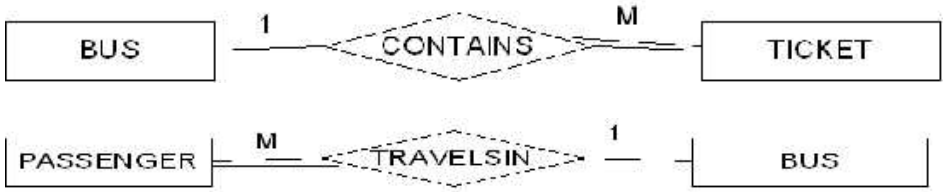
Week: 2

Concept design with E – R model

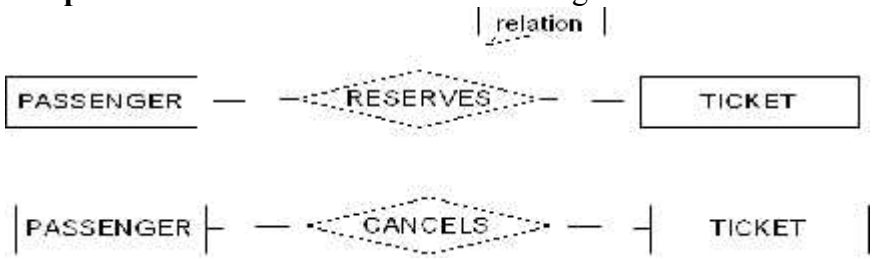
Relate the entities appropriately. Apply cardinalities for each relationship. Identify strong entities and weak entities (if any). Indicate the type of relationship (total/partial). Try to incorporate generalization, aggregation, specialization etc wherever required.

Definitions:

The cardinality ratio: - for a binary relationship specifies the maximum number of relationships that an entity can participate in.



Relationship: - it is defined as an association among two or more entities.



Weak and strong entity: - an entity set may not have sufficient attributes to form a primary key. Such an entity set is termed a weak entity set. An entity set that has primary key is termed a strong entity set.

Total participation:-

Ex: - if a travel agency states that every passenger must make reservation then every passenger travels in bus. Than a passengers entity can exist only if it participates in atleast one travels relationship instances. Thus the participation of passenger in travel is called total participation meaning that every entity in the "total set" passenger entities must be related to bus via travels relationship.

All passengers travel in one bus so it is total participation

Partial participation: a participation that is not total is called as partial participation.

Some passengers cancel ticket so it is partial participation

Generalization: consists of identifying some common characteristics of a collection of entity set and creating new entity set that contains entities possessing these common characteristics.

Aggregation: allows us to indicate that a relationship set participates in another relationship set.

Specialization: in the process of identifying subsets of an entity set (the super set) that share some distinguishing characteristics. This entity type is called the super class of the specialization.

Relationship between different entities:

Relationship between Bus and Ticket entities

1:M binary relationship

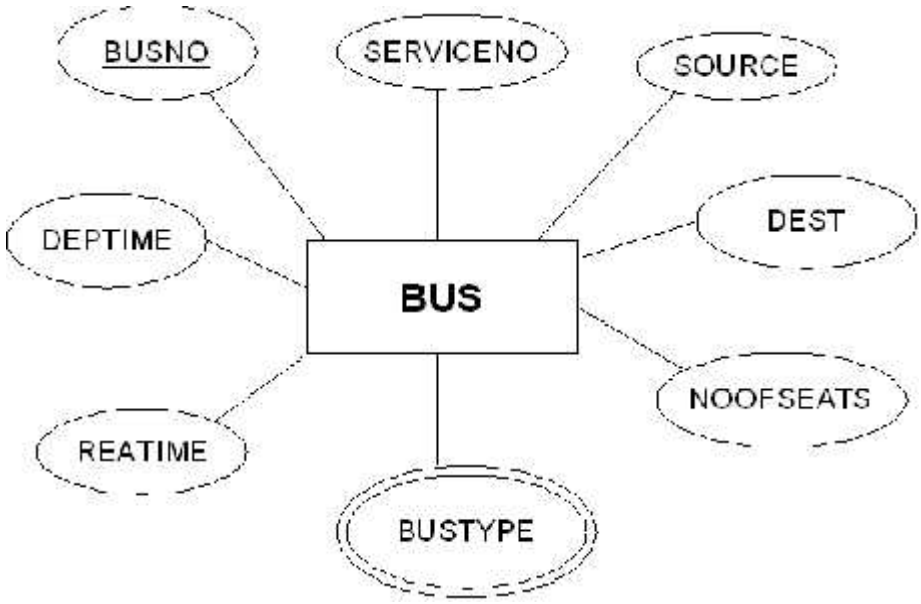
Relationship between Passenger and Bus entities

