

IT Infrastructure and Resource Management

Problem Statement

VJTI is large institution which has a variety of laboratories. The equipments in these labs need to be maintained on a regular basis, and the old ones need to be replaced to ensure a proper working environment. This can be achieved efficiently by maintaining a database containing the information of all the equipments and their working status. Each equipment will be assigned a unique id.

Usage Modules

- Management Level
- Lab Admin Level
- Student/Teacher Level

Management Level

- Resolving the complaints approved by the lab admin and deciding which supplier to buy components from.
- Maintaining the resources by regularly replacing the older components.
- Checking the regularity of all the lab admins.

Lab Admin Level

- View and modify any data regarding the components of the Computer.
- Verify and approve the complaints lodged by students and teachers.
- Assign priorities to the approved complaints.

Student/Teacher Level

- View the components and technical specification of any computer.
- View the working status of any component.
- Lodge a complaint regarding faulty components and check the status of their lodged complaint.

Entity

- Component (Component_ID, Supplier_ID, Working Status, Warranty, Date_of_purchase, Type)
- PC (PC_ID, Lab_ID, OS)
- Supplier (Supplier_ID, Name, Total_Complaints, Total_No_Shipped)
- Lab (Lab_ID, No_of_PCs)
- LabAdmin (LabAdmin_ID, Lab_ID, No_Of_Complaints_Handled, Last_Login)
- Complaint (Complaint_ID, Title, Complainer_ID, Status, Date_Of_Complaint)
- Complainer (Complainer_ID, Name, Departement, Designation, Email_ID)

Relationships

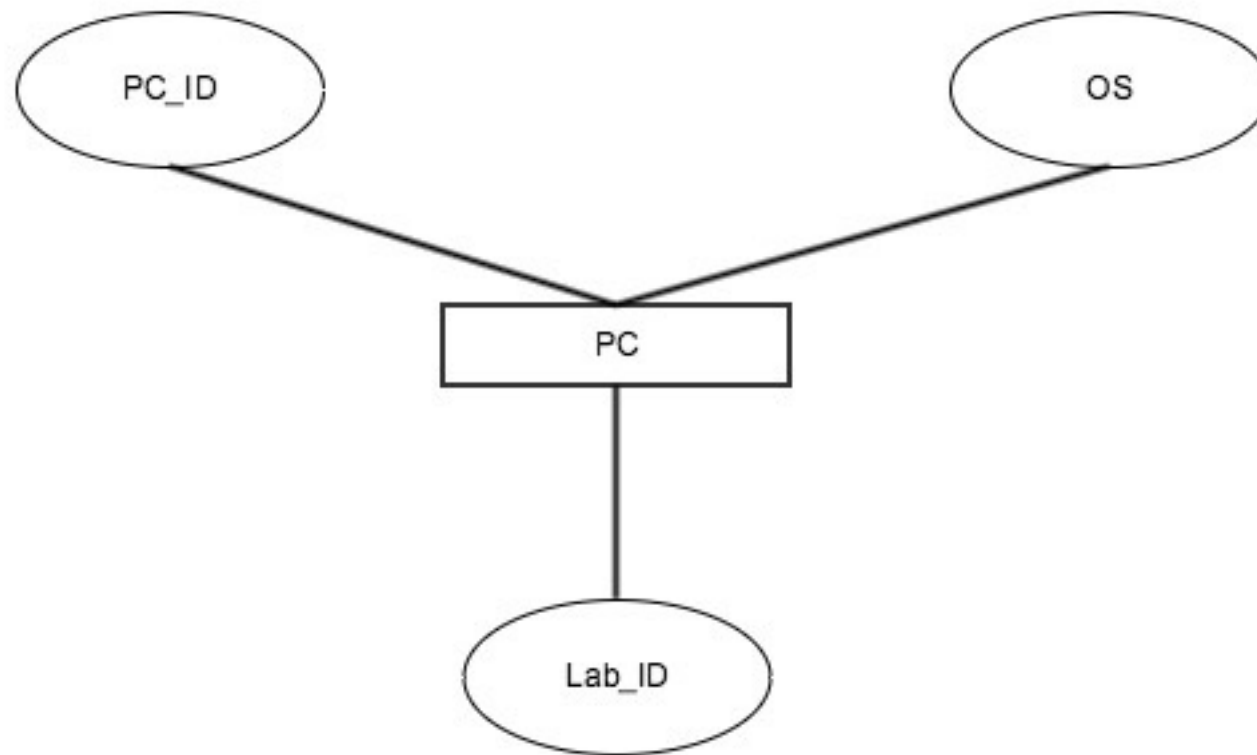
- Supplied by : <Component, Supplier> N : 1 Total/Total
- Comprises of : <PC, Component> 1 : N Total/Partial
- has : <Lab, PC> 1 : N Total/Total
- incharge of <Lab Admin, Lab> 1 : 1 Total/Total
- Approves/ Rejects <Lab Admin, Complaint> 1 : N Partial /Total
- About <Complaint, Component> N : 1 Total/ Total
- Lodges <Complainer, Complaint> N : M Total/Total

