Randyll Bearer: RLB97
Zachary White: ZTW9

Team Name: WhiteBeaver
TeamNumber: 17

Question 1:
AB → E

PrimaryKeys:
BC

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

AB → E

B → D   B → D

B->E   B → E   Result:

DF → A   DF → A   BCDF

C → F   C → F

DC → A

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 → D
B → E
DF → A
C → F
C → B

To fix, have
C → 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(<u>BookISBN</u>, Title, Price, QuantityOnHand)
R2(<u>OrderNumber,SupplierCode</u>, OrderDate, SupplierName, SupplierAddress)
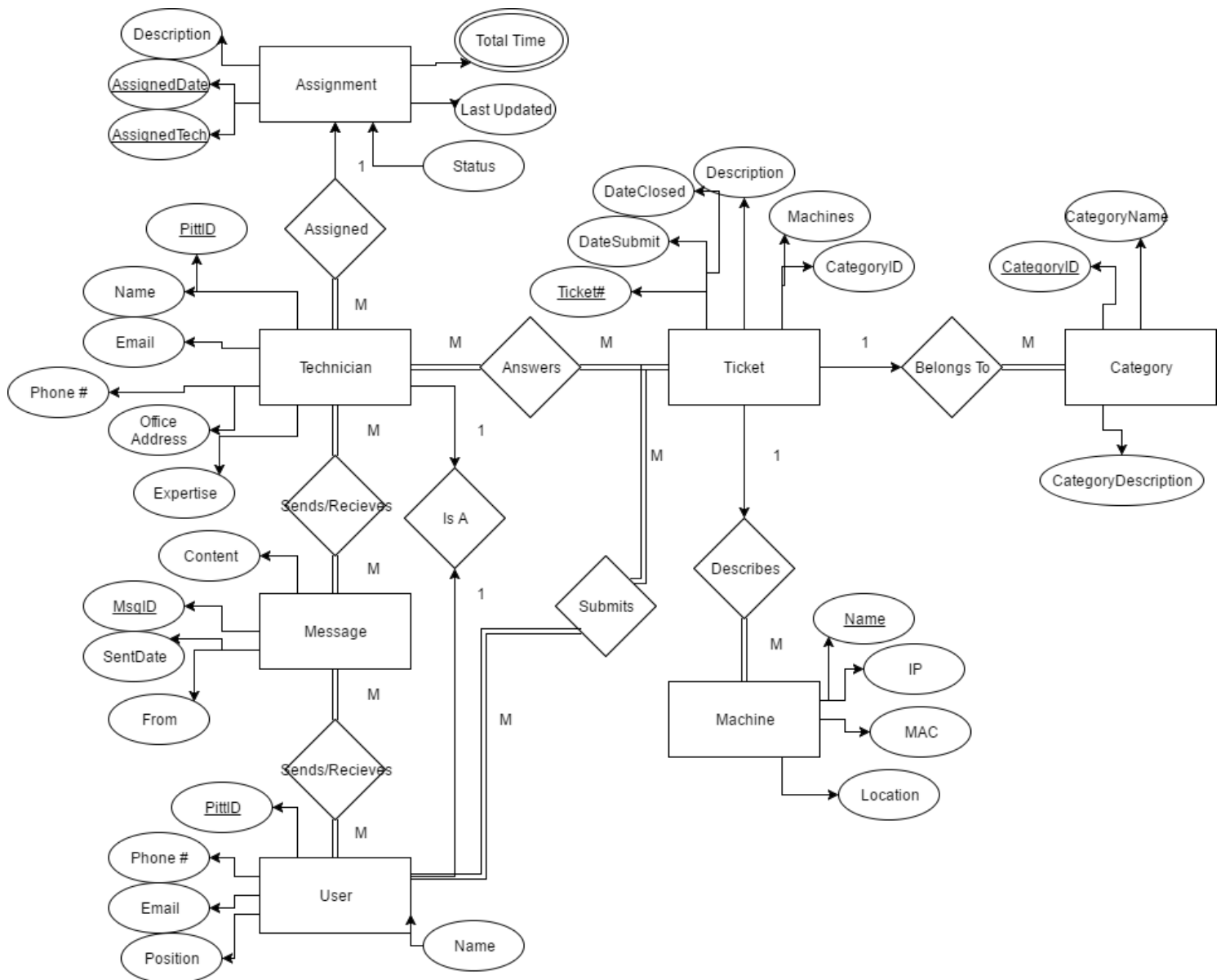R3(<u>BookISBN,OrderNumber</u>, Title, Price, QuantityOnHand, QuantityOrdered)
