

# College Analysis

Submitted to - Dr. Debanjan Sandhya

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# OVERVIEW

IITs have been a center of attraction of many JEE aspirants, and the basic questions that arises in the mind of aspirants are :

- **"Whether I will get a college of my choice?"**
- **"What would be the best college at my rank?"**
- **"Will I be able to afford to study in a college?"**
- **"Which colleges offer good placements?"**

And everyone has a different choice and taste, so here we bring forward our database, which includes maximum topics that confuse one aspirant while his counseling period using our database, he can easily select an IIT of his choice.

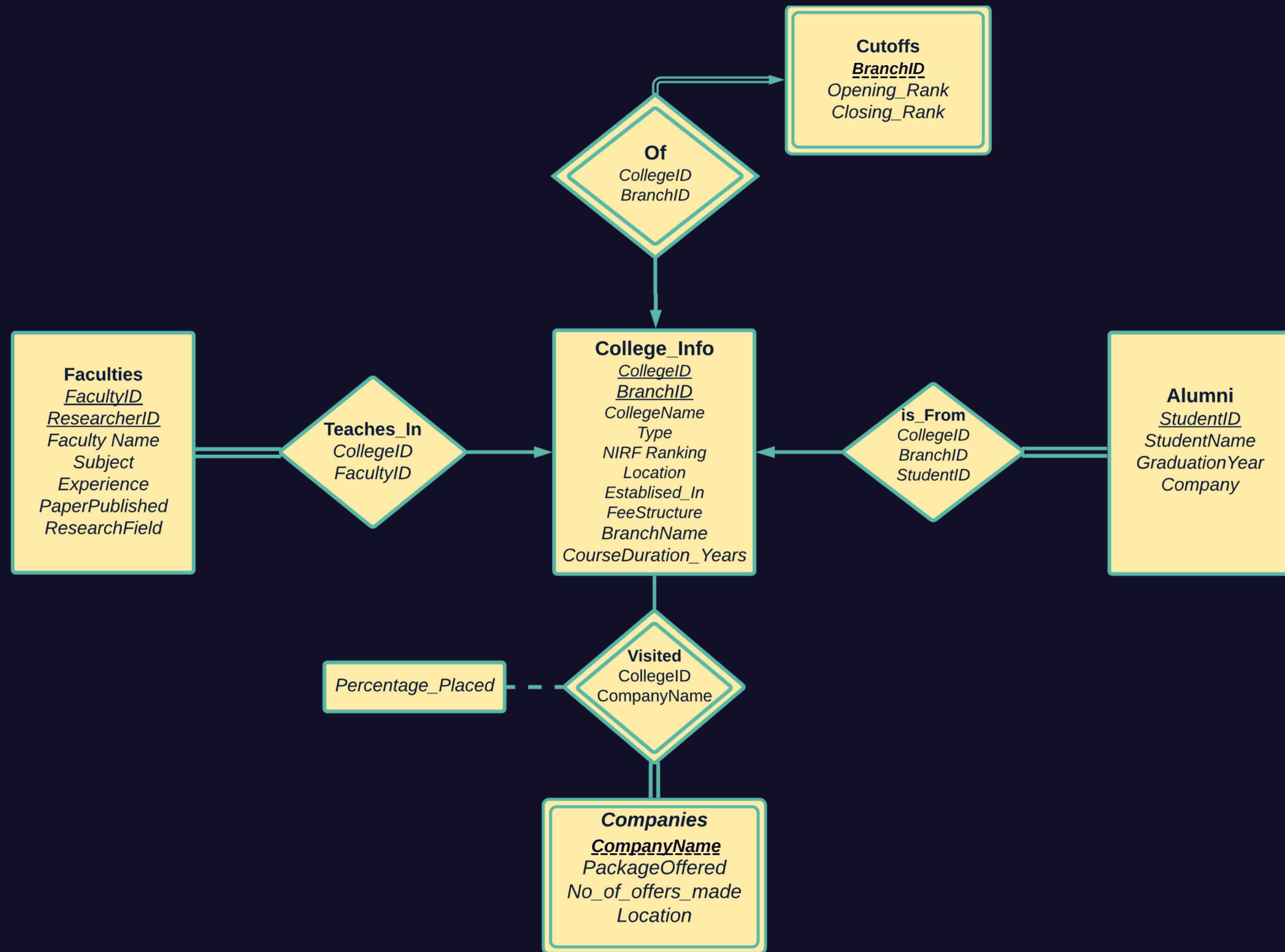
# USEFULNESS

- The database would be tremendously helpful in choosing a college based on preferences
- It can also show which college offers better placements compared to the other colleges.
- It would also help the student to determine if he will be able to afford the college he chooses to study.
- It will also show how is the research culture of a particular college