Assumptions/Clarifications

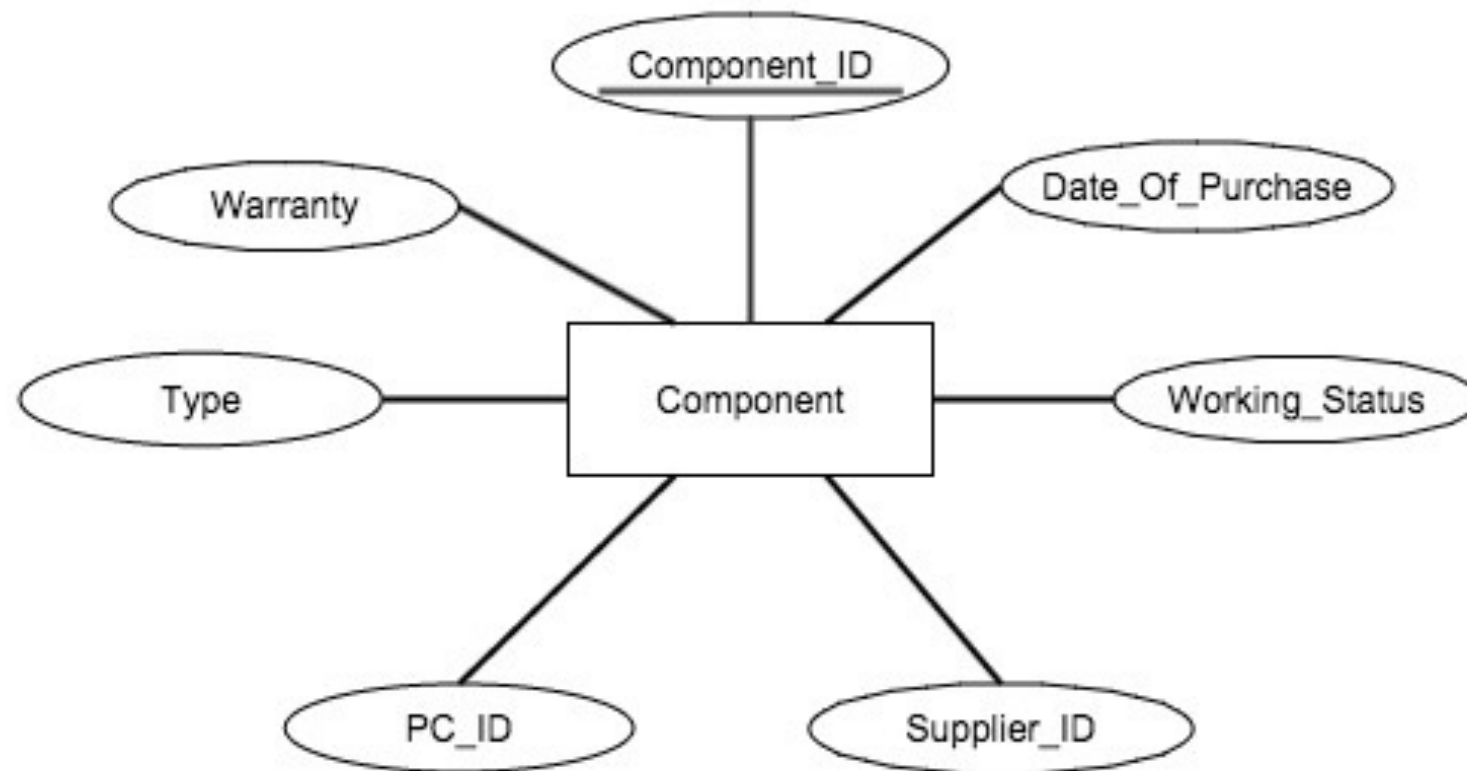
- Supplier is included as an entity in our model just to keep a track of complaints received of components supplied by a particular supplier.
- Each lab has one lab admin.
- email-ids of complainer is requested so that they may be notified through an automated email if their complaint was accepted/rejected.
- software related requests may include request for updating a software, installing new software or replacing buggy software.
- overall efficiency of the model depends on the regularity of the lab admins and management in resolving the complaints.

