AP20110010588

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CRIMINAL CRIME CASE DATABASE

DBMS COURSE PROJECT

My Contribution:

* I have given my best to do the ER-diagram for this database with my other mates and the description was changed to quite readable format
* The relational schema generated from the coding software from ‘dbdiagram’ was quite challenging to me, even though I managed to represent the schema with all the cardinalities.

Project Background:

Keeping criminal records in a database is much better than keeping them in paper files at the police station because if the files are physically damaged, the records will be lost. However, if the client-side system crashes, they can access the database from another client side, and this can be hierarchical. This CCC (criminal crime case) database is a sample database where the criminal details and what crimes they did in the past and in which police station the case was filed. The inspiration for this project came from our NCRB Indian crime database.

Description of the Project:

Although our data is hypothetical, it may still be used for actual data, because the CCC database has as much information as an FIR will have on various offenders who have committed crimes in various locations around Andhra Pradesh. Included among the 6 tables in this database are the connection tables; eventually, these tables were normalized to create a total of 9 and a frontend may also be attached to this database.

ER Diagram Creation:

Diagram

Description automatically generated

Description of ER diagram:

In our CCC database's er diagram, there are four entities and three cardinalities, with two of the cardinalities having attributes.

Entities and attributes

|  |  |
| --- | --- |
| **Criminal\_details** | cr\_id, Criminal\_name varchar, date\_of\_birth, Gender, Height, Weight, Marital\_status. |
| **Crime\_details** | c\_id, Crime\_name, Prison\_edu, Jail\_type. |
| **Districts** | D\_id, D\_name. |
| **Police\_stations** | P\_id, P\_name, D\_id varchar |

Cardinality of entities

|  |  |
| --- | --- |
| **One-to-Many** | Districts🡪Police\_stations, Districts🡪Criminal\_details |
| **Many-to-Many** | Criminal\_details🡨🡪Crime\_details |

Description of entities

1. **Criminal\_details:**

This entity has two cardinalities with other entities named, Crime details and Districts, and its primary key is cr\_id. This entity just represents the biodata of criminals, and it has a total of eight characteristics, one of which is derived and is called "age."

1. **Crime\_details:**

The primary key of this entity is c id, and the cardinality it is carrying with Criminal details is "Has-done", which represents the history of the criminal, such as what crime they committed with what weapon and at which police station this case was filed. This entity has all the information about the several types of crimes that criminals can commit.

1. **Districts:**

The primary key is D id, \_where the cardinality of one to many from Districts to Criminal details having “come from” to address the criminal’s birthplace. This entity represents the naming of districts with respect to these numbers as D\_id. This D\_id will reflect the police station addressing as well as the criminal birthplace addressing.

1. **Police\_stations:**

This object carries one cardinality with districts, where numerous police stations might be in one district, and the primary key is P id. This entity represents the police stations that are present in districts.

Conversion of ER diagram into Tables:

Graphical user interface

Description automatically generated

Description of Tables:

1. **Criminal\_details:**

There are seven attributes in this table, with the cr\_id serving as the primary key. When a criminal commits a crime, he is assigned a unique cr\_id; the next time the crime is committed, it is added to the database using this id. Other attributes, such as Criminal name, Date of Birth, and the remaining five, can serve as candidate keys.

1. **Crime\_history:**

There are 5 attributes in this table, and its primary key is a combination of its cr\_id and c\_id values, which are used to access each criminal's past crimes in the table. Its P\_id value indicates where this crime was reported when it was reported, and what weapon the criminal used.

1. **Crime\_details:**

This table lists the many crimes that the criminals have committed. As we saw in Criminal details, each criminal is assigned a unique c\_id based on the type of crime they committed. For example, c 1-rape, c 2-rape, and murder, c 3-murder, etc. The jail type indicates the kind of jail they will be assigned, such as central jail, and the prison\_edu indicates how many years the prisoner should serve in prison for the offence they committed.

1. **Address:**

The primary key in this address table is cr\_id, and it contains information about the criminal's district of birth and place of birth. This table was created using the cardinality between Criminal details and Districts.

