ISTE-608 Introduction to Database & Data Modeling

Homework # 3 – Transposing and E-R Diagram

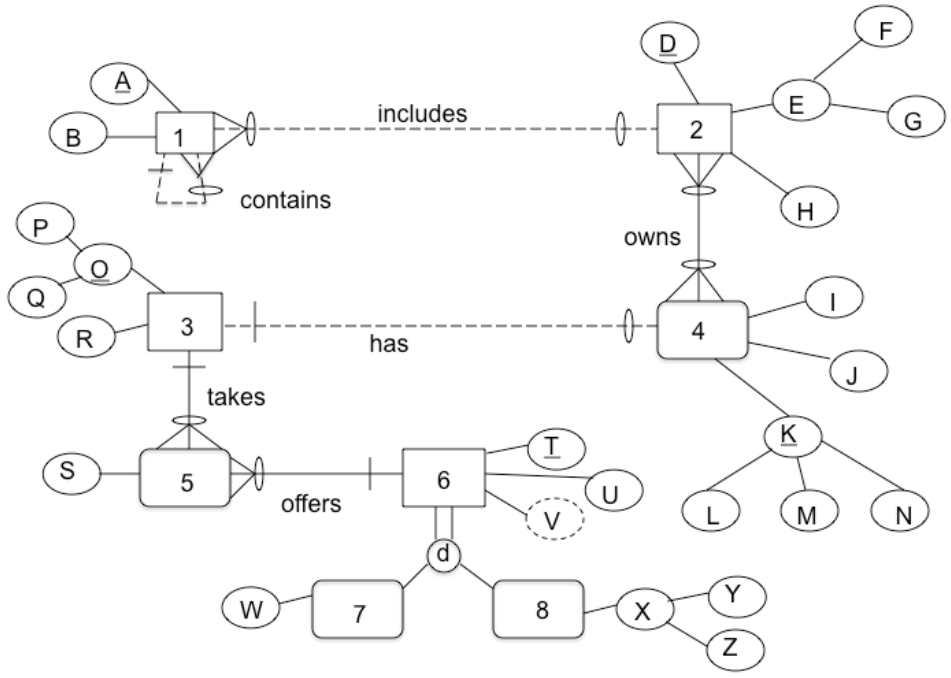
DUE: Sunday, September 16, 2018 by 11:59pm
Name: SACHIN MOHAN SUJIR

Submit this document edited to include your answers, for the two parts, to the HW#3 Dropbox by the stated deadline.

(It may be helpful to right-click on the icon and select Hide Spelling Errors and Hide Grammatical Errors.)

Part #1 – 50 points

1. (45 points) Transpose the E-R diagram above into relations, implementing all relationships. Denote primary keys and foreign keys appropriately. Use proper relation notation. You need to provide reference statements. There is a distinction between identifying and non-identifying relationships.



YOUR TRANSPOSED RELATIONS:

- 1(A, B, *D, Ac*)

  1(D) mei 2(D)
  1(Ac) mei 1(A)

- 2(D, F, G, H)

- 3(P, Q, R)

- 4(L, M, N, I, J, *P*, *Q*)

  4(P) mei 3(P)
  4(Q) mei 3(Q)

- 5(*P*, *Q*, S, *T*)

  5(P) mei 3(P)
  5(Q) mei 3(Q)
  5(T) mei 6(T)

- 6(T, U)

- 7(*T*, U)

  7(T) mei 6(T)

- 8(*T*, Y, Z)

  8(T) mei 6(T)

- 2_4(*L*, *M*, *N*, *D*)

  2_4(L, M, N) mei 4(L, M, N)
  2_4(D) mei 2(D)

2. (2 points) Using the E-R diagram above, please explain why entity 7 is weak and what the specific term for that type of entity is.
REASON: Entity 7 is a weak entity because it depends on entity 6 to exist. Based on entity 6, entity 7 may change accordingly.
TERM: ID-Dependent Weak Entity.