Entity Attribute Model

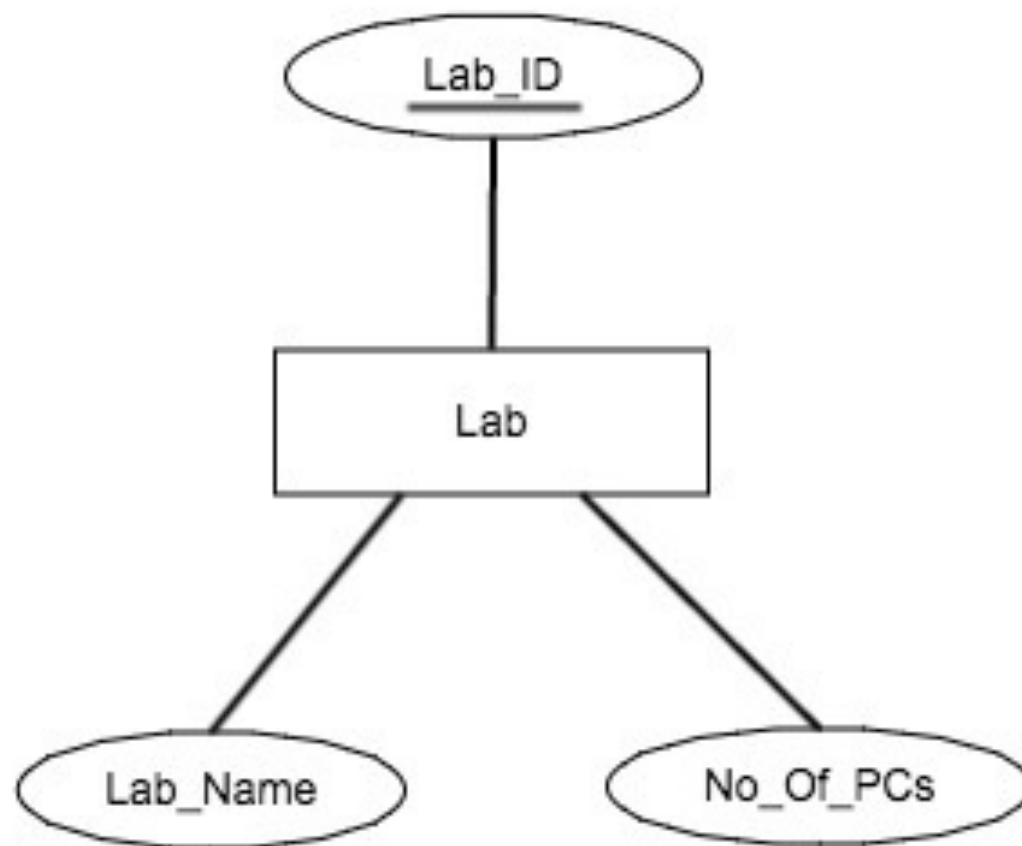
PC



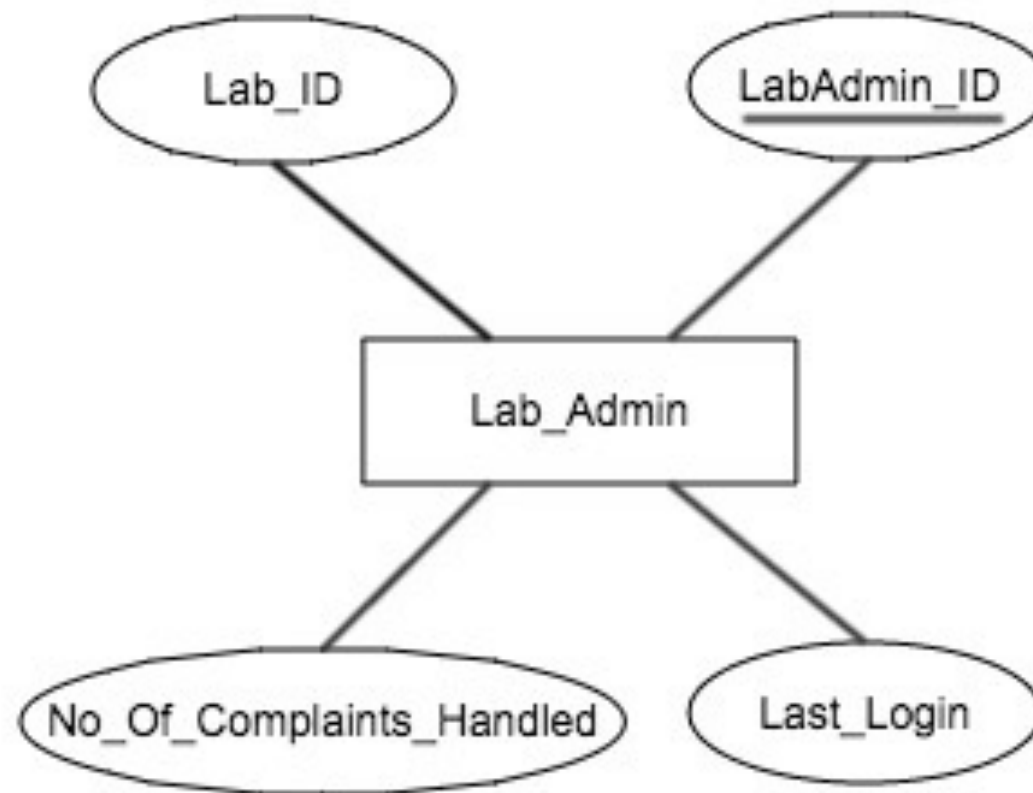
Component



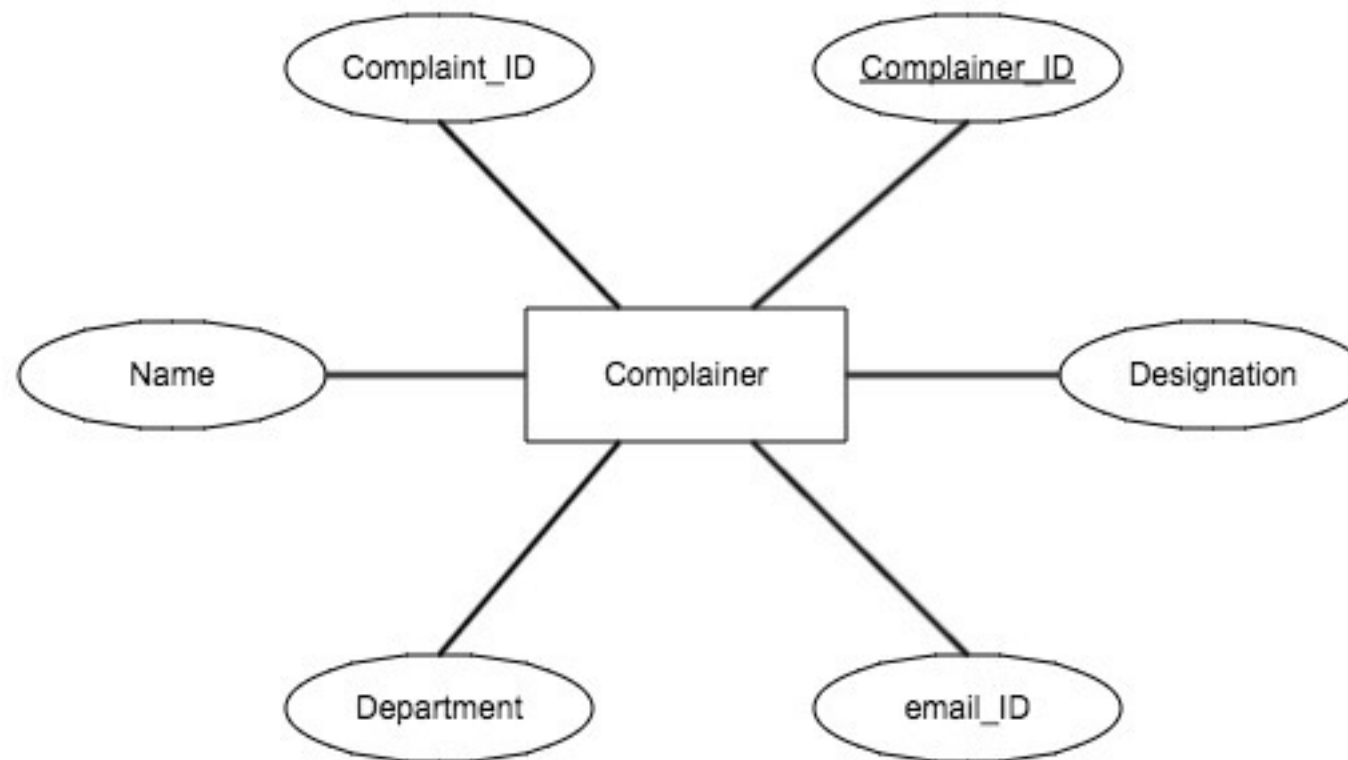
Lab



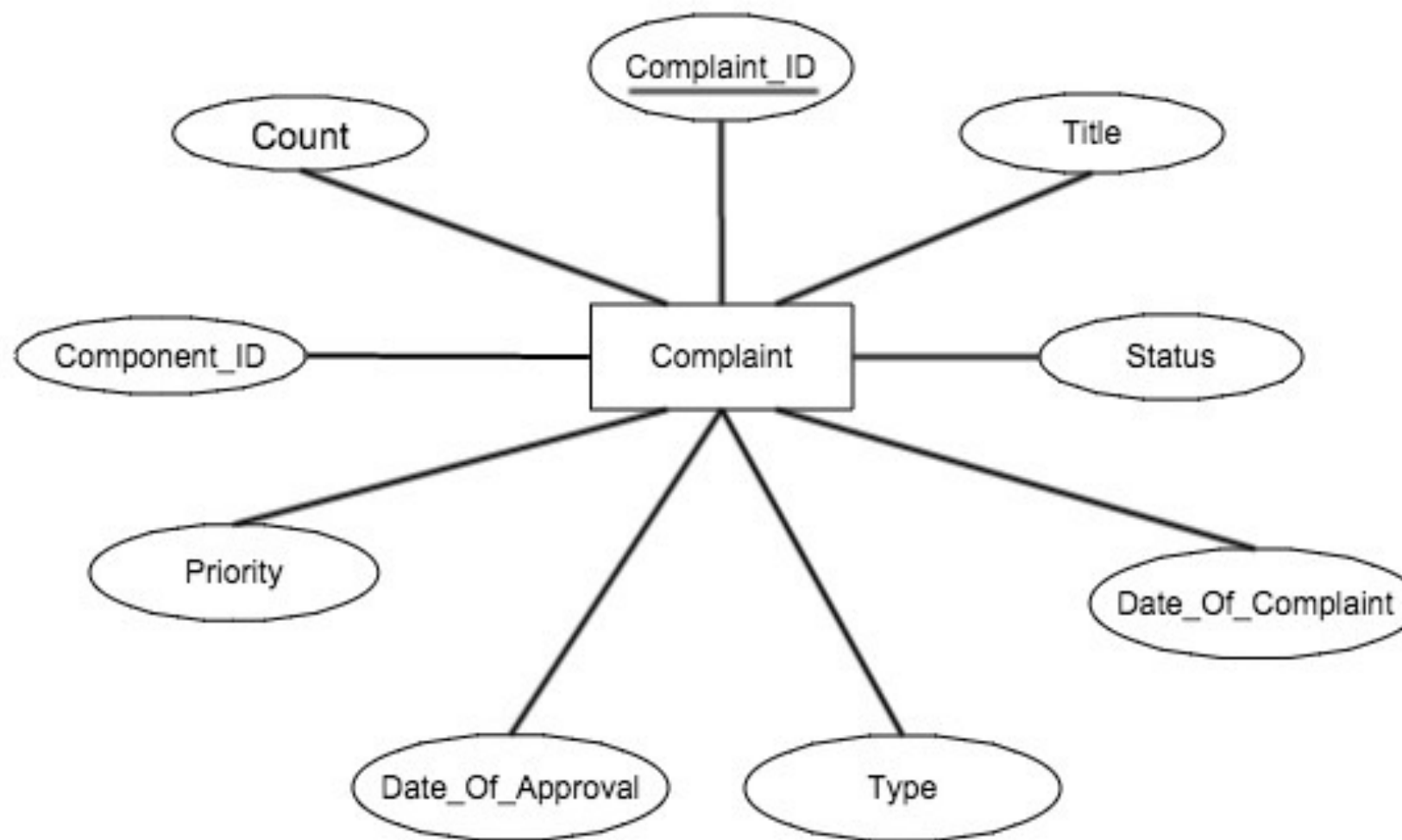
Lab Admin



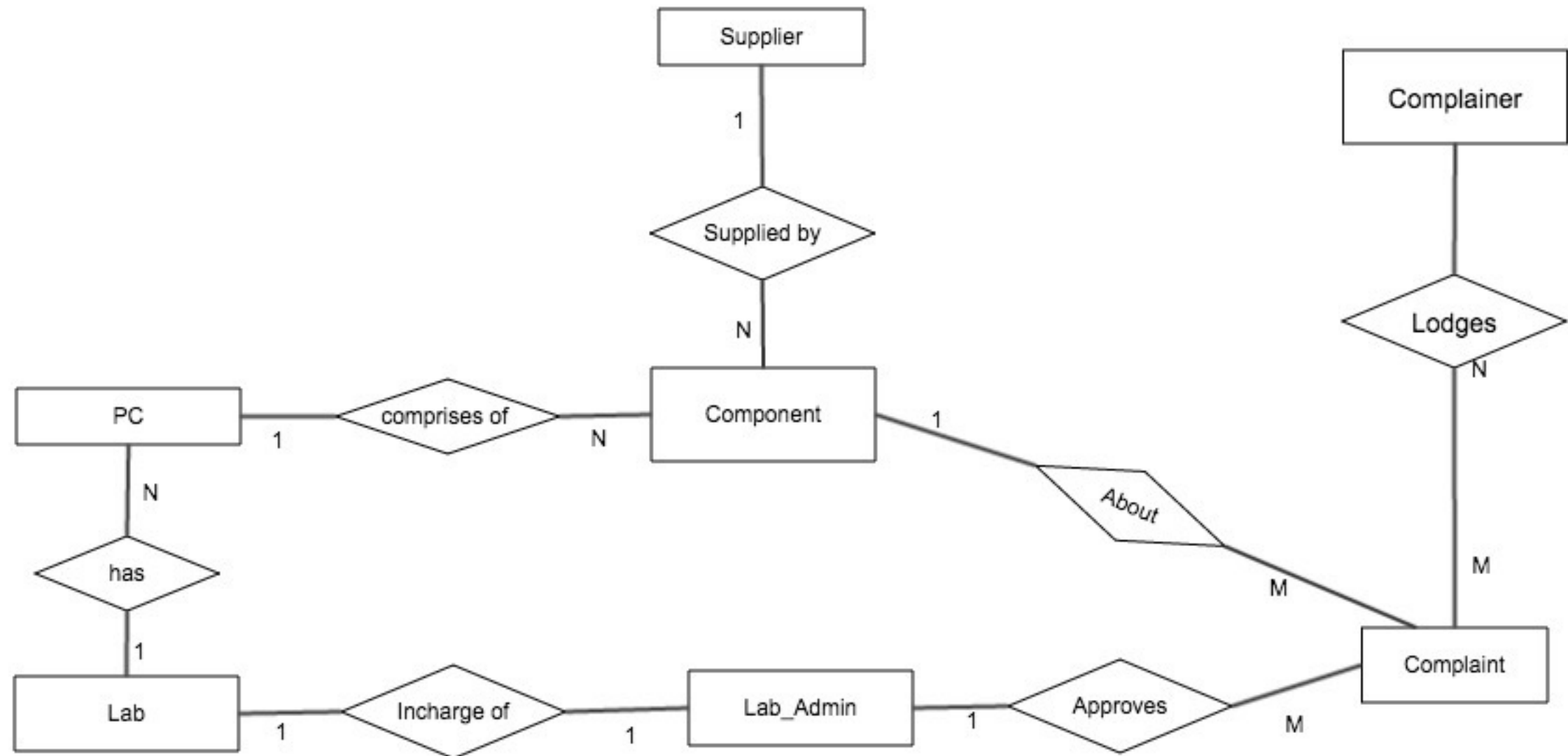
Complainer



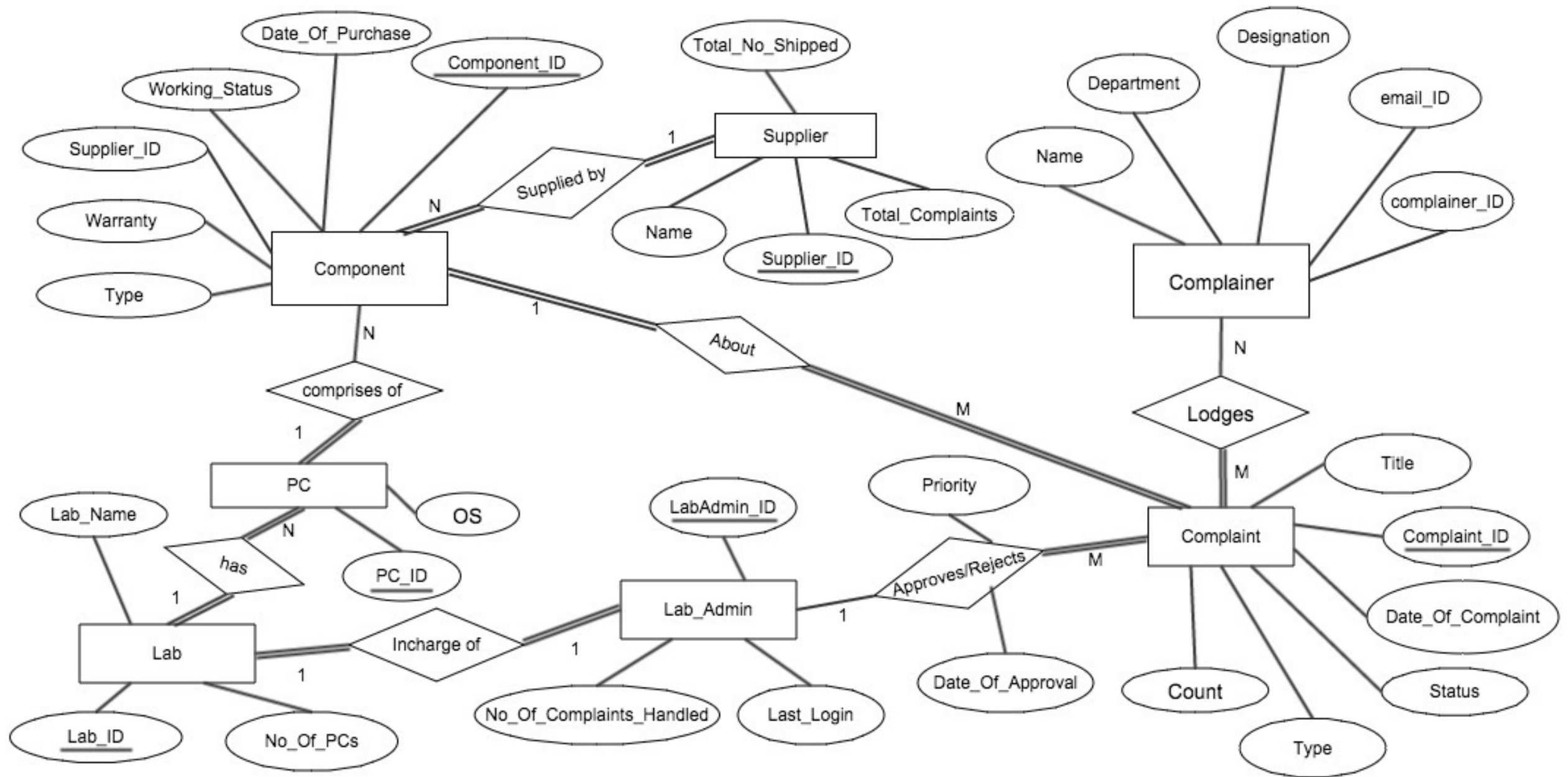
Complaint



Data Model



ER Model



Data Dictionary

Complaints

Primary Key - Complaint_ID

Name	Data Type	Constraints	Details
Title	varchar(200)	NOT NULL	Brief description of the complaint
Complaint_ID	INT	NOT NULL UNIQUE	
