



Examination : CAT-I / CAT-II / Others.....

Register No. 24BA11532 Slot: D1T101 Course Code BCSE302L

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Programme: Bachelor of B.Sc. Aligned School: SLOPE Faculty Name: Prof. Rakesh M.

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Class Number: CM202526D503062 Signature of the student: Jay Jay

Q No	Marks										
	a	b		a	b		a	b		a	b
1			11			21			31		
2			12			22			32		
3			13			23			33		
4			14			24			34		
5			15			25			35		
6			16			26			36		
7			17			27			37		
8			18			28			38		
9			19			29			39		
10			20			30			40		
Sub-Total			Sub-Total			Sub-Total			Sub-Total		

Authorization Seal

Invigilator Name / Code: 53343

Signature with date:

Initial of Superintendent / Coordinator

Marks : Grand Total

(in figures)

(in words)

Evaluator's Name:

Prof: RAJESH. M

Evaluator's Signature with date:

28/11/26

Office use

i.)
a.)

Intension refers to the schema of the database
i.e. the structure in which the database is
designed / modelled

one
specified
personal

Extension refers to the current records / data
present in the database at a particular instance.

So for the given scenario

Intension

The schema of the e-commerce website
is

Products

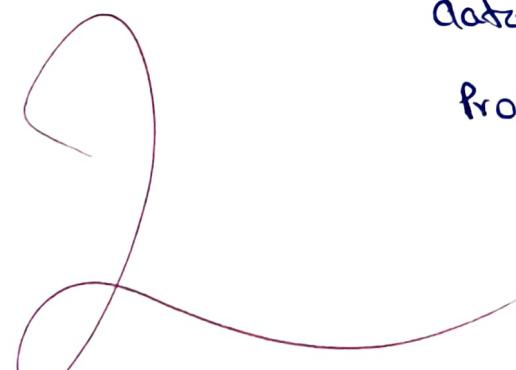
product-id	name	price	quantity
101	Shirt	599	100
102	pant	799	200
:			
110	Scarf	499	50

extension

The current records stored in the
database at that instant

Products -

101	Shirt	599	100
102	pant	799	200
:			
110	Scarf	499	50



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2.)

a) Customer

SQL query:

~~create table customer (customer_id int, customer_name
varchar2(20), address varchar2(20),
city varchar2(10), phone_number varchar2(10));~~

Movie

SQL query:

~~create table movie (movie_id int,~~

2.)

a) Customer

~~create table customer (customer_id int, name varchar2(20),
city varchar2(20), phone_no varchar2(10), int(10),
constraint pk_c_id primary key(customer_id));~~

Movie

~~create table movie (movie_id int, title varchar2(20),
genre varchar2(20), price float, constraint pk_m_id
primary key(movie_id));~~

Booking

~~create table booking (booking_id int, customer_id int,
movie_id int, booking_date date, status varchar2(20),
constraint pk_b_id primary key(booking_id),
constraint fk_c_id foreign key (customer_id) references customer,
constraint fk_m_id foreign key (movie_id) references movie);~~

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b.)

select name from customer where customer_id in
(select customer_id from booking where status = 'booked'));

2 Select title from movie where movie_id in

(select movie_id from booking where status = 'booked'));