M:1 binary relationship

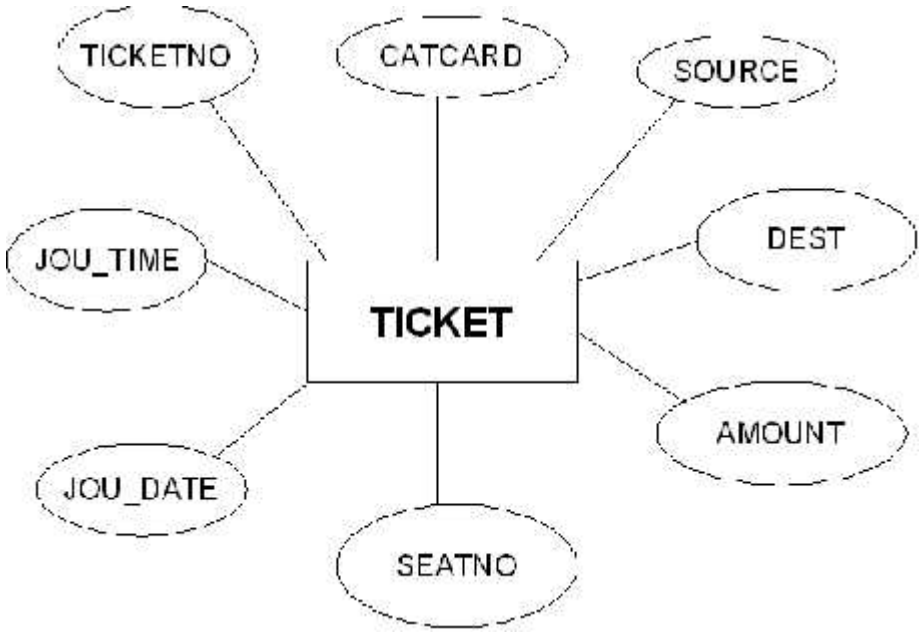
Relationship between Passenger and Ticket entities