Date_of_complaint	DATE	NOT NULL	Date when the complaint was lodged
Status	INT	NOT NULL	0-waiting for approval 1-approved, unresolved 2-resolved
Date_of_Approval	DATE	>= date of complaint	date of approval if the complaint was approved
Priority	INT	NOT NULL	priority of the complaint assigned by lab admin
Component_ID	INT	NOT NULL FOREIGN KEY	Component for which the complaint has been lodged
Count	INT	NOT NULL POSITIVE	No of people in favor of the complaint
Type	INT	NOT NULL	1. Hardware 2. Software 3. Network

Lab Admin

Primary Key - Lab_admin_ID

Name	Data Type	Constraints	Details
Name	varchar(40)	NOT NULL	Name of the Lab Admin
Lab_admin_ID	INT	NOT NULL UNIQUE	Uniquely identify each lab admin
Lab_ID	INT	NOT NULL FOREIGN KEY	identify the lab of which the person is admin of.
No_of_complaints_handled	INT	NON NEGATIVE	no of complaints handled after verification of complaint
Last_login	DATE		Indicates how active the admin is

Lab

Primary Key - Lab_ID

Name	Data Type	Constraints	Details
Lab_ID	INT	NOT NULL PRIMARY KEY	used to identify the location of the lab
No_of_pcs	INT	NOT NULL POSITIVE	no of computers in the labs