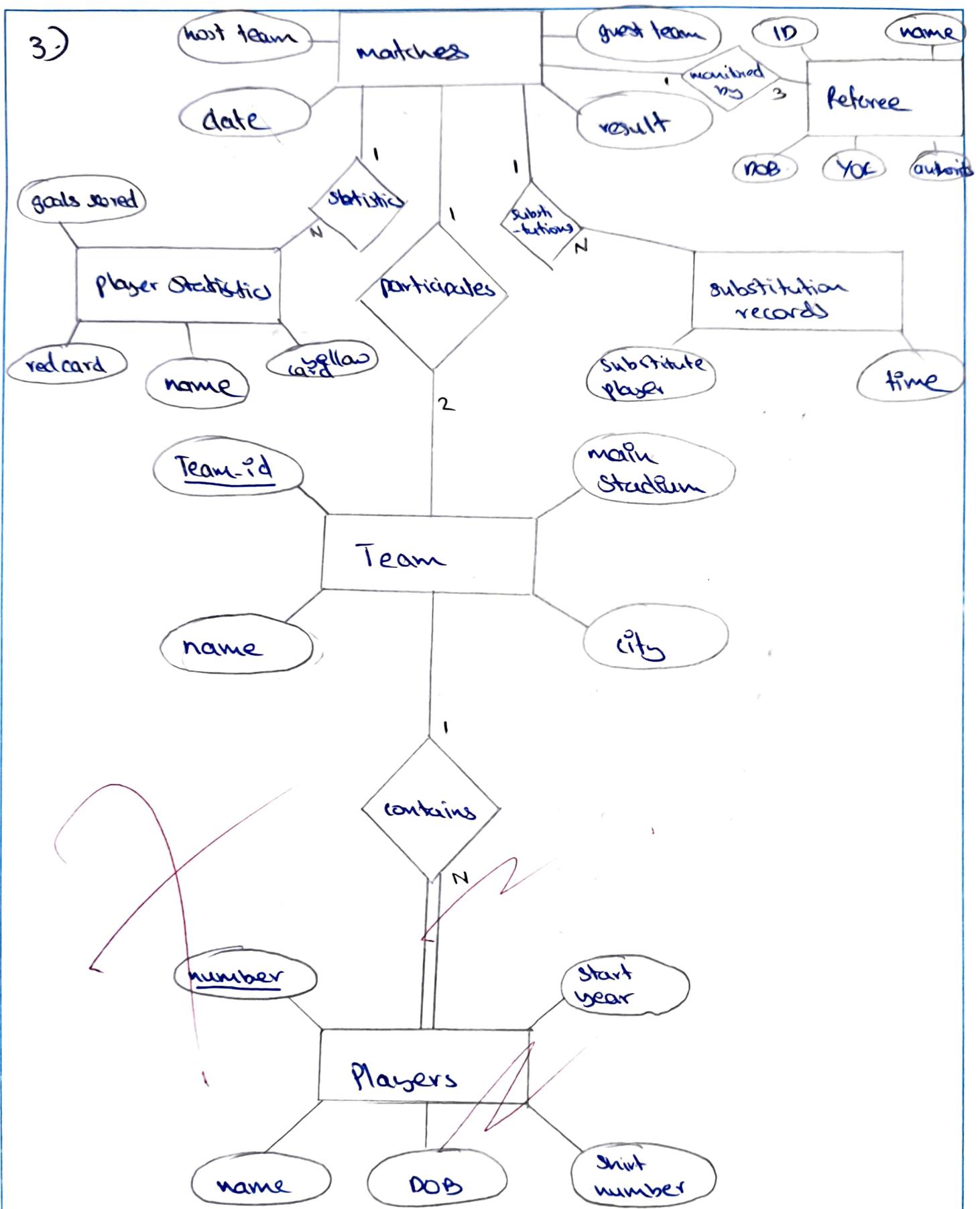
c.) select name from customer where customer_id in
(~~select customer_id from booking order by date asc~~);

2 Select title from movie where movie_id in

(~~select movie_id from booking order by date asc~~);

d.) select name, city from customer where customer_id in
(~~select customer_id from booking where genre = 'comedy'~~);

3.)



4.)