M:N binary relationship

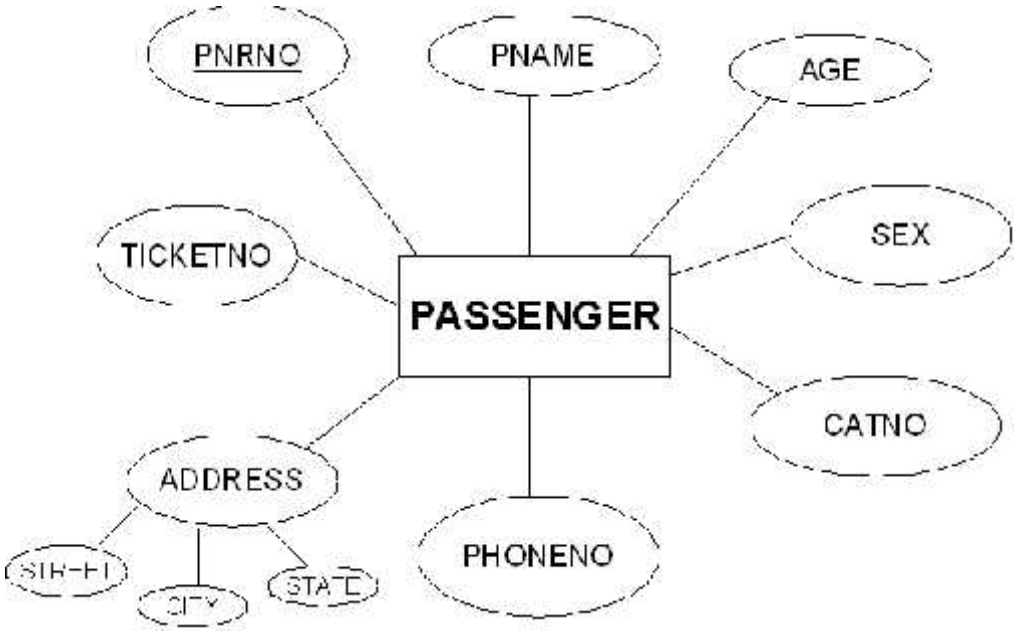
Entity diagram for *BUS*



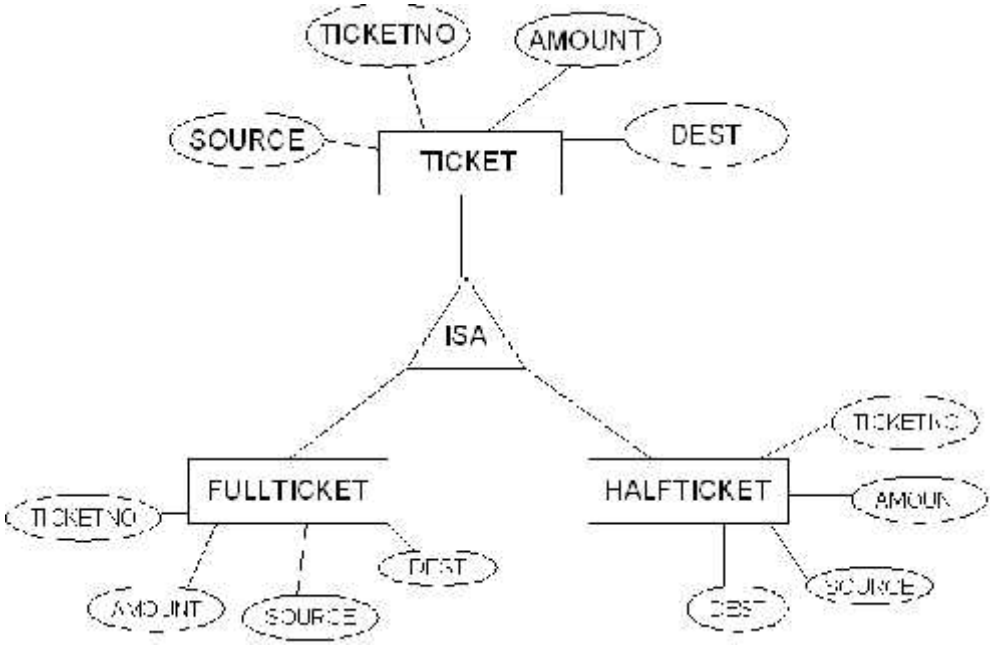
Entity diagram for *Ticket*



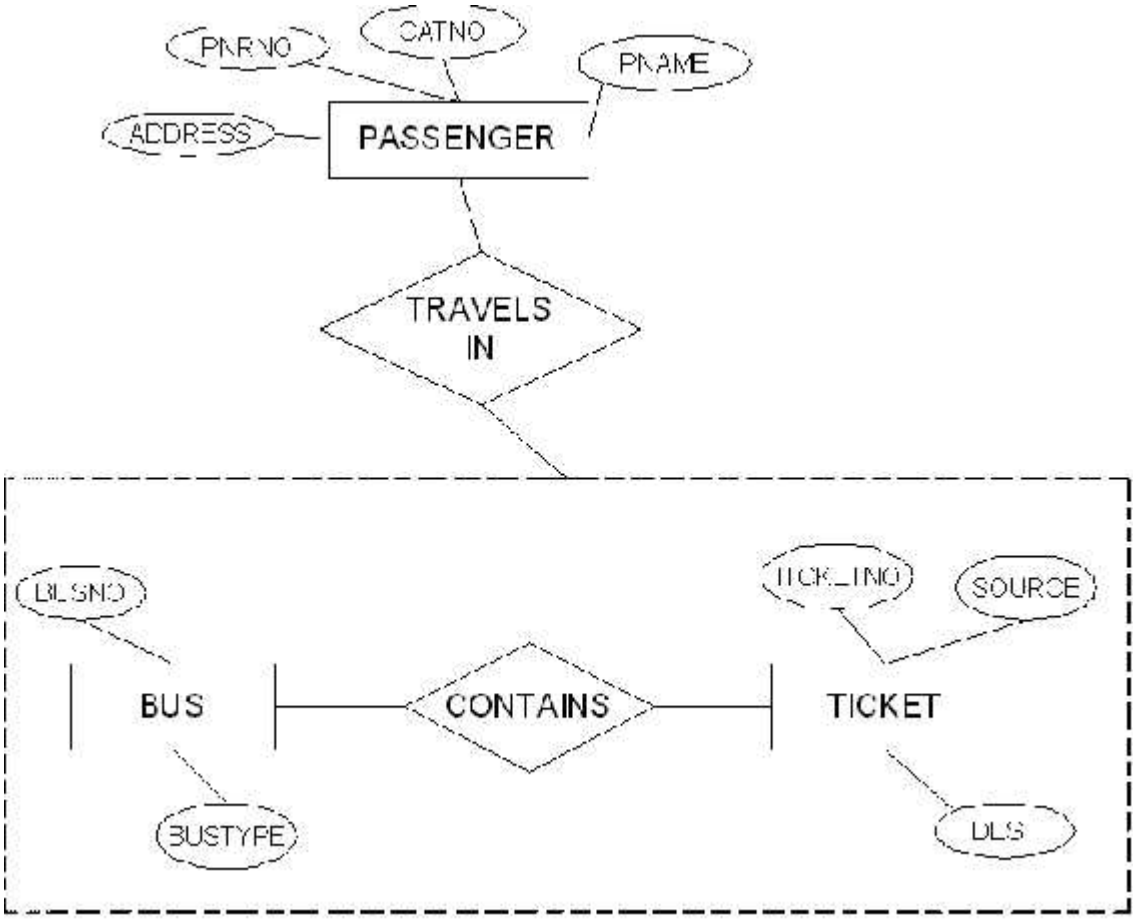