Lab_admin_ID	INT	NOT NULL FOREIGN KEY	id of the lab incharge

PC

Primary Key - PC_ID

Name	Data Type	Constraints	Details
PC_ID	INT	PRIMARY KEY NOT NULL	Will be used to identify any specific PC set
Lab_ID	INT	FOREIGN KEY NOT NULL	Identify the location of the PC
OS	varchar(20)	NOT NULL	Operating System installed on the computer

Component

Primary Key - Component_ID

Name	Data Type	Constraints	Details
Component_ID	INT	NOT NULL UNIQUE	Uniquely Identify each component
Date_of_purchase	DATE	NOT NULL	date of purchase of the component
Working_Status	BOOLEAN	NOT NULL	1 - working 0 - not working
Warranty	INT	POSITIVE	no of months of warrant
Supplier_ID	INT	NOT NULL	indicating the supplier of the component
Type	INT	NOT NULL	1 - CPU 2 - Monitor 3 - Keyboard 4 - Mouse

Supplier

Primary Key - Supplier_ID

Name	Data Type	Constraints	Details
Supplier_ID	INT	NOT NULL UNIQUE	Uniquely Identify each supplier
Name	varchar(100)	NOT NULL	Name of the supplier
No_of_components_supplied	INT	NOT NULL	no of components supplied by that supplier
No_of_complaints	INT	NON NEGATIVE	Total complaints from the components shipped by the supplier. This can be used to track the quality of the products shipped by the supplier.

Complainer

Primary Key - Complainer_ID

Name	Data Type	Constraints	Details
<i>Name</i>	INT	NOT NULL UNIQUE	Uniquely Identify each supplier
<i>Department</i>	varchar(100)	NOT NULL	Name of the supplier
<i>Designation</i>	INT	NOT NULL	no of components supplied by that supplier
E-mail	varchar(100)		E-mail id of the complainer will be collected if he wants to be notified with the status of his complaint.

Thank You

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