# ER Diagram

ER Diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships





# Entities and Attributes



CollegeID

BranchID

Established\_In

Fee Structure

Branch\_Name

Location

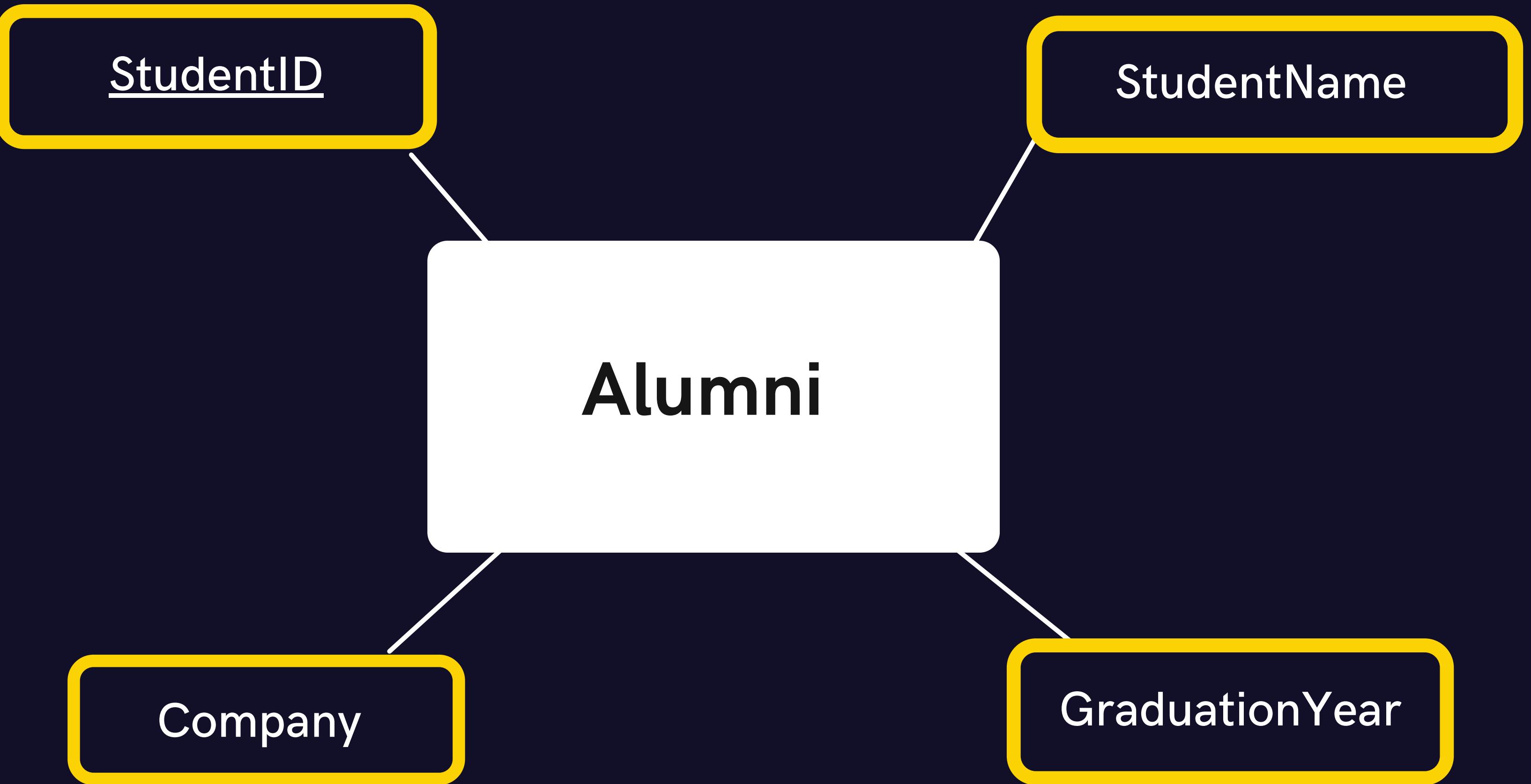
## College\_info

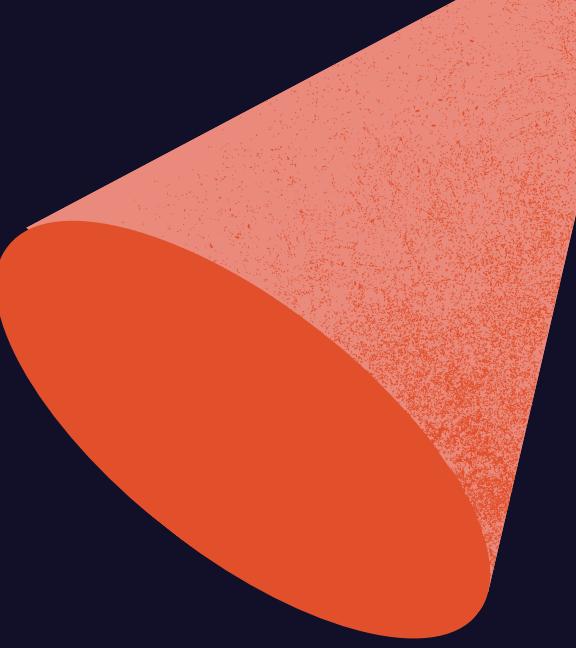
CollegeName

Type

NIRF Ranking

CourseDuration\_Years





BranchID

# Cutoffs



Opening\_Rank

Closing\_Rank

No\_of\_offers\_Made

CompanyName  
.....

# Companies

Location

PackageOffered

ResearchField

FacultyID

PaperPublished

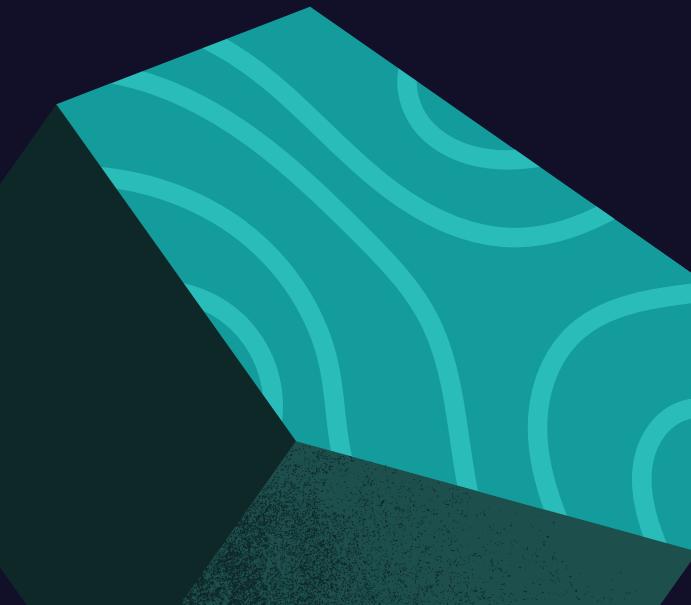
# Faculties

Experience

ResearchID

Subject

FacultyName



# Relationship Sets



# Relationship Sets

- **is\_From :**  
( CollegelD , BranchID , StudentID )
- **Visited :**  
( CollegelD , CompanyName ,  
Percentage\_Placed )
- **Teaches\_In :**  
( CollegelD , FacultyID )
- **Of :**  
( CollegelD , BranchID )

# Cardinality

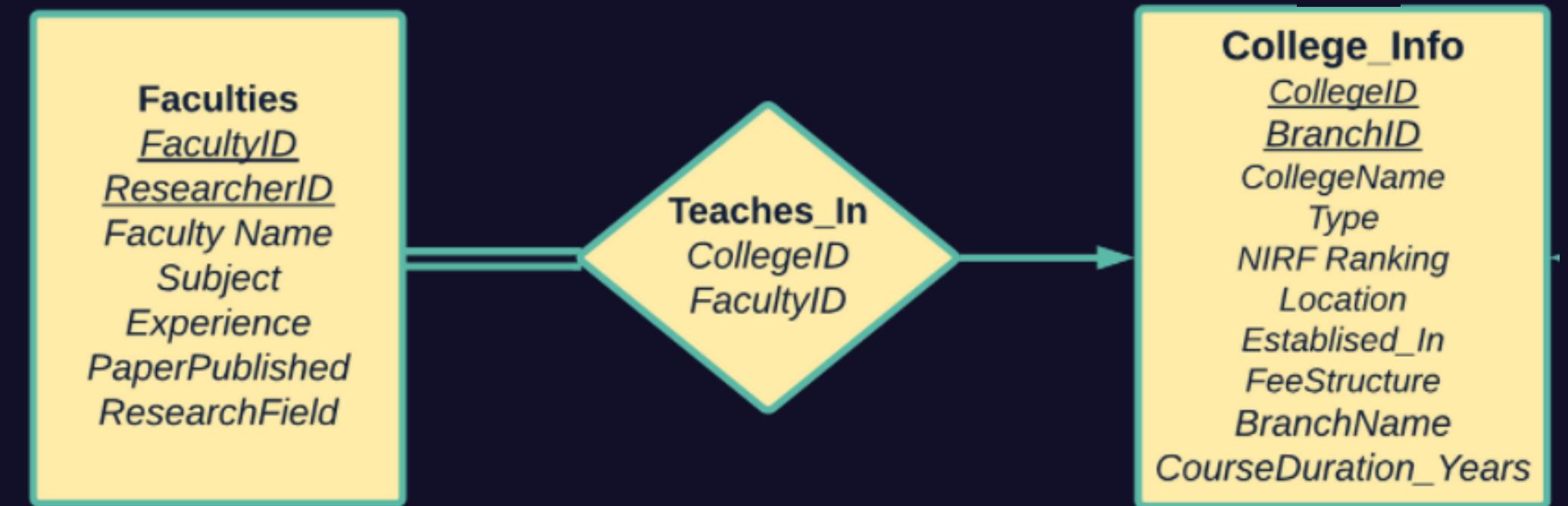
It is a One to Many relationship from College\_Info to Alumni.

