HOUSE BOAT MANAGEMENT SYSTEM

Prepared For

Dr. Kiran Sharma

Ass. Professor

BML Munjal University

By

D Veera Harsha Vardhan Reddy

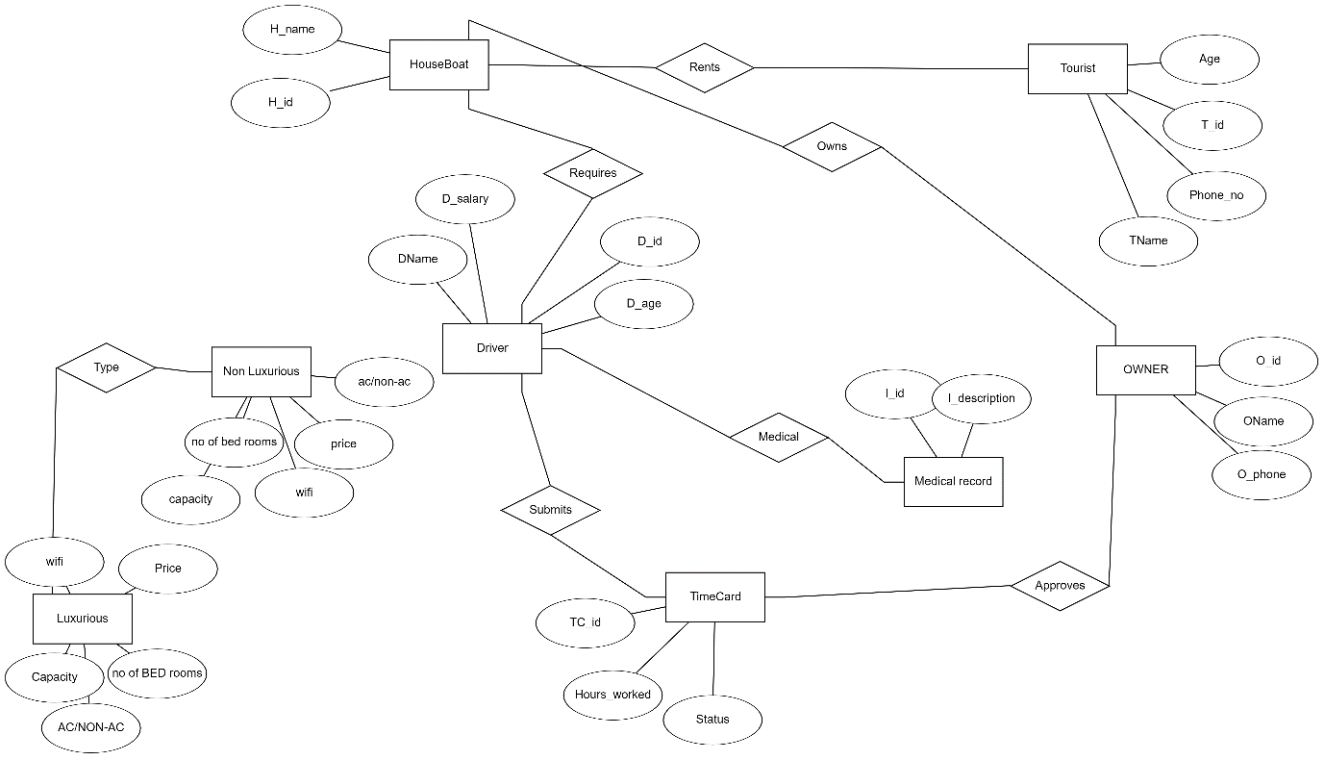
210C2030061

CSE-2

Problem Statement:

An agency keeps track of house boats, its owners and the customers who rented it.

ER DIAGRAM



Relational Schema:

Primary Keys: _____
Foreign Keys: grey

Tourist(T_id, TFirst_name, TLast_name, Age)
Rent(H_id, T_id, D_id)
Driver(D_id, DFirst_name, DLast_name, D_salary, D_age)
Medical_Record(D_id, I_id, I_description)
Time Card(TC_id, Hours_worked, Status, D_id)
Owner(O_id, OFirst_name, OLast_name, O_phone, TC_id)
Luxurious(H_id, H_name, O_id, Capacity, AC/non AC, Noofbedrooms,Wifi, Price)
Non-Luxurious(H_id,H_name,O_id,Capacity, AC/non AC, Noofbedrooms,Wifi, Price)

The relation between entities:

One to one relationship: Time card and Driver, Driver and Medical records.

