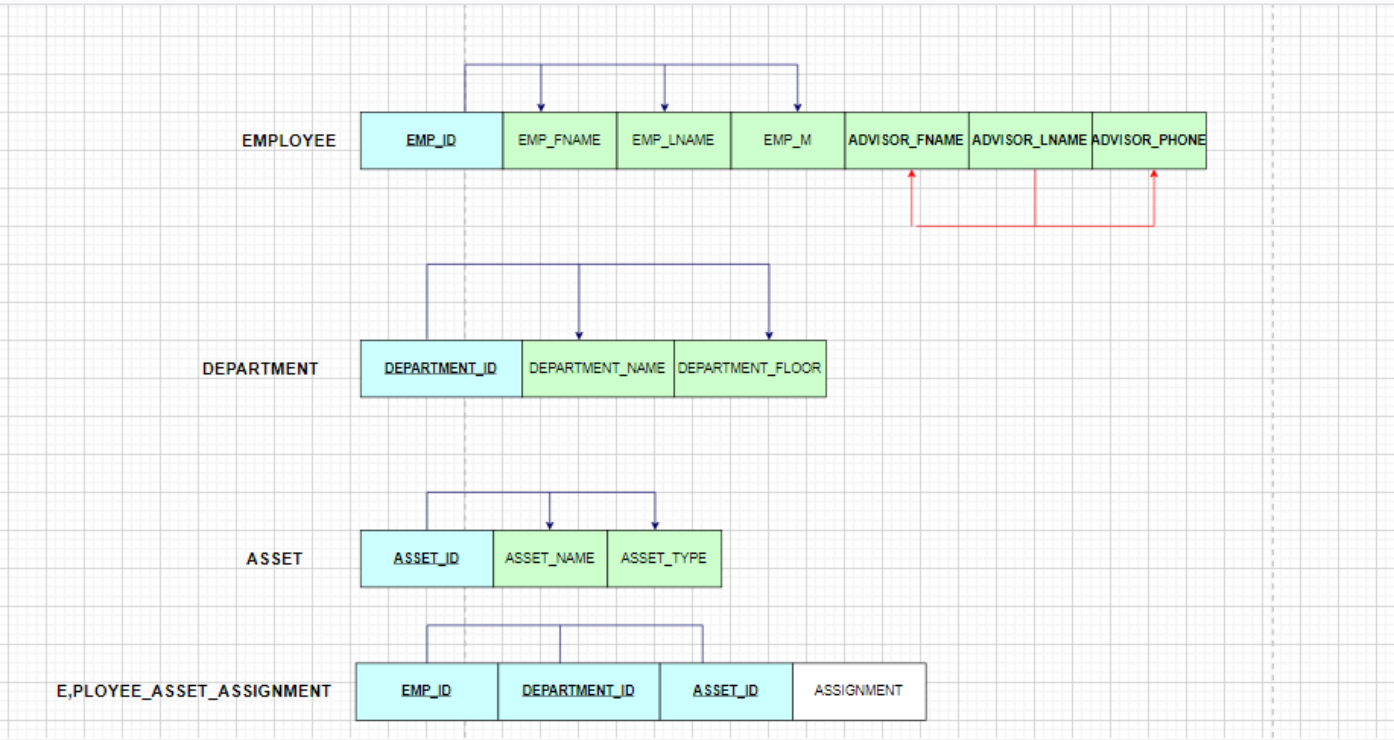
EMPLOYEE (**EMP_ID,** EMP_FNAME, EMP_LNAME, EMP_M, ADVISOR_FNAME, ADVISOR_LNAME, ADVISOR_PHONE)

DEPARTMENT (**DEPARTMENT_ID**, DEPARTMENT_NAME, DEPARTMENT_FLOOR)

ASSET (**ASSET_ID**, ASSET_NAME, ASSET_TYPE)

EMPLOYEE_ASSET_ASSIGNMNET (**EMP_ID, DEPARTMENT_ID**, **ASSET_ID**, ASSIGNMENT)

Insert Dependency Diagram(s):



Third Normal Form

Relational Schema:

EMPLOYEE (**EMP_ID,** EMP_FNAME, EMP_LNAME, EMP_M)

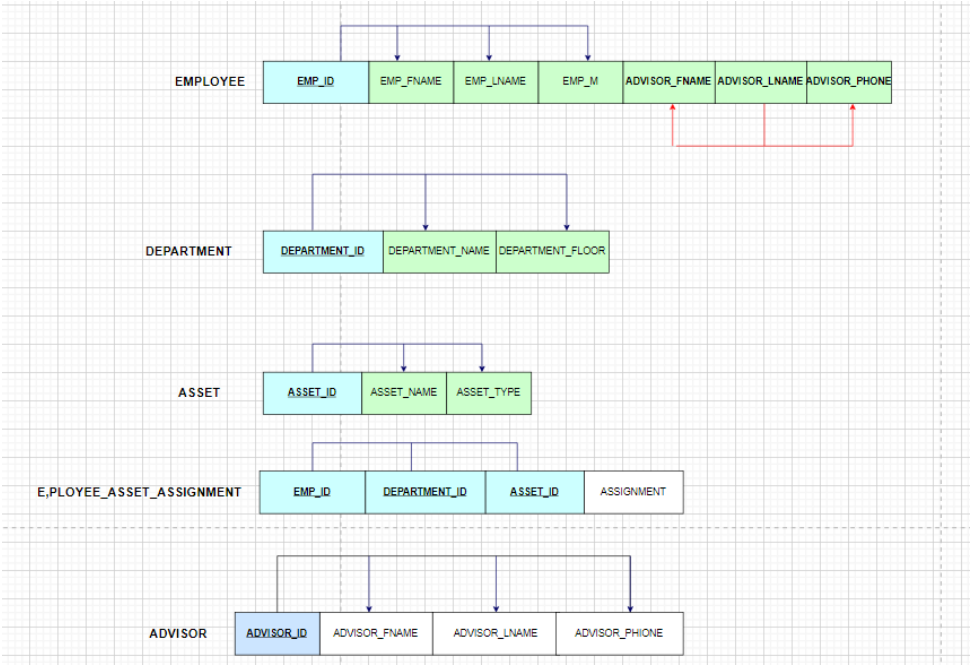
DEPARTMENT (**DEPARTMENT_ID**, DEPARTMENT_NAME, DEPARTMENT_FLOOR)