It is a Many to Many relationship between College\_Info and Companies.

It is a Many to One relationship from Faculties to College\_Info

It is a One to One relationship from Cutoffs to College\_Info.

# ER Diagram to Tables

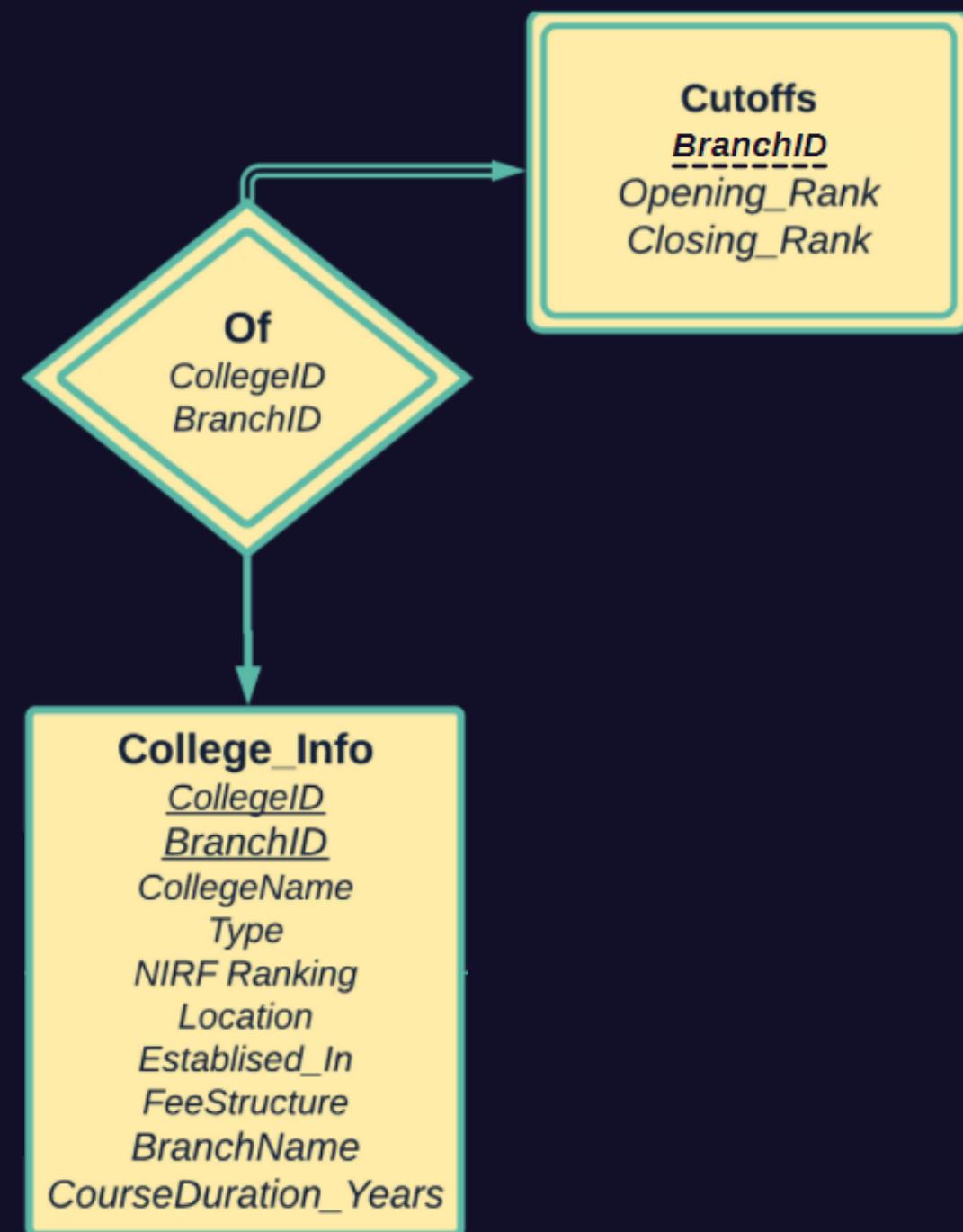


### Teaches\_In :

( CollegeID , FacultyID , ResearcherID , FacultyName , Subject , Experience ,  
PaperPublished , ResearchField)

### Functional Dependencies :

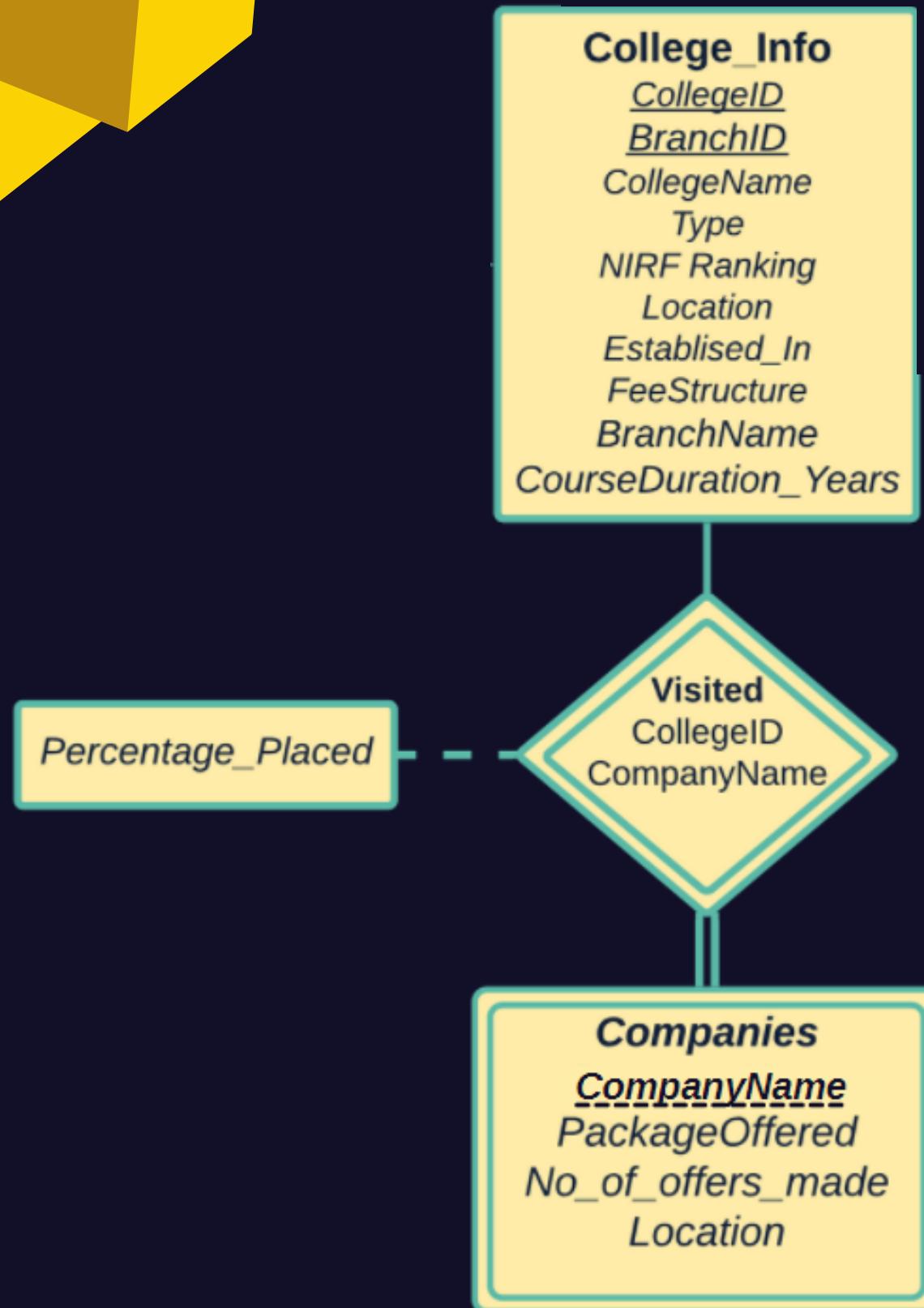
FacultyID,ResearcherID->Faculty Name , Subject , Experience , Paper\_Published  
ResearchField  
ResearcherID->Paper\_Published , ResearchField