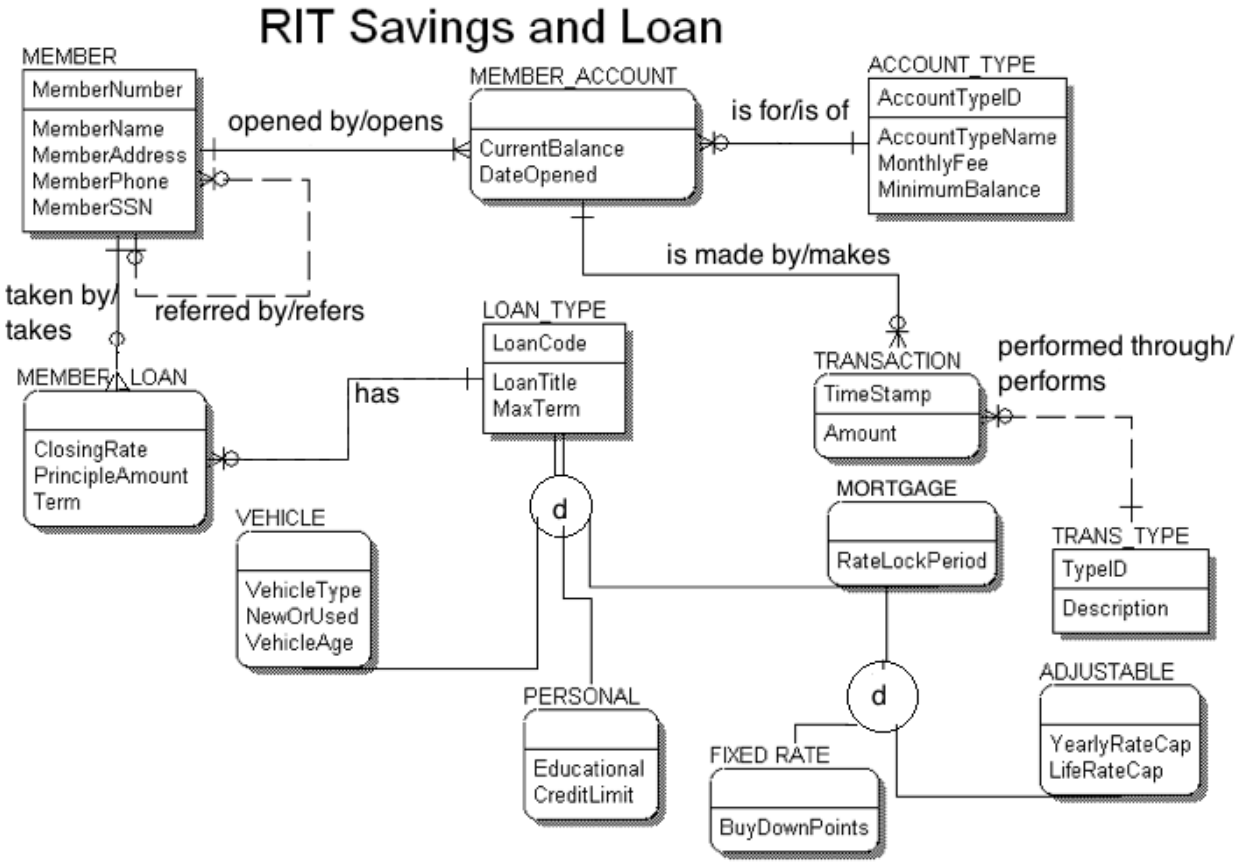
3. (2 points) Using the E-R diagram above, please explain why entity 5 is weak and what the specific term for that type of entity is.
REASON: Entity 5 is a weak entity because it depends on entity 3 to exist. Based on entity 3, entity 5 may change accordingly.
TERM: ID-Dependent Weak Entity.

4. (1 point) Using the E-R diagram above, please explain what relationship makes entity 4 weak and what about that relationship causes it to be weak.

EXPLANATION: Entity 4 is a weak entity because it depends on entity 3 to exist. It is in a 1:1 relationship with entity 3, where entity 3 does not have to have a entity 4, but entity 4 has to have an entity 3.

Part 2 – RIT Savings and Loan (50 points)

1. (50 points) Transpose the E-R diagram above into relations, implementing all relationships. Denote primary keys and foreign keys appropriately. Use proper relation notation. You need to provide reference statements.



YOUR TRANSPOSED RELATIONS:

- Member(MemberNumber, MemberName, MemberAddress, MemberPhone, MemberSSN, *ReferrerMemberNumber*)

  Member(ReferrerMemberNumber) mei Member(MemberNumber)

- Member_Account(*MemberNumber*, *AccountTypeID*, CurrentBalance, DateOpened)

Member_Account(MemberNumber) mei Member(MemberNumber)
Member_Account(AccountTypeID) mei Account_Type(AccountTypeID)

- Account_Type(AccountTypeID, AccountTypeName, MonthlyFee, MinimumBalance)

- Member_Loan(*MemberNumber, LoanCode*, ClosingRate, PrincipleAmount, Term)

  Member_Loan(MemberNumber) mei Member(MemberNumber)
  Member_Loan(LoanCode) mei Loan_Type(LoanCode)

- Loan_Type(LoanCode, LoanTitle, MaxTerm)

- Vehicle(*LoanCode*, VehicleType, NewOrUsed, VehicleAge)

  VehicleType(LoanCode) mei Loan_Type(LoanCode)

- Personal(*LoanCode*, Educational, CreditLimit)

  Personal(LoanCode) mei Loan_Type(LoanCode)

- Mortage(*LoanCode*, RateLockPeriod)

  Mortage(LoanCode) mei Loan_Type(LoanCode)

- Fixed Rate(*LoanCode*, BuyDownPoints)

  Fixed Rate(LoanCode) mei Mortage(LoanCode)

- Adjustable(*LoanCode*, YearlyRateCap, LifeRateCap)

  Adjustable(LoanCode) mei Mortage(LoanCode)

- TRANS_TYPE(TypeID, Description)

- Transaction(TimeStamp, Amount, *TypeID*, *MemberNumber*, *AccountTypeID*)

  Transaction(TypeID) mei Trans_Type(TypeID)

Transaction(MemberNumber, AccountTypeID) mei Member_Account(MemberNumber, AccountTypeID)