1. **Police\_stations:**

P\_1 - Guntur police station; P\_2 - Vijayawada police station, etc. are just a few examples of the police stations that may be accessed using the primary key P\_id for this table. Since one district has several police stations, this table has a cardinality with districts.

1. **Districts:**

This table displays the district names in relation to these numbers as D\_id. Both the address of the police station and the address of the criminal's place of birth will appear on this D\_id.

Normalization of tables up to 3-NF:

* **Criminal\_details**



cr\_id as A

Criminal\_name as B

date\_of\_birth as C

Gender as D

Height as E

Weight as F

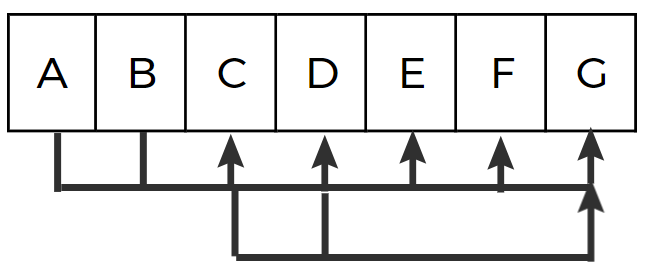
Marital\_status as G

🡪

Functional dependencies are :

AB -> CDEFG

CD -> G



Here A and B are prime attributes, C, D, E, F, and G depend on AB and G depends on CD. This type of dependency is Transitive dependency which violates 3NF as CD is a non-prime key.

below tables are updated tables after 3NF

|  |
| --- |
| Criminal \_details |
| **cr\_id** |
| Criminal\_name |
| date\_of\_birth |
| Gender |
| Height |
| Weight |

|  |
| --- |
| Marital\_status |
| **date\_of\_birth** |
| **Gender** |
| status |

* **Crime\_history**



cr\_id as A

c\_id as B

P\_id as C

date\_of\_crime as D

weapon as E

🡪

Functional Dependencies are :

AB -> CDE

B -> E

Diagram

Description automatically generated

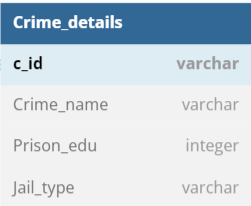
Here A and B are prime attributes, Cand, D, and E depend on A, B, and E depends only on B. This is a partial dependency that violates 2NF. Therefore Crime\_history table is not in 2NF.

below tables are updated tables after 3NF

|  |
| --- |
| Crime\_history |
| **cr\_id** |
| **c\_id** |
| P\_id |
| date\_of\_crime |

|  |
| --- |
| Weapon\_used |
| **c\_id** |
| weapon |

* **Crime\_details**



c\_id as A

Crime\_name as B

Prison\_edu as C

Jail\_type as D

🡪

Functional Dependencies are :

AB -> CD

C -> D

Diagram

Description automatically generated with medium confidence

Here A,B are prime attributes. C,D depends on A,B ,and D depends on C. This is Transitive dependency which violates 3NF. Therefore Crime\_details table not in 3NF.

below tables are updated tables after 3NF

|  |
| --- |
| Crime\_details |
| **c\_id** |
| Crime\_name |
| Prison\_edu |

|  |
| --- |
| Jail\_details |
| **Prison\_edu** |
| Jail\_type |

Creation of Data in the tables:

**desc criminal\_bio;**

**+---------------+-------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+---------------+-------------+------+-----+---------+-------+**

**| cr\_id | varchar(10) | NO | PRI | NULL | |**

**| criminal\_name | varchar(20) | NO | | NULL | |**

**| date\_of\_birth | date | NO | MUL | NULL | |**

**| gender | varchar(2) | NO | MUL | NULL | |**

**| height | float(1,1) | YES | | NULL | |**

**| weight | int | YES | | NULL | |**

**+---------------+-------------+------+-----+---------+-------+**

**desc marital\_status;**

**+---------+------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+---------+------------+------+-----+---------+-------+**

**| dob | date | NO | PRI | NULL | |**

**| gen | varchar(2) | NO | PRI | NULL | |**

**| married | varchar(2) | NO | | NULL | |**

**+---------+------------+------+-----+---------+-------+**

**desc address;**

**+--------------+-------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+--------------+-------------+------+-----+---------+-------+**