Cutoff (CollegeID , BranchID , Closing\_Rank ,  
Opening\_Rank )

Functional Dependencies :

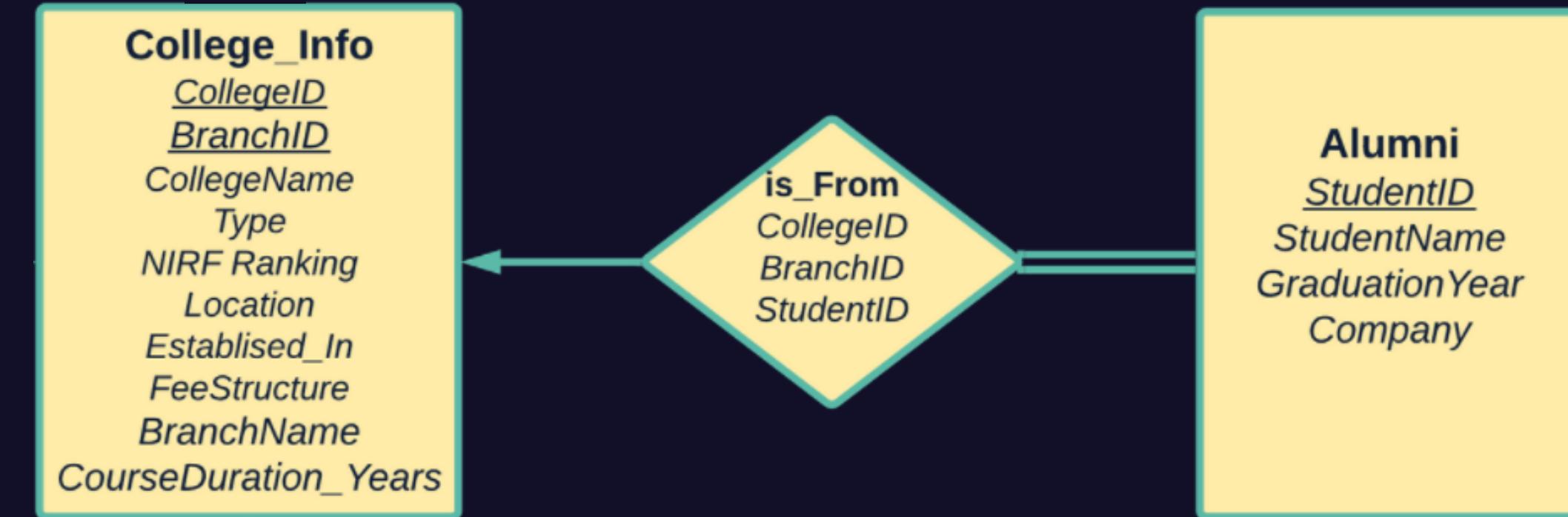
CollegeID,BranchID->(Closing\_Rank,Opening\_Rank)



**Companies :** ( **CollegeID** , **CompanyName** ,  
**PackageOffered** , **No\_of\_offers\_made** , **Location** ,  
**Percentage\_Placed** )

### **Functional Dependencies :**

**CollegeID, CompanyName->** ( **PackageOffered** ,  
**No\_of\_offers\_made** , **Location** , **Percentage\_Placed** )  
**CompanyName->(Location)**



Alumni :

( CollegeID , BranchID , StudentID , StudentName , GraduationYear , Company )

Functional Dependencies :

CollegeID , BranchID , StudentID -> StudentName , GraduationYear , Company

StudentID(P)->StudentName,GraduationYear,Company

## **College\_Info**

CollegeID

BranchID

CollegeName

Type

NIRF Ranking

Location

Established\_In

FeeStructure

BranchName

CourseDuration\_Years

## **College\_Info :**

( CollegeID , BranchID , CollegeName , Type ,  
NIRF\_Ranking , Location , Established\_In , FeeStructure ,  
BranchName , CourseDuration\_Years)

