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RLB97
Question 1:

$AB \rightarrow E$
$B \rightarrow D$
B->E
$DF \rightarrow A$
$C \rightarrow F$
$DC \rightarrow A$

$B \rightarrow D$
$B \rightarrow E$
$DF \rightarrow A$
$C \rightarrow F$

PrimaryKeys:
<u>BC</u>

Result:
<u>BC</u>DF

These are **not** in 3NF or BCNF, $DF \rightarrow A$ is not a part of the key.

These FD's are **lossy.**

	A	B	C	D	E	F
R1(B,D)		A		A	A	
R2(B,E)		A		A	A	
R3(DF, A)	A			A		A
R4(C,F)			A			A

$B \rightarrow D$
$B \rightarrow E$
$DF \rightarrow A$
$C \rightarrow F$
$C \rightarrow B$

To fix, have $C \rightarrow B$ which will fill out R5 which helps fill out R1-R4

	A	B	C	D	E	F
R1(B,D)	A	A	A	A	A	A
R2(B,E)	A	A	A	A	A	A
R3(DF, A)	A	A	A	A	A	A
R4(C,f)	A	A	A	A	A	A
R5(C,B)	A	A	A	A	A	A

Question 2:
FD1: BookISBN → Title,Price,QuantityOnHand
FD2: OrderNumber → OrderDate,SupplierCode
FD3: SupplierCode → SupplierName, SupplierAddress
FD4: BookISBN,OrderNumber → QuantityOrdered

R1(BookISBN, Title, Price, QuantityOnHand)
R2(OrderNumber,SupplierCode, OrderDate, SupplierName, SupplierAddress)
R3(BookISBN,OrderNumber, Title, Price, QuantityOnHand, QuantityOrdered)

ER Diagram Question 1

Constraints:

-User's position can only be 1 of {faculty, staff member, student}

- Assignment status can only be 1 of {assigned, in_progress, delegated, closed_successful, closed_unsuccessful}

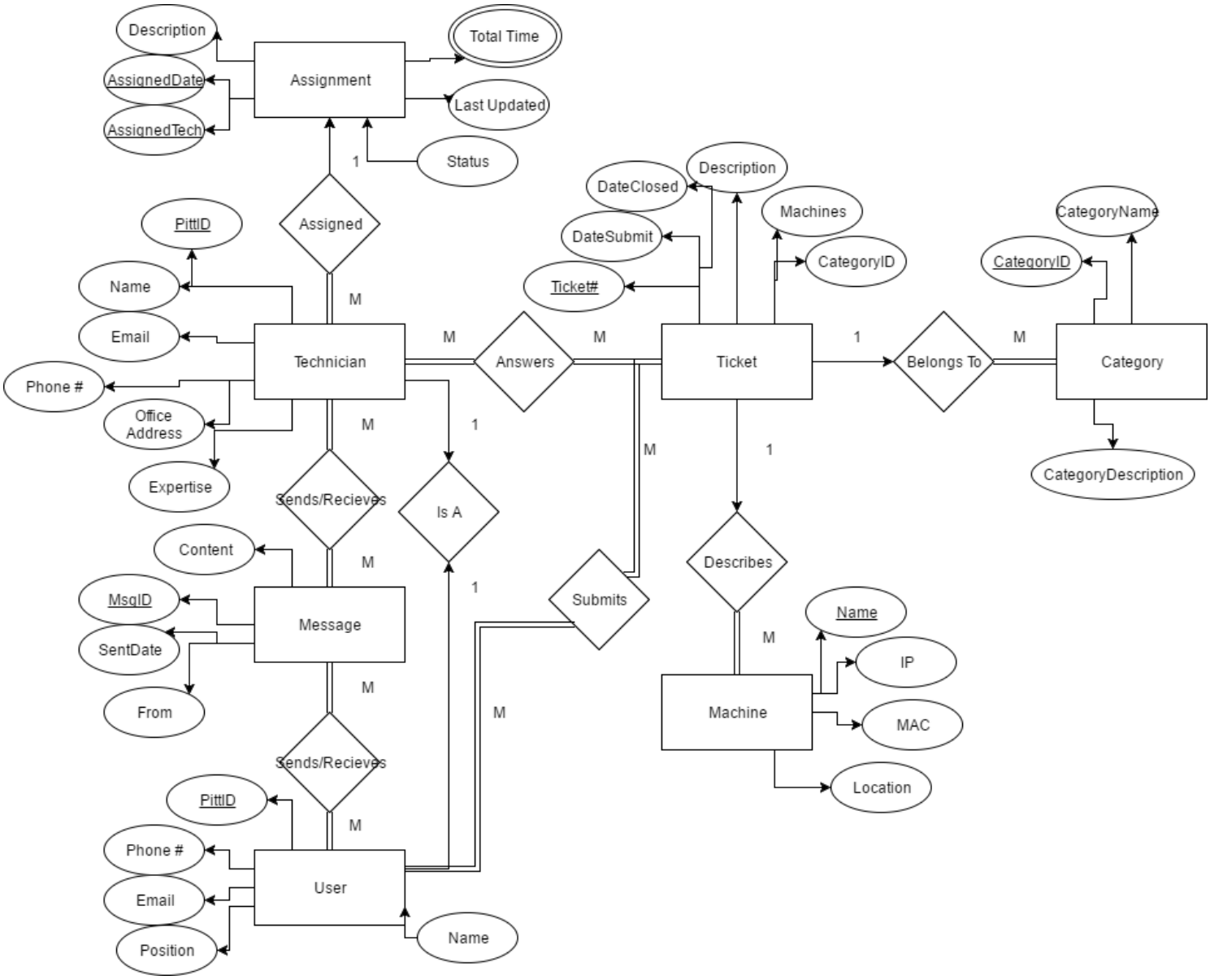
Assumptions:

- Assignment.TotalTime can be derived from measuring the time between status updates, from in_progress to closed

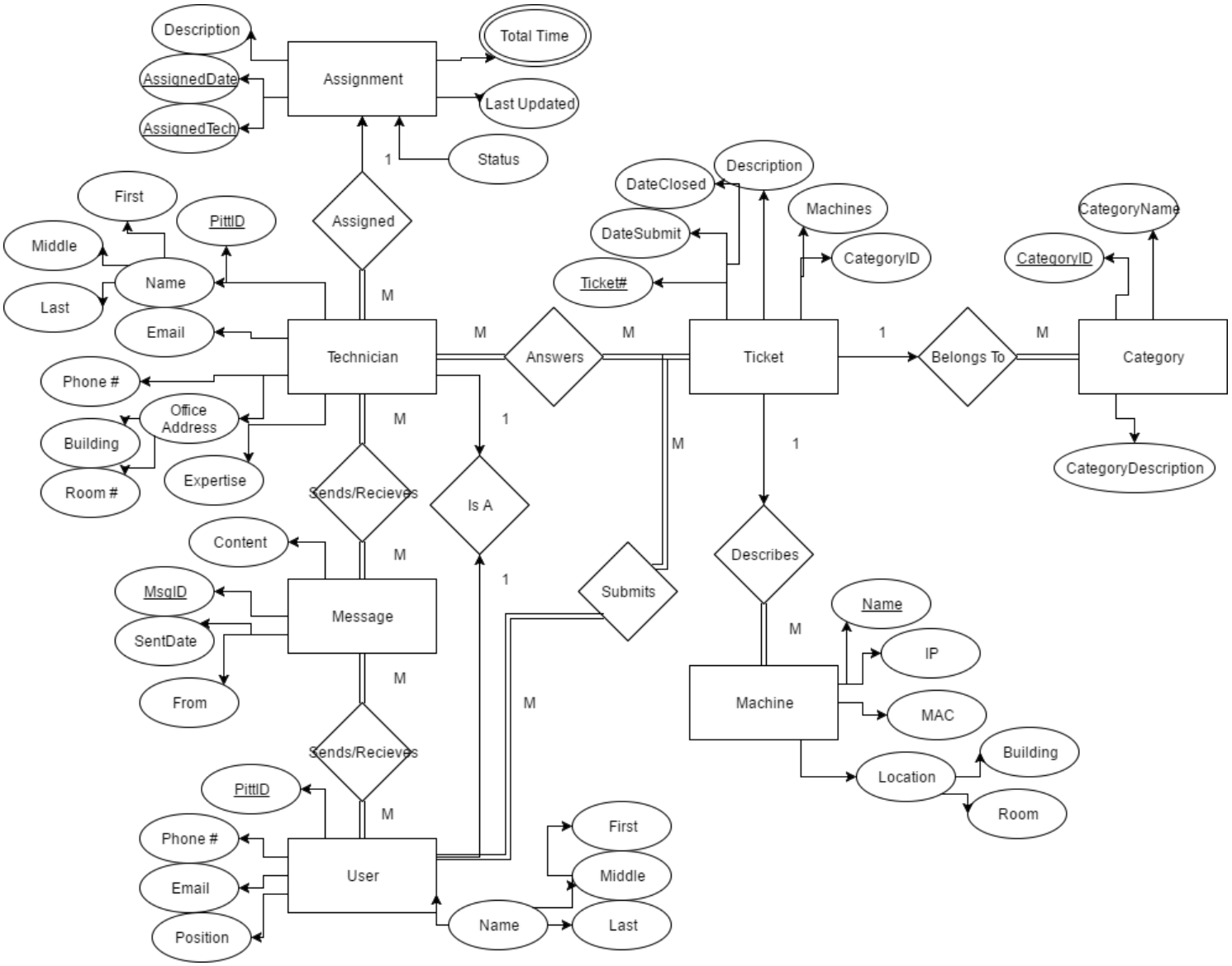
- Any Number of technicians can work on assignment over time, but at any given point there can only be 1 technician on a specific assignment.

-We want to log all official messages between tech and user

-Message.From tells you who the sender is.



FULL ER Diagram with Complex Attributes



ER Diagram 2 Translation Into Relational Schema:

TECHNICIAN(PittID,First, Middle, Last, Email, Phone#, Building, Room#, Expertise)
FK(PittID)→USER(PittID)

USER(PittID,First,Middle,Last, Phone#, Email, Position)

MESSAGE(MsgID,Content, SentDate, From)
FK(From)→ USER(PittID)

TICKET(Ticket#, DateSubmit, DateClosed, Description, Machines, CategoryID)
FK(Machines)→MACHINE(Name)
FK(CategoryID→CATEGORY(CategoryID)

ASSIGNMENT(AssignedTech, AssignedDate, Description, LastUpdated, Status)
FK(AssignedTech)→ TECHNICIAN(PittID)

MACHINE(Name, MAC, IP, Building, Room#)

CATEGORY(CategoryID, CategoryName, CategoryDescription)