**| id | varchar(10) | NO | PRI | NULL | |**

**| D\_id | varchar(10) | NO | MUL | NULL | |**

**| native\_place | varchar(30) | NO | | NULL | |**

**+--------------+-------------+------+-----+---------+-------+**

**desc crime\_history;**

**+---------------+-------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+---------------+-------------+------+-----+---------+-------+**

**| cr\_id | varchar(10) | NO | PRI | NULL | |**

**| c\_id | varchar(10) | NO | PRI | NULL | |**

**| P\_id | varchar(10) | NO | MUL | NULL | |**

**| date\_of\_crime | date | NO | | NULL | |**

**+---------------+-------------+------+-----+---------+-------+**

**desc weapon\_hold;**

**+--------+-------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+--------+-------------+------+-----+---------+-------+**

**| c\_id | varchar(10) | NO | PRI | NULL | |**

**| weapon | varchar(10) | NO | | NULL | |**

**+--------+-------------+------+-----+---------+-------+**

**desc crime\_details;**

**+-------------+-------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+-------------+-------------+------+-----+---------+-------+**

**| c\_id | varchar(10) | NO | PRI | NULL | |**

**| crime\_name | varchar(20) | NO | | NULL | |**

**| prison\_time | int | NO | MUL | NULL | |**

**+-------------+-------------+------+-----+---------+-------+**

**desc jail\_type;**

**+-------------+-------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+-------------+-------------+------+-----+---------+-------+**

**| prison\_time | int | NO | PRI | NULL | |**

**| jail | varchar(20) | NO | | NULL | |**

**+-------------+-------------+------+-----+---------+-------+**

**desc police\_stations;**

**+--------+-------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+--------+-------------+------+-----+---------+-------+**

**| P\_id | varchar(10) | NO | PRI | NULL | |**

**| P\_name | varchar(20) | NO | | NULL | |**

**| D\_id | varchar(10) | NO | MUL | NULL | |**

**+--------+-------------+------+-----+---------+-------+**

**desc districts;**

**+--------+-------------+------+-----+---------+-------+**

**| Field | Type | Null | Key | Default | Extra |**

**+--------+-------------+------+-----+---------+-------+**

**| D\_id | varchar(10) | NO | PRI | NULL | |**

**| D\_name | varchar(10) | NO | | NULL | |**

**+--------+-------------+------+-----+---------+-------+**

Queries: -

1. **Write a query to display the criminal biodata who did a crime in the decade 2010 to 2020 in northAndhra?**

select \* from criminal\_bio

where cr\_id in (select cr\_id

from crime\_history

where date\_of\_crime between '2010/01/01' and '2020/12/31'

and P\_id in(select P\_id

from police\_stations

where D\_id in (select D\_id

from districts

where D\_name='srikakulam'

or D\_name='vizianagaram'

or D\_name='visakhapatnam')));

#OUTPUT:

**+--------+--------------------+---------------+--------+--------+--------+**

**| cr\_id | criminal\_name | date\_of\_birth | gender | weight | height |**

**+--------+--------------------+---------------+--------+--------+--------+**

**| cr2002 | Waltair Veerayya | 1975-07-24 | M | 75 | 5.80 |**

**| cr2003 | Chepala Satyawathi | 1965-07-24 | F | 79 | 5.40 |**

**+--------+--------------------+---------------+--------+--------+--------+**

**2.Write a Query to display the count of crimes reported on each district?**

select p.D\_id,p.D\_name,count(c.c\_id) as 'number of cases'

from districts p,crime\_history c

where p.D\_id in (select s.D\_id

from police\_stations s

where s.P\_id = c.P\_id)

group by p.D\_id order by p.D\_id;