## **Functional Dependencies :**

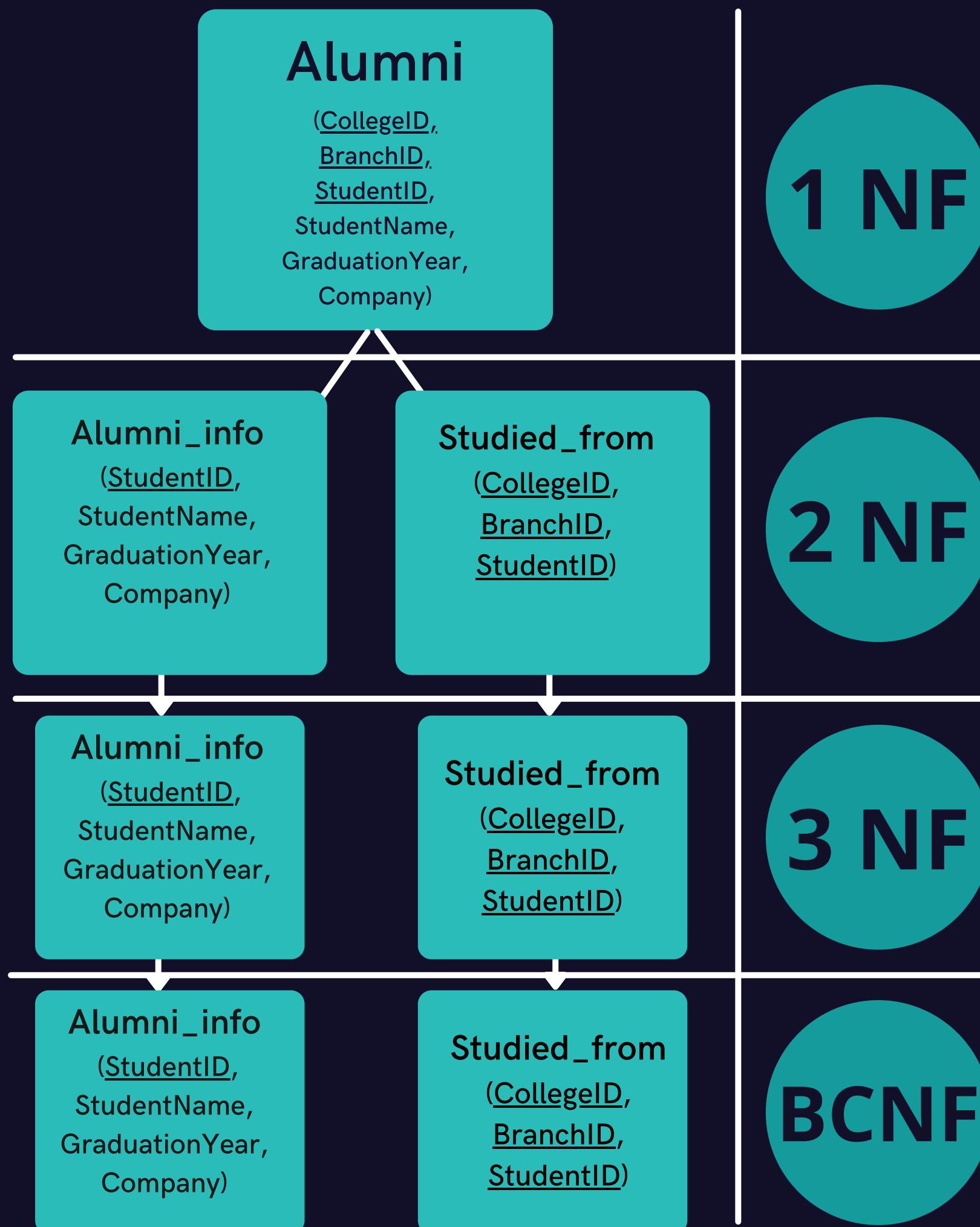
**CollegeID,BranchID->CollegeName , NIRF Ranking , Location  
, BranchName , Established\_In , Fee\_Structure ,  
CourseDuration\_Year , Type**

**CollegeID->CollegeName , NIRF Ranking , Established\_In ,  
Fee\_Structure , Type , Location**

**BranchID -> BranchName , CourseDuration\_Year**

# Normalization

# Alumni



Candidate key : (CollegeID,BranchID,StudentID)

All the attributes are atomic, thus it is in 1NF

PD:

$\text{StudentID}(P) \rightarrow \text{StudentName}, \text{GraduationYear}, \text{Company}$

Decomposition :

R1 (StudentID,StudentName,GraduationYear,Company)

R2 (CollegeID,BranchID,StudentID)

It has no Transitive dependency  
So, it is in 3NF

LHS has Candidatekey(StudentID)  
So, it is in BCNF

## Teaches\_In

(CollegeID,  
FacultyID,  
ResearcherID,  
FacultyName,  
Subject,  
Experience,  
PaperPublishe,  
ResearchField)

### Researcher\_info

(ResearcherID,  
Paper\_Published,  
ResearchField)

### faculty\_info

(FacultyID,  
ResearcherID,  
Faculty Name,  
Subject, Experience)

### Teaches\_In

(CollegeID,  
FacultyID,  
ResearcherID)

### Researcher\_info

(ResearcherID,  
Paper\_Published,  
ResearchField)

### faculty\_info

(FacultyID,  
ResearcherID,  
Faculty Name,  
Subject, Experience)

### Teaches\_In

(CollegeID,  
FacultyID,  
ResearcherID)

### Researcher\_info

(ResearcherID,  
Paper\_Published,  
ResearchField)

### faculty\_info

(FacultyID,  
ResearcherID,  
Faculty Name,  
Subject, Experience)

### Teaches\_In

(CollegeID,  
FacultyID,  
ResearcherID)

1 NF

## Teaches\_In

Candidate key : (CollegeID, FacultyID, ResearcherID)

All the attributes are atomic, thus it is in 1NF

2 NF

PD:

-(FacultyID,ResearcherID) $\rightarrow$ (Faculty Name, Subject, Experience  
,Paper\_Published, ResearchField)

ResearcherID $\rightarrow$ Paper\_Published , ResearchField

Decomposition :

R7 (ResearcherID,Paper\_Published,ResearchField)

R6 (FacultyID,ResearcherID,Faculty Name,Subject,Experience)

R10 (CollegeID,FacultyID,ResearcherID)

3 NF

R7, R6 and R10 do not have any Transitive dependency.

So, they are in 3NF

BCNF

In R7, R6 and R10 , each attribute can be determined by Candidate keys  
So, they are in BCNF

## Companies

(CollegeID,  
CompanyName,  
PackageOffered,  
No\_of\_offers\_made,  
Location,  
Percentage\_Placed)

1 NF

## Companies

Candidate key : (CollegeID, CompanyName)

→ All the attributes are atomic, thus it is in 1NF

Companies  
(CompanyName,  
Location)

Placements  
(CollegeID,  
CompanyName  
PackageOffered,  
No\_of\_offers\_made,  
Percentage\_Placed)

2 NF

PD:

CompanyName->(Location)

Decomposition :

Companies  
(CompanyName,  
Location)  
Placements  
(CollegeID,  
CompanyName,  
PackageOffered,  
No\_of\_offers\_made,  
Percentage\_Placed)

Companies  
(CompanyName,  
Location)

Placements  
(CollegeID,  
CompanyName  
PackageOffered,  
No\_of\_offers\_made,  
Percentage\_Placed)

3 NF

→ In FD of R4 , no transitive dependencies present, so it is in 3NF. LHS has a super key, so it is in 3NF

Companies  
(CompanyName,  
Location)

Placements  
(CollegeID,  
CompanyName  
PackageOffered,  
No\_of\_offers\_made,  
Percentage\_Placed)

BCNF

→ In of R4 each attribute can be determined by Candidate key,  
so it is in BCNF

## Cutoffs

(CollegeID,  
BranchID,  
Opening\_Rank,  
Closing\_Rank)

**1 NF**

## Cutoffs

(CollegeID,  
BranchID,  
Opening\_Rank,  
Closing\_Rank)

**2 NF**

## Cutoffs

(CollegeID,  
BranchID,  
Opening\_Rank,  
Closing\_Rank)

**3 NF**

## Cutoffs

(CollegeID,  
BranchID,  
Opening\_Rank,  
Closing\_Rank)

**BCNF**

## Cutoffs

Candidate key : (CollegeID, BranchID)