One to many relationship: owner and luxurious, Owner and Non-Luxurious

Many to many relationship: Tourist and Luxurious, Tourist and Non-Luxurious.

SQL:

```
create table tourist(t_id varchar(10) primary key, tfirst_name varchar(20),
tlast_name varchar(20), age int, phone varchar(13), country varchar(20));

create table houseboat(h_id varchar(10) primary key, h_name varchar(20),
capacity int, acfacility varchar(6), noofbedrooms int, wifi varchar(6), price int);


create table medicalrecords(i_id varchar(10) primary key, idescription
varchar(80));

create table driver(d_id varchar(10) primary key, dfirst_name varchar(20),
dlast_name varchar(20), dsalary int, dage int, i_id varchar(10)) ;

create table boatowner(o_id varchar(10) primary key, ofirst_name
varchar(20),olast_name varchar(20), ophone varchar(13));

create table management(rent_date date, t_id varchar(10), h_id varchar(10),
d_id varchar(10), o_id varchar(10), foreign key(t_id) references tourist(t_id),
foreign key(d_id) references driver(d_id), foreign key(h_id) references
houseboat(h_id) , foreign key(o_id) references boatowner(o_id) , primary
key(rent_date, t_id));
```

Tourist Entity:

```
insert into tourist values('T1', 'Sowmya', 'Khanna', 29, '+919446252773', 'India');


insert into tourist values('T2', 'Rajesh', 'Khanna', 34, '+919497822113', 'India');

insert into tourist values('T3', 'John', 'Doe', 35, '+15555421238', 'USA');

insert into tourist values('T4', 'Mary', 'Jones', 34, '+15555421282', 'USA');

insert into tourist values('T5', 'Abdus', 'Salam', 29, '+971050120282', 'UAE');

insert into tourist values('T6', 'Sanaa', 'Salam', 25, '+971050821682', 'UAE');

select * from tourist;
```

t_id	tfirst_name	tlast_name	age	phone	country
T1	Sowmya	Khanna	29	+919446252773	India
T2	Rajesh	Khanna	34	+919497822113	India
T3	John	Doe	35	+15555421238	USA
T4	Mary	Jones	34	+15555421282	USA
T5	Abdus	Salam	29	+971050120282	UAE
T6	Sanaa	Salam	25	+971050821682	UAE

HouseBoat Entity:

insert into houseboat values('H123', 'Aqua Castle', 6, 'AC', 2, 'Y', 33810);

insert into houseboat values('H108', 'Nova Holidays', 4, 'NONAC', 1, 'Y', 13510);

insert into houseboat values('H154', 'Pournami', 10, 'AC', 4, 'Y', 41378);

insert into houseboat values('H162', 'River View', 3, 'NONAC', 2, 'N', 20229);

insert into houseboat values('H821', 'Pearl Spot', 6, 'AC', 3, 'N', 43500);

select * from houseboat;

h_id	h_name	capacity	acfacility	noofbedrooms	wifi	price
H108	Nova Holidays	4	NONAC	1	Y	13510
H123	Aqua Castle	6	AC	2	Y	33810
H154	Pournami	10	AC	4	Y	41378
H162	River View	3	NONAC	2	N	20229
H821	Pearl Spot	6	AC	3	N	43500

Medical Records Entity:

insert into medicalrecords values('I454','Diabeties');

insert into medicalrecords values('I156','None');

insert into medicalrecords values('I664','Eyesight Issues');

insert into medicalrecords values('I321','BP');

insert into medicalrecords values('I842','Heart Patient');

select * from medicalrecords;

i_id	idescription
I156	None
I321	BP
I454	Diabeties
I664	Eyesight Issues
I842	Heart Patient