**+------+---------------+-----------------+**

**| D\_id | D\_name | number of cases |**

**+------+---------------+-----------------+**

**| D1 | vizianagaram | 1 |**

**| D10 | kurnool | 2 |**

**| D11 | kadapa | 1 |**

**| D12 | ananthapuram | 2 |**

**| D13 | chittore | 2 |**

**| D2 | visakhapatnam | 2 |**

**| D3 | srikakulam | 2 |**

**| D4 | East Godavari | 2 |**

**| D5 | West Godavari | 1 |**

**| D6 | vijayawada | 1 |**

**| D7 | guntur | 1 |**

**| D8 | Prakasham | 1 |**

**| D9 | Nellore | 1 |**

**+------+---------------+-----------------+**

**3. Write a Query to display criminal id,name and jail details of criminals who are from Vizianagaram?**

select c.cr\_id,c.criminal\_name,d.prison\_time,d.jail

from criminal\_bio c,jail\_type d

where c.cr\_id in (select cr\_id from crime\_history

where crime\_history.cr\_id=c.cr\_id) and

d.prison\_time in (select prison\_time from crime\_details

where c\_id in(select c\_id from crime\_history

where crime\_history.cr\_id=c.cr\_id) and

crime\_details.prison\_time=d.prison\_time) and

c.cr\_id =(select id from address

where D\_id in (select D\_id

from districts

where D\_name='vizianagaram'));

**+--------+---------------+-------------+---------------+**

**| cr\_id | criminal\_name | prison\_time | jail |**

**+--------+---------------+-------------+---------------+**

**| cr2001 | Bledu seenu | 3 | district\_jail |**

**| cr2001 | Bledu seenu | 12 | sub-jail |**

**+--------+---------------+-------------+---------------+**

**4.write a Query to display the count of crimes done by each criminal?**

select a.cr\_id, a.criminal\_name, count(b.c\_id) as total\_crimes

from criminal\_bio a, crime\_history b

where b.cr\_id in (select cr\_id from crime\_history) and

b.cr\_id = a.cr\_id group by b.cr\_id;

**+--------+----------------------+---------------+**

**| cr\_id | criminal\_name | total crimes |**

**+--------+----------------------+---------------+**

**| cr2001 | Bledu seenu | 2 |**

**| cr2002 | Waltair Veerayya | 2 |**

**| cr2003 | Chepala Satyawathi | 2 |**

**| cr2004 | Sorachepala Sahayam | 1 |**

**| cr2005 | Gajjala Babji | 1 |**

**| cr2006 | Ganjaay Harsha | 1 |**

**| cr2007 | Gold Gopal | 1 |**

**| cr2008 | Kanchela Jhansi | 1 |**

**| cr2009 | Katari Krishna | 1 |**

**| cr2010 | Mondikathi Basireddy | 2 |**

**| cr2011 | Bayam Bairreddy | 1 |**

**| cr2012 | Singarala Saroja | 2 |**

**| cr2013 | kasiraju Jalireddy | 2 |**

**+--------+----------------------+---------------+**

**5. write a Query to display the Police station details in which no crimes are reported from the year 2020?**

select p.P\_id, p.P\_name, d.D\_name

from police\_stations p, districts d

where NOT EXISTS (select P\_id from crime\_history

where crime\_history.P\_id = p.P\_id and

date\_of\_crime between '2020/01/01' and '2022/12/31')

and d.D\_name in (select D\_name from districts

where d.D\_id = p.D\_id)

order by p.P\_id;

**+-------+----------------------+---------------+**

**| P\_id | P\_name | D\_name |**

**+-------+----------------------+---------------+**

**| ps101 | Nandyala ps | kurnool |**

**| ps111 | kadapa 1\_town ps | kadapa |**

**| ps12 | korukonda ps | vizianagaram |**

**| ps122 | Ananthapuram HD ps | ananthapuram |**

**| ps131 | Madanapalle ps | chittore |**

**| ps31 | pathapatnam ps | srikakulam |**

**| ps32 | tekkeli 1\_town ps | srikakulam |**

**| ps41 | kakinada 2\_town ps | East Godavari |**

**| ps42 | Rajamandri 1\_town ps | East Godavari |**

**| ps51 | Polavaram ps | West Godavari |**

**| ps61 | Gudiwada 2\_town ps | vijayawada |**

**| ps71 | Mangalgiri 2\_town ps | guntur |**

**| ps82 | Vetapalem ps | Prakasham |**

**| ps92 | Nellore 2\_town ps | Nellore |**

**+-------+----------------------+---------------+**

**Views:**

1. **Create a view that should be having the list of all police stations which are termed as head Quarters along with their district names?**

create view Police\_Head\_Quarters as

select p.P\_id, p.P\_name, d.D\_name

from police\_stations p,districts d

where d.D\_id=p.D\_id and p\_name like "%HD%";

select \* from Police\_Head\_Quarters;