All the attributes are atomic, thus it is in 1NF



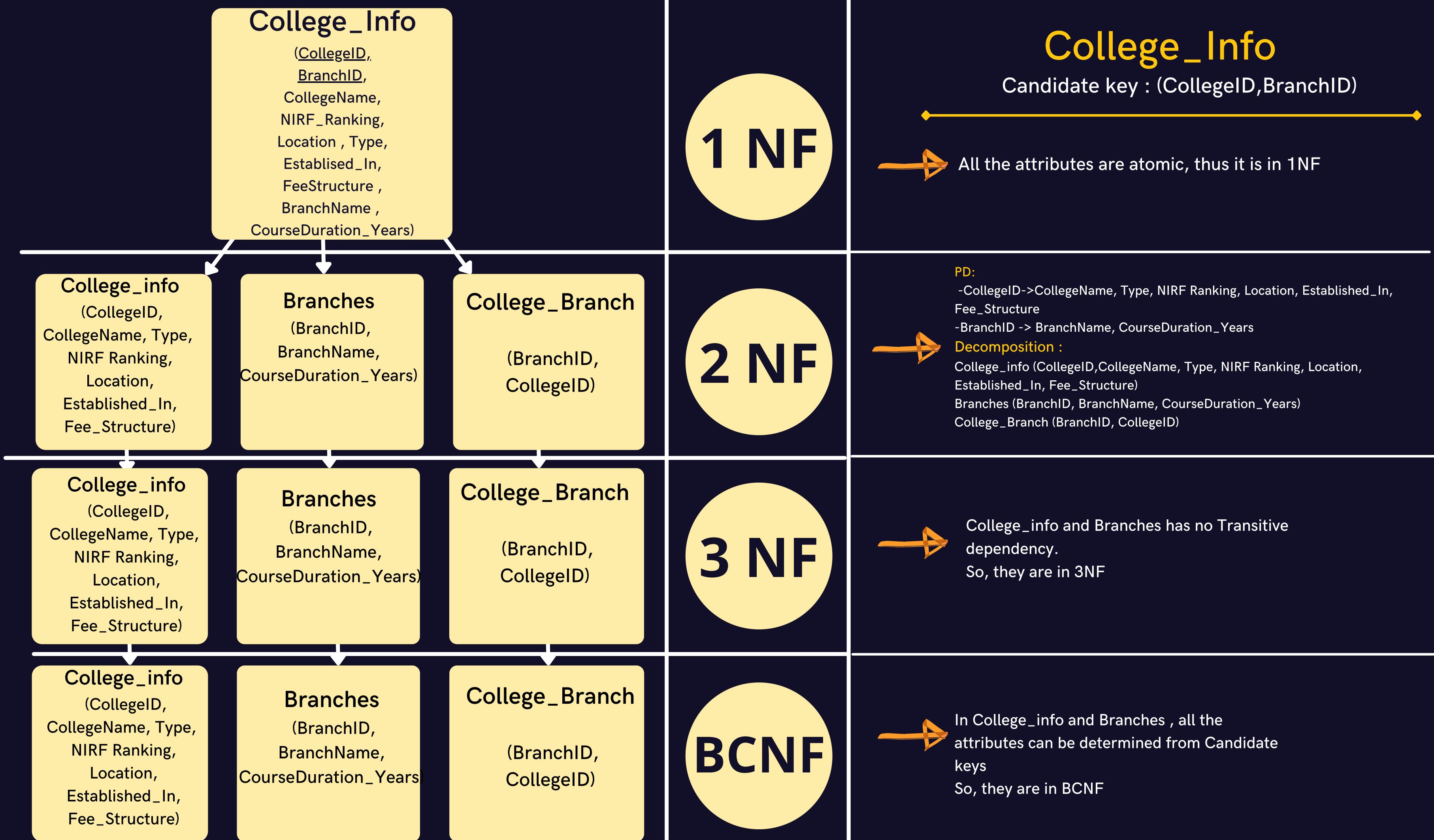
No Partial Dependency, it is 2NF



No transitive dependencies present, so it is in 3NF.



All the attributes can be determined from a Candidate key. So, they are in BCNF





**SQL**

# Alumni\_info table

## Table creation Syntax

```
CREATE TABLE `dbms`.`alumni_info` (
  `Student_ID` VARCHAR(10) NOT NULL,
  `Student_name` VARCHAR(45) NOT NULL,
  `Graduation_year` INT NOT NULL,
  `Company` VARCHAR(45) NOT NULL,
  PRIMARY KEY (`Student_ID`);
```

## Output

| Field           | Type        | Null | Key | Default | Extra |
|-----------------|-------------|------|-----|---------|-------|
| Student_ID      | varchar(10) | NO   | PRI |         | HULL  |
| Student_name    | varchar(45) | NO   |     |         | HULL  |
| Graduation_year | int         | NO   |     |         | HULL  |
| Company         | varchar(45) | NO   |     |         | HULL  |

# Insertion

```

insert into alumni_info values
('A1001', 'Robert Williams', 2010, 'Amazon');
insert into alumni_info values
('B1002', 'Harry Styles', 2011, 'Google');
insert into alumni_info values
('B1010', 'Heath Ledger', 2014, 'Microsoft');
insert into alumni_info values
('B1006', 'Adelina Walker', 2016, 'Flipkart');
insert into alumni_info values
('B1008', 'Robert Downey', 2015, 'Qualcomm');
insert into alumni_info values
('C1005', 'Will Smith', 2018, 'Flipkart');
insert into alumni_info values
('D1009', 'Rahul Chahar', 2012, 'Directi');
insert into alumni_info values
('E1004', 'Mortesin Gayle', 2019, 'Amazon');
insert into alumni_info values
('E1005', 'Mark Strong', 2015, 'Google');
insert into alumni_info values
('E1008', 'James Faulkner', 2018, 'Paypal');
insert into alumni_info values
('F1006', 'David Warner', 2014, 'Facebook');
insert into alumni_info values
('F1002', 'Chris Evans', 2019, 'Amazon');
insert into alumni_info values
('G1005', 'Paul Rudd', 2012, 'Infosys');
insert into alumni_info values
('H1011', 'Bruce Banner', 2011, 'Cisco');
insert into alumni_info values
('J1007', 'Pat Cummins', 2016, 'Paytm');
select *from alumni_info;

```

# Output

| Student_ID | Student_name    | Graduation_year | Company   |
|------------|-----------------|-----------------|-----------|
| A1001      | Robert Williams | 2010            | Amazon    |
| B1002      | Harry Styles    | 2011            | Google    |
| B1006      | Adelina Walker  | 2016            | Flipkart  |
| B1008      | Robert Downey   | 2015            | Qualcomm  |
| B1010      | Heath Ledger    | 2014            | Microsoft |
| C1005      | Will Smith      | 2018            | Flipkart  |
| D1009      | Rahul Chahar    | 2012            | Directi   |
| E1004      | Mortesin Gayle  | 2019            | Amazon    |
| E1005      | Mark Strong     | 2015            | Google    |
| E1008      | James Faulkner  | 2018            | Paypal    |
| F1002      | Chris Evans     | 2019            | Amazon    |
| F1006      | David Warner    | 2014            | Facebook  |
| G1005      | Paul Rudd       | 2012            | Infosys   |
| H1011      | Bruce Banner    | 2011            | Cisco     |
| J1007      | Pat Cummins     | 2016            | Paytm     |