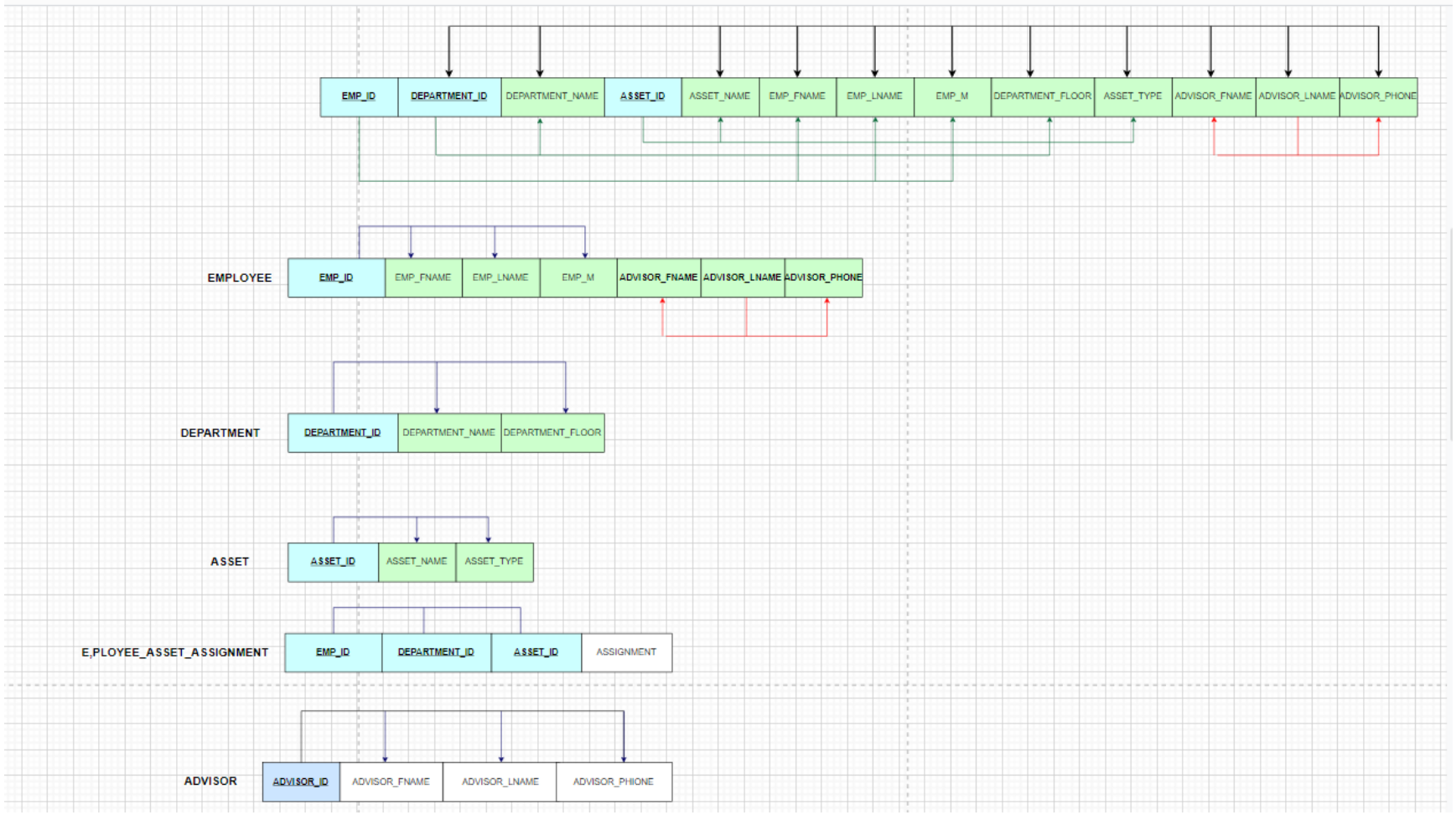
ASSET (**ASSET_ID**, ASSET_NAME, ASSET_TYPE)

EMPLOYEE_ASSET_ASSIGNMNET (**EMP_ID, DEPARTMENT_ID**, **ASSET_ID**, ASSIGNMENT)

ADVISOR (**ADVISOR_ID**, ADVISOR_FNAME, ADVISOR_LNAME, ADVISOR_PHONE)

Insert Dependency Diagram(s)





Final Dependency Diagram