Driver Entity:

insert into driver values('D454', 'Suresh', 'M. N', 12000, 40, 'I454');

insert into driver values('D156', 'Venu', 'S. K', 8000, 35, 'I156');

insert into driver values('D664', 'Raghu', 'C', 20000, 38, 'I664');

insert into driver values('D321', 'Ravi', 'Kumar', 13000, 42, 'I321');

insert into driver values('D842', 'Manoj', 'Unnikrishnan', 22000, 43, 'I842');

insert into driver values('D846', 'Mahesh', 'Krishnan', 19000, 25, NULL);

select * from driver;

d_id	dfirst_name	dlast_name	dsalary	dage	i_id
D321	Ravi	Kumar	13000	42	I321
D454	Suresh	M. N	12000	40	I454
D664	Raghu	C	20000	38	I664
D842	Manoj	Unnikrishnan	22000	43	I842
D846	Mahesh	Krishnan	19000	25	NULL

BoatOwner Entity:

insert into boatowner values('O123','Aravindan', 'Menon', '+919746576958');

insert into boatowner values('O421','Vijayan', 'Nair', '+919567843277');

insert into boatowner values('O668','Samuel', 'John', '+919895436378');

insert into boatowner values('O187','Chacko', 'K. T', '+919298154468');

insert into boatowner values('O842','Kurien', 'K. P', '+919646782854');

select * from boatowner;

o_id	ofirst_name	olast_name	ophone
O123	Aravindan	Menon	+919746576958
O187	Chacko	K. T	+919298154468
O421	Vijayan	Nair	+919567843277
O668	Samuel	John	+919895436378
O842	Kurien	K. P	+919646782854

Management Values Entity:

```
insert into management values('06-11-18', 'T1', 'H108', 'D156', 'O187');
insert into management values('06-11-18', 'T2', 'H108', 'D156', 'O187');
insert into management values('09-10-18', 'T3', 'H123', 'D454', 'O842');
insert into management values('09-10-18', 'T4', 'H123', 'D454', 'O842');
insert into management values('01-05-18', 'T5', 'H154', 'D664', 'O123');
insert into management values('01-05-18', 'T6', 'H154', 'D664', 'O123');
select * from management;
```

rent_date	t_id	h_id	d_id	o_id
2001-05-18	T5	H154	D664	O123
2001-05-18	T6	H154	D664	O123
2006-11-18	T1	H108	D156	O187
2006-11-18	T2	H108	D156	O187
2009-10-18	T3	H123	D454	O842
2009-10-18	T4	H123	D454	O842

QUERIES:

1) **Display first name of each tourist and the name of the houseboat that they have rented.**

   A) select Tourist.TFirst_name, Houseboat.H_name from ((Management INNER JOIN Tourist ON Management.T_id = Tourist.T_id) INNER JOIN Houseboat ON Management.H_id = Houseboat.H_id);

TFirst_name	H_name
Sowmya	Nova Holidays
Rajesh	Nova Holidays
John	Aqua Castle
Mary	Aqua Castle
Abdus	Pournami
Sanaa	Pournami

2) **Display the details of each housboat whose price is greater than 40000.**

   A) select * from houseboat where price>40000;

h_id	h_name	capacity	acfacility	noofbedrooms	wifi	price
H154	Pournami	10	AC	4	Y	41378
H821	Pearl Spot	6	AC	3	N	43500

3) **Display the name and the discount price of each houseboat, where the discount price = price – 1000.**

   A) select h_name, price-1000 as discount_price from houseboat;

h_name	discount_price
Nova Holidays	12510
Aqua Castle	32810
Pournami	40378
River View	19229
Pearl Spot	42500

4) **Select details of drivers whose first name starts with R.**

   A) select * from driver where dfirst_name like 'R%';

d_id	dfirst_name	dlast_name	dsalary	dage	i_id
D321	Ravi	Kumar	13000	42	I321
D664	Raghu	C	20000	38	I664

   Select details of tourist whose last name has a h in it.