**+-------+--------------------+--------------+**

**| P\_id | P\_name | D\_name |**

**+-------+--------------------+--------------+**

**| ps122 | Ananthapuram HD ps | ananthapuram |**

**| ps132 | Tirupathi HD ps | chittore |**

**+-------+--------------------+--------------+**

1. **Create a view that is having the list of crimes which are leading to central\_jail.**

**create or replace view central\_jail\_crimes as**

select c\_id, crime\_name, prison\_time

from crime\_details natural join jail\_type

where crime\_details.prison\_time=jail\_type.prison\_time and

jail\_type.jail like "central%";

select \* from central\_jail\_crimes;

+-------+-----------------**--+-------------+**

**| c\_id | crime\_name | prison\_time |**

**+-------+-------------------+-------------+**

**| c3006 | hawaala | 48 |**

**| c3011 | Fraud | 60 |**

**| c3013 | rape and escape | 96 |**

**| c3007 | Murder | 108 |**

**| c3010 | women trafficking | 108 |**

**| c3001 | rape and murder | 120 |**

**+-------+-------------------+-------------+**

1. **Create a view which has the list of criminals who have done the crimes other than at their districts?**

create or replace view Other\_district\_criminals as

select c.cr\_id,c.criminal\_name,d.D\_name as own\_district,e.D\_name as caught\_in

from criminal\_bio c, districts d, districts e

where e.D\_name!=d.D\_name and

e.D\_id in ( select D\_id from police\_stations

where P\_id in (select P\_id from

crime\_history where c.cr\_id = crime\_history.cr\_id)) and

d.D\_id in (select D\_id from address

where c.cr\_id=address.id);

select \* from Other\_district\_criminals;

**+--------+------------------+---------------+---------------+**

**| cr\_id | criminal\_name | own\_district | caught\_in |**

**+--------+------------------+---------------+---------------+**

**| cr2001 | Bledu seenu | vizianagaram | visakhapatnam |**

**| cr2002 | Waltair Veerayya | visakhapatnam | East Godavari |**

**+--------+------------------+---------------+---------------+**

1. **Create a view which the list of criminals who had done most no of crimes.**

**create view mr\_420 as**

select a.cr\_id,a.criminal\_name,

count(c.c\_id) as 'number of crimes'

from criminal\_bio a,crime\_history c

where a.cr\_id = c.cr\_id

group by c.c\_id

having count(c.c\_id)>=all(select count(c\_id)

from crime\_history

group by crime\_history.cr\_id);

select \* from mr\_420;

**+--------+--------------------+------------------+**

**| cr\_id | criminal\_name | number of crimes |**

**+--------+--------------------+------------------+**

**| cr2001 | Bledu seenu | 2 |**

**| cr2002 | Waltair Veerayya | 2 |**

**| cr2003 | Chepala Satyawathi | 2 |**

**| cr2007 | Gold Gopal | 2 |**

**| cr2009 | Katari Krishna | 2 |**

**| cr2011 | Bayam Bairreddy | 2 |**

**+--------+--------------------+------------------+**

1. **Create a view that has the details of crimes that include the weapon “gun”?**

**create view Gun\_involved\_crimes as**

select c\_id,crime\_name,weapon\_found as weapons

from crime\_details natural join weapon\_hold

where weapon\_hold.c\_id

crime\_details.c\_id and weapon\_found like "%gun%";

select \* from Gun\_involved\_crimes;

**+-------+-------------------+------------+**

**| c\_id | crime\_name | weapons |**

**+-------+-------------------+------------+**

**| c3005 | smuggling | gun,knife |**

**| c3006 | hawaala | Gun,knife |**

**| c3010 | women trafficking | Gun,knives |**

**+-------+-------------------+------------+**