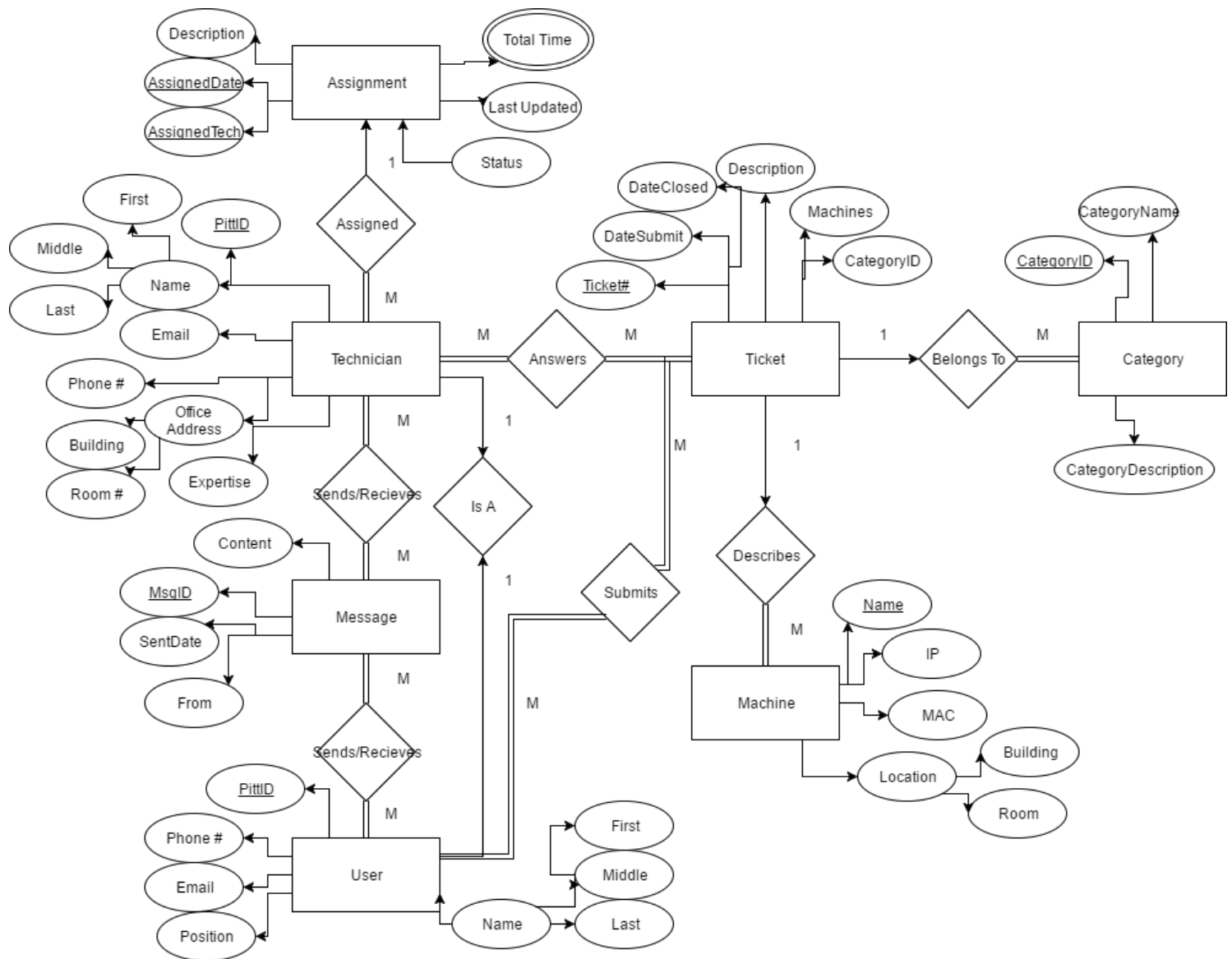
ER Diagram Question 1

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(<u>PittID</u>,First, Middle, Last, Email, Phone#, Building, Room#, Expertise)
FK(PittID)→USER(PittID)

USER(<u>PittID</u>,First,Middle,Last, Phone#, Email, Position)

MESSAGE(<u>MsgID</u>,Content, SentDate, From)
FK(From)→ USER(PittID)

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

ASSIGNMENT(<u>AssignedTech, AssignedDate</u>, Description, LastUpdated, Status)
FK(AssignedTech)→ TECHNICIAN(PittID)

MACHINE(<u>Name,</u> MAC, IP, Building, Room#)

CATEGORY(<u>CategoryID,</u> CategoryName, CategoryDescription)