   A) select * from tourist where tlast_name like '%h%';

t_id	tfirst_name	tlast_name	age	phone	country
T1	Sowmya	Khanna	29	+919446252773	India
T2	Rajesh	Khanna	34	+919497822113	India

5) **Display first name from driver whose salary is greater than 9000**

   A) select dfirst_name from driver where dsalary in (select dsalary from driver where dsalary>9000);

dfirst_name
Ravi
Suresh
Raghu
Manoj
Mahesh

Display first name of driver whose salary is not greater than 9000,

A) select dfirst_name from driver where dsalary not in (select dsalary from driver where dsalary>9000);

dfirst_name
Venu

6) Display details of records where rent dates is between '06-10-18' and '09-11-18'

A) select * from Management where Rent_date BETWEEN '06-10-18' AND '09-11-18';

rent_date	t_id	h_id	d_id	o_id
2006-11-18	T1	H108	D156	O187
2006-11-18	T2	H108	D156	O187
2009-10-18	T3	H123	D454	O842
2009-10-18	T4	H123	D454	O842

7) Display houseboat name and capacity of houseboats that have ac facility

A) select h_name, capacity from houseboat where h_id in(select h_id from houseboat where acfacility like 'AC');

h_name	capacity
Aqua Castle	6
Pournami	10
Pearl Spot	6

8)Display first name and last name of all tourists and drivers,

A) select tfirst_name "First Name", tlast_name "Last Name" from tourist union select dfirst_name, dlast_name from driver;

	First Name	Last Name
▶	Sowmya	Khanna
	Rajesh	Khanna
	John	Doe
	Mary	Jones
	Abdus	Salam
	Sanaa	Salam
	Venu	S. K
	Ravi	Kumar
	Suresh	M. N
	Raghu	C
	Manoj	Unnikrish...
	Mahesh	Krishnan

Normalization:

The Normalization process can be shown as follows:

A = Tid
B = TFirst_name
C = TLast_name
D = Age
E = Phone
F = Country
G = H_id
H = H_name
I = Capacity
J = AC/NON-AC
K = Bedroom
L = Wifi
M = Price
N = Rent_date
O = D_id
P = DFirst_name
Q = DLast_name
R = D_salary
S = D_age
T = I_id
U = I_description
V = O_id
W = OFirst_name,
X = OLast_name,
Y = OPhone.

0NF Form:

In the 0NF Form, we list all the attributes as follows:

T_id, TFirst_name, TLast_name, Age, Phone, Country, H_id, H_name, Capacity, Acfacility, Bedroom, Wifi, Price, Rent_date, D_id, DFirst_name, DLast_name, D_salary, D_age, I_id, I_description, O_id, OFirst_name, OLast_name, OPhone.

We combined all of the attributes into a single table. The table is shown here as follows, with a few values added in the table:

T_id	TFirst_name	TLast_name	Age	Phone	H_id	H_name	Capacity	Acfacility	BEDROOM	Wi_Fi	Price	D_id	DFirst_name	DLast_name	D_salary	D_age	Rent_Date	I_Id	I_description	O_id	OFirst_name	OLast_name	OPhone
1	RAJ	SINGH	19	9447643380, 9746576598	1	CRUISER	50	AC	15	Y	7000	1	SURAJ	YADAV	50000	35	8/11/2018	1	MIGRAINE	1	PANKAJ	TRIVEDI	9447641221
2	SURAJ	DESAI	18	9786567443	2	CRUISER	30	AC	10	Y	3000	2	SUMANTH	SINGH	30000	40	8/11/2018	2	MIGRAINE	2	SAM	SMITH	9447641243

Functional dependencies are:

AGNOV -> ABCDEFGHIJKLMNOPQRSTUVWXY

Primary Key:
AGNOV

1NF Form:

In the 1NF Form, we split the rows that had the multivalued attributes, so that each column can have unique values.

T_id	TFirst_name	TLast_name	Age	Phone	H_id	H_name	Capacity	Acfacility	BEDROOM	Wi_Fi	Price	D_id	DFirst_name	DLast_name	D_salary	D_age	Rent_Date	I_Id	I_description	O_id	OFirst_name	OLast_name	OPhone
1	RAJ	SINGH	19	9447643380	1	CRUISER	50	AC	15	Y	7000	1	SURAJ	YADAV	50000	35	8/11/2018	1	MIGRAINE	1	PANKAJ	TRIVEDI	9447641221
1	RAJ	SINGH	19	9746576598	1	CRUISER	50	AC	15	Y	7000	1	SURAJ	YADAV	50000	35	8/11/2018	1	MIGRAINE	1	PANKAJ	TRIVEDI	9447641221
2	SURAJ	DESAI	18	9786567443	2	CRUISER	30	AC	10	Y	3000	2	SUMANTH	SINGH	30000	40	8/11/2018	2	MIGRAINE	2	SAM	SMITH	9447641243