## Alumni\_info table

# Studied\_from table

## Table creation Syntax

```
CREATE TABLE `dbms`.`studied_from` (
  `CollegeID` INT NOT NULL,
  `BranchID` INT NOT NULL,
  `Student_ID` VARCHAR(10) NOT NULL,
  FOREIGN KEY (Student_ID) REFERENCES alumni_info(Student_ID),
  FOREIGN KEY (BranchID) REFERENCES branches(BranchID),
  FOREIGN KEY (CollegeID) REFERENCES college_info(CollegeID)
);
```

## Output

| Field      | Type        | Null | Key | Default |
|------------|-------------|------|-----|---------|
| CollegeID  | int         | NO   | MUL | HULL    |
| BranchID   | int         | NO   | MUL | HULL    |
| Student_ID | varchar(10) | NO   | MUL | HULL    |

# Insertion

```
insert into studied_from values  
( 401, 501 , 'A1001');  
insert into studied_from values  
( 401, 1010, 'B1002');  
insert into studied_from values  
( 405, 4011, 'C1005');  
insert into studied_from values  
(402, 1111, 'B1010');  
insert into studied_from values  
(403, 2001, 'B1006');  
insert into studied_from values  
(404, 201, 'B1008');  
insert into studied_from values  
(409, 6001, 'D1009');  
insert into studied_from values  
(407, 8811, 'E1004');
```

```
insert into studied_from values  
(405, 5001, 'E1005');  
insert into studied_from values  
(410, 4013, 'E1008');  
insert into studied_from values  
(407, 1010, 'F1006');  
insert into studied_from values  
(408, 1112, 'F1002');  
insert into studied_from values  
(404, 2001, 'G1005');  
insert into studied_from values  
(406, 502, 'H1011');  
insert into studied_from values  
(403, 501, 'J1007');  
  
select *from studied_from;
```

# Output

| CollegeID | BranchID | Student_ID |
|-----------|----------|------------|
| 401       | 501      | A1001      |
| 401       | 1010     | B1002      |
| 405       | 4011     | C1005      |
| 402       | 1111     | B1010      |
| 403       | 2001     | B1006      |
| 404       | 201      | B1008      |
| 409       | 6001     | D1009      |
| 407       | 8811     | E1004      |
| 405       | 5001     | E1005      |
| 410       | 4013     | E1008      |
| 407       | 1010     | F1006      |
| 408       | 1112     | F1002      |
| 404       | 2001     | G1005      |
| 406       | 502      | H1011      |
| 403       | 501      | J1007      |

**Studied\_from  
table**

# Companies table

## Table creation Syntax

```
CREATE TABLE `dbms`.`companies` (  
  `CompanyName` VARCHAR(50) NOT NULL,  
  `Location` VARCHAR(45) NOT NULL,  
  PRIMARY KEY (`CompanyName`);
```

## Output

| Field       | Type        | Null | Key | Default |
|-------------|-------------|------|-----|---------|
| CompanyName | varchar(50) | NO   | PRI | NULL    |
| Location    | varchar(45) | NO   |     | NULL    |

# Insertion

```
insert into companies values  
('Amazon', 'Banglore');  
insert into companies values  
('Cisco', 'Banglore');  
insert into companies values  
('Directi', 'Mumbai');  
insert into companies values  
('Facebook', 'Mumbai');  
insert into companies values  
('Flipkart', 'Banglore');  
insert into companies values  
('Google', 'Gurugram');  
insert into companies values  
('Infosys', 'Banglore');  
insert into companies values  
('Microsoft', 'Hyderabad');  
insert into companies values  
('Paytm', 'Noida');  
insert into companies values  
('Paypal', 'Chennai');  
insert into companies values  
('Qualcomm', 'Gurugram');  
select *from companies;
```

# Output

| CompanyName | Location  |
|-------------|-----------|
| Amazon      | Banglore  |
| Cisco       | Banglore  |
| Directi     | Mumbai    |
| Facebook    | Mumbai    |
| Flipkart    | Banglore  |
| Google      | Gurugram  |
| Infosys     | Banglore  |
| Microsoft   | Hyderabad |
| Paypal      | Chennai   |
| Paytm       | Noida     |
| Qualcomm    | Gurugram  |

**Companies table**

# Placements table

## Table creation Syntax

```
CREATE TABLE `dbms`.`placements` (
  `CollegeID` INT NOT NULL,
  `CompanyName` VARCHAR(45) NOT NULL,
  `Package_Offered` VARCHAR(45) NOT NULL,
  `Number_of_offers_made` INT NOT NULL,
  `Percentage_Placed` INT NOT NULL
FOREIGN KEY (CollegeID) REFERENCES college_info(CollegeID),
FOREIGN KEY (CompanyName) REFERENCES
college_info(CompanyName);
```

## Output

| Field                 | Type        | Null | Key | Default |
|-----------------------|-------------|------|-----|---------|
| CollegeID             | int         | NO   | MUL | HULL    |
| CompanyName           | varchar(45) | NO   | MUL | HULL    |
| Package_Offered       | varchar(45) | NO   |     | HULL    |
| Number_of_offers_made | int         | NO   |     | HULL    |
| Percentage_Placed     | int         | NO   |     | HULL    |

# Insertion

```
insert into placements values  
( 401, 'Microsoft', '42 lpa', 7, 99);  
insert into placements values  
( 401, 'Atlassin', '51 lpa', 1, 99);  
insert into placements values  
(401, 'Cisco', '20 lpa', 5, 99);  
insert into placements values  
(401, 'Tower Research Capital', '50  
lpa', 1,99);  
insert into placements values  
(402,'Directi', '45 lpa', 1, 98.5);  
insert into placements values  
(402, 'Microsoft', '42 lpa', 5, 98.5);  
insert into placements values  
(402, 'Amazon', '27 lpa', 4, 98.5);  
insert into placements values  
(403, 'Tower Research Capital', '50  
lpa', 1, 97.29);  
insert into placements values  
(403, 'Google', '35 lpa', 2, 97.29);  
insert into placements values  
(403, 'Adobe', '39 lpa', 5, 97.29);  
insert into placements values  
(404, 'Microsoft', '42 lpa', 3, 95);
```

```
insert into placements values  
(404, 'Paytm', '15 lpa', 4, 95);  
insert into placements values  
(404, 'Flipkart', '19 lpa', 1, 95);  
insert into placements values  
(404, 'Adobe', '39 lpa', 3, 95);  
insert into placements values  
(405, 'Microsoft', '42 lpa', 4, 97);  
insert into placements values  
(405, 'Directi', '45 lpa', 2, 97);  
insert into placements values  
(405, 'Amazon', '27 lpa', 7, 97);  
insert into placements values  
(405, 'Paytm', '15 lpa', 2, 97);  
insert into placements values  
(405, 'Paypal', '25 lpa', 2, 97);  
insert into placements values  
(406, 'Atlassin', '51 lpa', 1 , 95.5);  
insert into placements values  
(406, 'Microsoft', '42 lpa', 1, 95.5);  
insert into placements values  
(406, 'Amazon', '27 lpa', 5, 95.5);  
insert into placements values  
(406, 'Goggle', '35 lpa', 2, 95.5);
```

```
insert into placements values  
(407, 'Adobe', '39 lpa', 2, 94);  
insert into placements values  
(407, 'Cisco', '10 lpa', 3, 94);  
insert into placements values  
(407, 'Paytm', '15 lpa', 1, 94);  
insert into placements values  
(408, 'Amazon', '27 lpa', 3, 92.5);  
insert into placements values  
(408, 'Microsoft', '42 lpa', 1, 92.5);  
insert into placements values  
(408, 'Cisco', '10 lpa', 4, 92.5);  
insert into placements values  
(409, 'Flipkart', '19 lpa', 3, 93.5);  
insert into placements values  
(409, 'Cisco', '10 lpa', 2, 93.5);  
insert into placements values  
(410, 'Microsoft', '42 lpa', 1, 91.5);  
insert into placements values  
(410, 'Cisco', '10 lpa', 7, 91.5);  
insert into placements values  
(410, 'Paytm', '15 lpa', 1, 91.5);  
select *from placements;
```