To develop a relational schema for the given database

I construct schema for strong entity sets

E Bus
E Route
E Bus_stops
Driver
~~ETrip~~
E System users
WE Buspass

Bus

Bus-id vehicle_no vehicle_model status

Route

Route-id Routename

Bus_stops

Busstop-id name address

Driver

Driver-id name yearsofexperience salary

Trip

Trip-id date time academic year

System users

User-id name age

II) construct schema for weak entity sets

bus pass

Route-id academic year

III mapping 1:1 relationships

assigned

Pass_id Assigned bus

Assigned Route-id

Stops

Route

has bus pass

User_id Route-id

IV mapping 1:N relationships

assigned

bus_id Route_id

Stops

Stop_id Route_id

~~trips~~ ~~trip_id~~ ~~Route_id~~

to

V mapping M:N relationship

handles

driver_id bus_id

VI mapping multivalued attributes

there are no multivalued
attributes

VII mapping many relationships

trips

trip_id bus_id route_id driver_id

VIII mapping EER entities

user
user_id name age

student
user_id

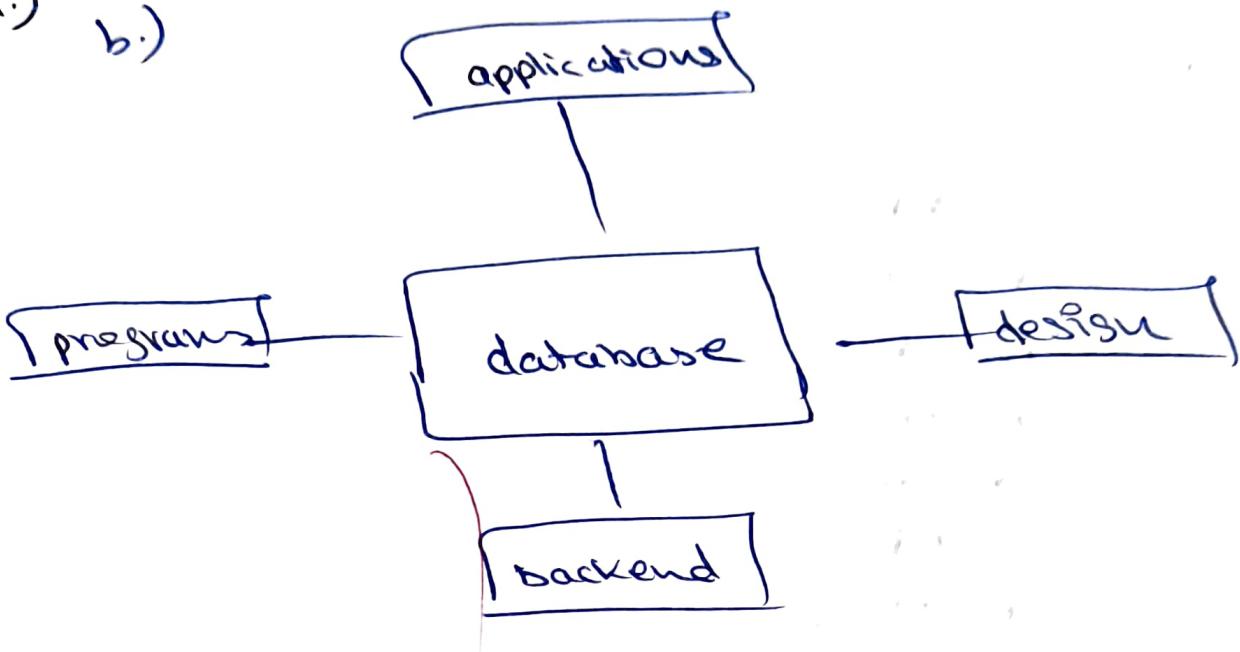
rollno

teacher

user_id faculty_no

1.)

b.)



Roles

Database Administrator

manages access to database

Database

designer

designs the layout of databases

Database user

users who have access to view

database types

→ naive

→ sophisticated

etc

$$5.) F = \{$$

$$A \rightarrow BC$$

$$B \rightarrow BD$$

$$CD \rightarrow E$$

$$A \rightarrow D$$

$$E \rightarrow F$$

$$AF \rightarrow G$$

$$C \rightarrow D$$

$$D \rightarrow E$$

a.) find the closure set for current FD's

$$A^t = \{A, B, C, D, E, G, F\}$$

$$B^t = \{B, D, E, G, F\}$$

$$C^t = \{C, D, E, F\}$$

$$D^t = \{D, E, F\}$$

$$E^t = \{E, F\}$$

$$F^t = \{F\}$$

$$G^t = \{G\}$$

b) making singleton RNS

new FDs

$$A \rightarrow B$$

~~BCD~~

$$A \rightarrow C$$

$$B \rightarrow D$$

$$C \rightarrow E$$

$$A \rightarrow D$$

$$E \rightarrow F$$

$$AF \rightarrow G$$

$$C \rightarrow D$$

$$D \rightarrow E$$

II Removing extraneous attributes

$$A \rightarrow B$$

$$A \rightarrow C$$

$$B \rightarrow D$$

$$C \rightarrow E \quad (\because D \subseteq C)$$

$$A \rightarrow D$$

$$E \rightarrow F$$

$$A \rightarrow G \quad (\because A \text{ is } F \subseteq A)$$

$$C \rightarrow D$$

$$D \rightarrow E$$

III Finding redundant FDs by removing

(i) $A \rightarrow B$

$$A^+ = \{A, C, D, E, F, G\}$$

$A \rightarrow B$ is mandatory

(ii) $A \rightarrow C$

$$A^+ = \{A, B, D, E, F, G\}$$

$A \rightarrow C$ is mandatory

(iii) $B \rightarrow D$

$$B^+ = \{B, G\}$$

$B \rightarrow D$ is mandatory

(iv) $C \rightarrow E$

$$C^+ = \{C, D, E, F\}$$

$C \rightarrow E$ is redundant

(v) $A \rightarrow D$

$$A^+ = \{A, B, C, D, E, F, G\}$$

$A \rightarrow D$ is redundant

(vi) $E \rightarrow F$

$$E^+ = \{E\}$$

$E \rightarrow F$ is mandatory

(vii) $A \rightarrow G$

$$A^+ = \{A, B, C, D, E, F, G\}$$

$A \rightarrow G$ is mandatory

(viii) $C \rightarrow D$

$$C^+ = \{C\}$$

$C \rightarrow D$ is mandatory

(ix) $D \rightarrow E$

$$D^+ = \{D\}$$

$D \rightarrow E$ is mandatory.

Final FDs for (minimal) canonical cover

$A \rightarrow B$

$A \rightarrow C$

$B \rightarrow D$

$E \rightarrow F$

$A \rightarrow G$

$C \rightarrow D$

$D \rightarrow E$

candidate key is $A_1 A_{11}$