Entity diagram for *Passenger*



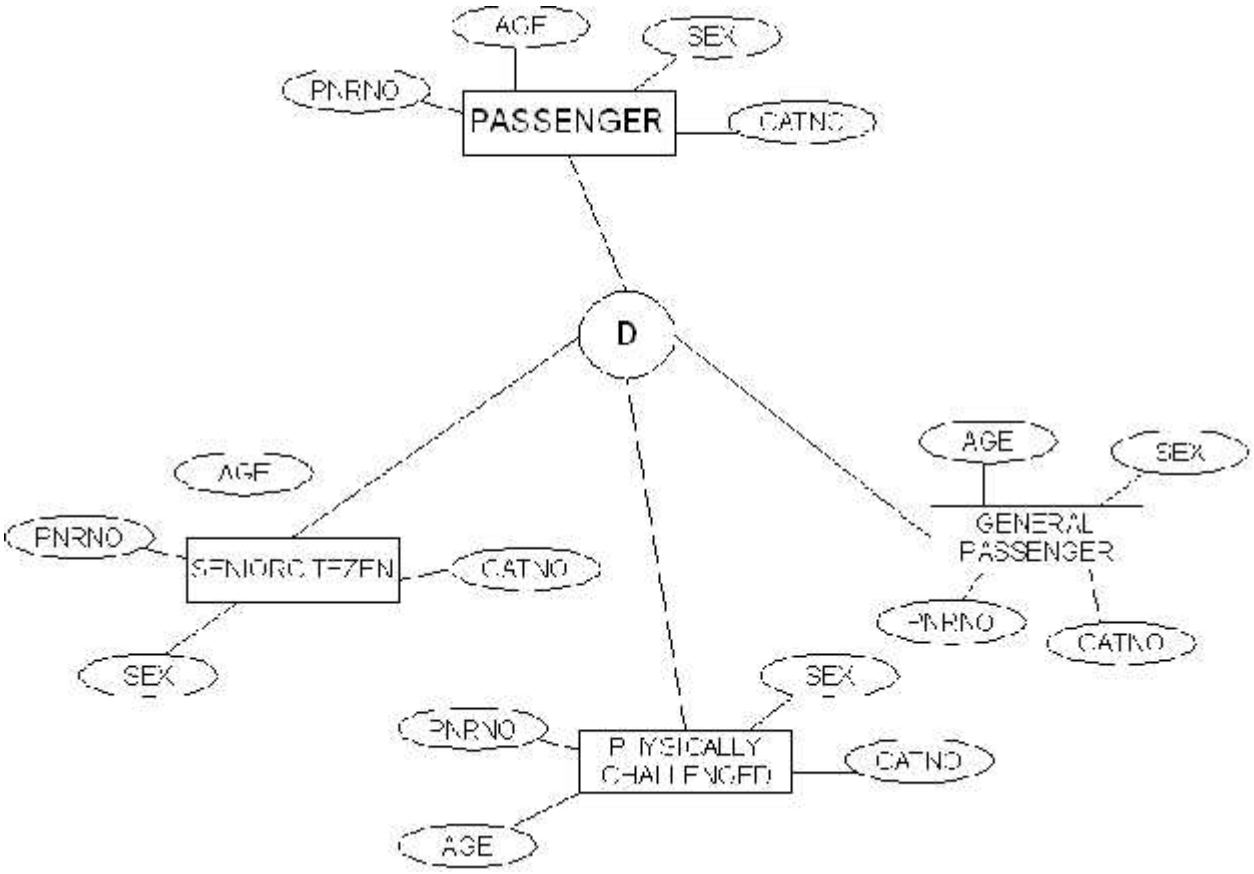
Generalization:



Aggregation:



Specialization: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