

**Week: 1****E-R Model**

Analyze the problem carefully and come up with entities in it. Identify what data has to be persisted in the database. This contains the entities, attributes etc.

Identify the primary keys for all the entities. Identify the other keys like candidate keys, partial keys, if any.

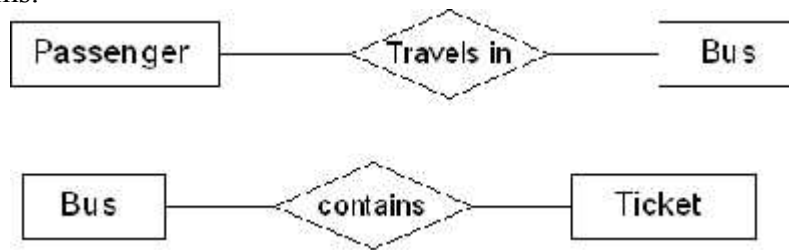
**Definitions:**

**Entity:** the object in the **ER** Model represents is an entity which is thing in the real world with an independent existence.

Eg:

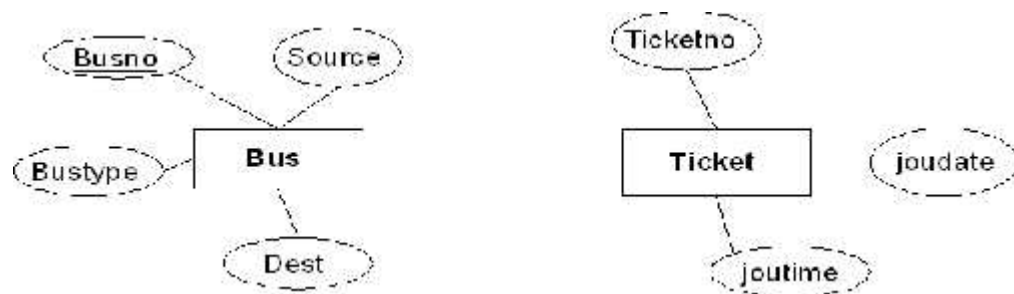
**ER-Model:**

Describes data as entities, relationships and attributes. The ER-Model is important preliminary for its role in database design. ER Model is usually shown pictorially using entity relationship diagrams.

**Attributes:**

The properties that characterize an entity set are called its attributes. An attribute is referred to by the terms data items, data element, data field item.

Ex: attributes for bus entity and ticket entity.

**Candidate key:**

It can be defined as minimal super key or irreducible super key. In other words an attribute or combination of attributes that identifies the record uniquely but none of its proper subsets can identify the record uniquely.

<u>Busno</u>	<u>serviceno</u>	source	destination	deptime	retime	bustype	noofseats
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Busno,serviceno----->candidate key

**Primary key:**

A candidate key that is used by the database designer for unique identification of each row in a table is known as primary key. A primary key consists of one or more attributes of the table.



**Partial key:**

A weak entity type normally has a partial key which is the set of attributes that can uniquely identify weak entity that are related to the same owner entity.

**The entities in the “Roadway travels” is**

- 1) Bus 2) Ticket 3) Passenger

**Bus entity:**

Attributes for the bus entity are

Busno, serviceno, source, destination, deptime, retime, bustype, noofseats

**Bus schema:**

<b>Busno</b>	<b><u>serviceno</u></b>	source	destination	deptime	retime	bustype	noofseats
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Busno,serviceno,source -----> super key

Busno,serviceno,bustype-----> super key

Busno,serviceno----->candidate key

Busno,serviceno-----> primary key

**Ticket entity:**

Attributes for the ticket entity are

Ticketno, joudate, joutime, source, destination, seatno, amount, catcard

**Ticket schema:**

<b><u>Ticketno</u></b>	Joudate	Joutime	Source	Destination	Seatno	Amount	Catcard
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Ticketno, source, destination ----- >Super key

Ticketno, source, seatno -----> Super key

Ticketno, destination, seatno -----> Super key

Ticketno-----> candidate key

Ticketno----->primary key

**Passenger entity:**

Attributes for the Passenger entity are

Pnrno, pname, age, sex, ticketno, address, phno, catno

**Passenger schema:**

<u>Pnrno</u>	pname	age	sex	ticketno	address	phno	catno
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Pnrno,pname----- super key  
 Pnrno,ticketno----- super key  
 Pnrno,phno----- super key  
 Pnrno ----- candidate key  
 Pnrno -----primary key

**Sample data for *Bus* entity:**

<u>Busno</u>	<u>serviceno</u>	source	destination	deptime	retime	bustype	Noofseats
<u>Ap555</u>	<u>3889</u>	Srpt	Hyd	9:00:00	19:15:00	Ac	36
<u>Ap501</u>	<u>3891</u>	Srpt	Hyd	10:00:15	20:15:00	Ac	36
<u>Ap444</u>	<u>3601</u>	Hyd	Srpt	9:00:00	19:30:00	Nonac	52
<u>Ap891</u>	<u>3555</u>	Hyd	Srpt	9:30:00	20:30:00	Nonac	52
<u>Ap8830</u>	<u>3239</u>	Hyd	Vij	9:00:00	22:30:00	Metro	45

**Sample data for *Ticket* entity:**

<u>Ticketno</u>	<u>Joudate</u>	<u>Joutime</u>	Source	Destination	Seatno	Amount	Catcard
1111	2010-8-5	9:00:00	Srpt	Hyd	5	96	No
2222	2010-8-5	10:00:15	Srpt	Hyd	10	88	Yes
3333	2010-8-15	9:00:00	Hyd	Srpt	15	88	Yes
4444	2010-8-18	9:30:00	Hyd	Srpt	20	96	No
5555	2010-8-6	9:00:00	Hyd	Vij	18	172	Yes

**Sample data for *Passenger* entity:**

<u>Pnrno</u>	<u>pname</u>	<u>age</u>	<u>sex</u>	<u>ticketno</u>	<u>address</u>	<u>phno</u>	<u>Catno</u>
1001	Subbu	31	M	1111	5-4,srpt	9492506282	Cap5112
1002	Achaith	22	M	2222	6-8,hyd	9949060540	
1003	Padma	25	F	3333	h/7,vij	9704054050	Cap5772
1004	Ravi	23	M	4444	8-9,hyd	9704613151	Cap6132
1005	Satyam	42	F	5555	9-11,hyd	9848354941	Cap6732