Functional Dependencies:
AGNOV -> ABCDEFGHIJKLMNOPQRSTUVWXY

2NF Form:

In the 2NF Form, the partial dependencies are removed, and the tables can be split as follows:

Tourist(T_id, TFirst_name, TLast_name, Age, Phone, Country)
Houseboat(H_id, H_name, Capacity, Acfacility, Bedroom, Wifi, Price)
Driver(D_id, DFirst_name, DLast_name, D_salary, D_age, I_id, I_description)
Owner(O_id, OFirst_name, OLast_name, OPhone)
Management(Rent_date, T_id, H_id, D_id, O_id)

T_id	TFirst_name	TLast_name	Age	Phone	Country
1	RAJ	SINGH	19	9447643380	India
1	RAJ	SINGH	19	9746576598	India
2	SURAJ	DESAI	18	9786567443	India

H_id	H_name	Capacity	Acfacility	BEDROOM	Wi_Fi	Price
1	CRUISER	50	AC	15	Y	7000
2	CRUISER	30	AC	10	Y	3000

D_id	DFirst_name	DLast_name	D_salary	D_age	I_Id	I_desciption
1	SURAJ	YADAV	50000	35	1	MIGRAINE
2	SUMANTH	SINGH	30000	40	2	MIGRAINE

O_id	OFirst_name	OLast_name	OPhone
1	PANKAJ	TRIVEDI	9447641221
2	SAM	SMITH	9447641243

Rent_date	T_id	H_id	D_id	O_id
6/11/18	1	1	1	1
10/2/18	2	2	2	2

The Tourist attributes have partial dependencies only on T_id.
The Houseboat attributes have partial dependencies only on H_id.
The Driver attributes have partial dependencies only on D_id.
The Medical_Record attributes have partial dependencies only on I_id.
The Owner attributes have partial dependencies only on O_id.

The Management entitiy contains the primary keys of all the other entities.

Functional Dependencies are:
A -> BCDEF
G -> HIJKLM
O -> PQRSTU
T -> U
V ->WXY

3NF Form:

In the 3NF Form, the tables can be further divided as follows:

Tourist(T_id, TFirst_name, TLast_name, Age, Phone, Country)
Houseboat(H_id, H_name, Capacity, AC/NON-AC, Bedroom, Wifi, Price)
Driver(D_id, DFirst_name, DLast_name, D_salary, D_age, I_id)
Medical_Record(I_id, I_description)
Owner(O_id, OFirst_name, OLast_name, OPhone)
Management(Rent_date, T_id, H_id, D_id, O_id)

T_id	TFirst_name	TLast_name	Age	Phone	Country
1	RAJ	SINGH	19	9447643380	India
1	RAJ	SINGH	19	9746576598	India
2	SURAJ	DESAI	18	9786567443	India

H_id	H_name	Capacity	Acfacility	BEDROOM	Wi_Fi	Price
1	CRUISER	50	AC	15	Y	7000
2	CRUISER	30	AC	10	Y	3000

D_id	DFirst_name	DLast_name	D_salary	D_age	I_Id
1	SURAJ	YADAV	50000	35	1
2	SUMANTH	SINGH	30000	40	2

I_Id	I_desciption
1	MIGRAINE
2	MIGRAINE

O_id	OFirst_name	OLast_name	OPhone
1	PANKAJ	TRIVEDI	9447641221
2	SAM	SMITH	9447641243

Rent_date	T_id	H_id	D_id	O_id
6/11/18	1	1	1	1
10/2/18	2	2	2	2

In the 3NF form, we remove the transitive dependencies. The transitive dependency here is found in the Driver entity, where the I_description depends only on I_id.

Functional Dependencies are:

A -> BCDEF
G -> HIJKLM
O -> PQRST
T -> U
V ->WXY