## Output :

| CollegeID | CompanyName            | Package_Offered | Number_of_offers_made | Percentage_Placed |
|-----------|------------------------|-----------------|-----------------------|-------------------|
| 401       | Microsoft              | 42 lpa          | 7                     | 99                |
| 401       | Atlassin               | 51 lpa          | 1                     | 99                |
| 401       | Cisco                  | 20 lpa          | 5                     | 99                |
| 401       | Tower Research Capital | 50 lpa          | 1                     | 99                |
| 402       | Directi                | 45 lpa          | 1                     | 99                |
| 402       | Microsoft              | 42 lpa          | 5                     | 99                |
| 402       | Amazon                 | 27 lpa          | 4                     | 99                |
| 403       | Tower Research Capital | 50 lpa          | 1                     | 97                |
| 403       | Google                 | 35 lpa          | 2                     | 97                |
| 403       | Adobe                  | 39 lpa          | 5                     | 97                |
| 404       | Microsoft              | 42 lpa          | 3                     | 95                |
| 404       | Paytm                  | 15 lpa          | 4                     | 95                |
| 404       | Flipkart               | 19 lpa          | 1                     | 95                |
| 404       | Adobe                  | 39 lpa          | 3                     | 95                |
| 405       | Microsoft              | 42 lpa          | 4                     | 97                |
| 405       | Directi                | 45 lpa          | 2                     | 97                |
| 405       | Amazon                 | 27 lpa          | 7                     | 97                |
| 405       | Paytm                  | 15 lpa          | 2                     | 97                |
| 405       | Paypal                 | 25 lpa          | 2                     | 97                |
| 406       | Atlassin               | 51 lpa          | 1                     | 96                |
| 406       | Microsoft              | 42 lpa          | 1                     | 96                |
| 406       | Amazon                 | 27 lpa          | 5                     | 96                |
| 406       | Goggle                 | 35 lpa          | 2                     | 96                |
| 407       | Adobe                  | 39 lpa          | 2                     | 94                |
| 407       | Cisco                  | 10 lpa          | 3                     | 94                |
| 407       | Paytm                  | 15 lpa          | 1                     | 94                |
| 408       | Amazon                 | 27 lpa          | 3                     | 93                |
| 408       | Microsoft              | 42 lpa          | 1                     | 93                |
| 408       | Cisco                  | 10 lpa          | 4                     | 93                |
| 409       | Flipkart               | 19 lpa          | 3                     | 94                |
| 409       | Cisco                  | 10 lpa          | 2                     | 94                |
| 410       | Microsoft              | 42 lpa          | 1                     | 92                |
| 410       | Cisco                  | 10 lpa          | 7                     | 92                |
| 410       | Paytm                  | 15 lpa          | 1                     | 92                |

**Placements table**

# Cutoff table

## Table creation Syntax

```
CREATE TABLE `dbms`.`cutoff` (
  `CollegeID` INT NOT NULL,
  `BranchID` INT NOT NULL,
  `Opening_Rank` INT NOT NULL,
  `Closing_Rank` INT NOT NULL,
  FOREIGN KEY (CollegeID) REFERENCES college_info(CollegeID),
  FOREIGN KEY (BranchID) REFERENCES branches(BranchID));
```

## Output

| Field        | Type | Null | Key | Default |
|--------------|------|------|-----|---------|
| CollegeID    | int  | NO   | MUL | NULL    |
| BranchID     | int  | NO   | MUL | NULL    |
| Opening_Rank | int  | NO   |     | NULL    |
| Closing_Rank | int  | NO   |     | NULL    |

# Insertion

```
insert into cutoff values  
(401, 2001, 200, 1200);  
insert into cutoff values  
(402, 1111, 12000, 16593);  
insert into cutoff values  
(402, 1112, 5678, 8765);  
insert into cutoff values  
(403, 501, 3000, 5768);  
insert into cutoff values  
(403, 502, 5894, 7654);  
insert into cutoff values  
(404, 5001, 5678, 7658);  
insert into cutoff values  
(405, 4011, 5234, 9876);  
insert into cutoff values  
(405, 4012, 2116, 2440);  
  
insert into cutoff values  
(405,4013, 3012, 3473);  
insert into cutoff values  
(406, 7012, 647, 1013);  
insert into cutoff values  
(407, 6001, 1765, 2567);  
insert into cutoff values  
(407, 6002, 2002, 3012);  
insert into cutoff values  
(408, 1010, 3456, 4678);  
insert into cutoff values  
(409, 8811, 3241, 4567);  
insert into cutoff values  
(410, 201, 3786, 5144);  
  
select *from cutoff;
```

# Output

| CollegeID | BranchID | Opening_Rank | Closing_Rank |
|-----------|----------|--------------|--------------|
| 401       | 2001     | 200          | 1200         |
| 402       | 1111     | 12000        | 16593        |
| 402       | 1112     | 5678         | 8765         |
| 403       | 501      | 3000         | 5768         |
| 403       | 502      | 5894         | 7654         |
| 404       | 5001     | 5678         | 7658         |
| 405       | 4011     | 5234         | 9876         |
| 405       | 4012     | 2116         | 2440         |
| 405       | 4013     | 3012         | 3473         |
| 406       | 7012     | 647          | 1013         |
| 407       | 6001     | 1765         | 2567         |
| 407       | 6002     | 2002         | 3012         |
| 408       | 1010     | 3456         | 4678         |
| 409       | 8811     | 3241         | 4567         |
| 410       | 201      | 3786         | 5144         |

# Cutoff table

# Faculty\_info table

## Table creation Syntax

```
CREATE TABLE `dbms`.`faculty_info` (
  `FacultyID` VARCHAR(5) NOT NULL,
  `FacultyName` VARCHAR(20) NOT NULL,
  `ResearcherID` VARCHAR(5) NOT NULL,
  `Subject` VARCHAR(20) NOT NULL,
  `Experience` INT NOT NULL,
  FOREIGN KEY (`ResearcherID`) REFERENCES
researcher_info(`ResearcherID`),
PRIMARY KEY (`FacultyID`);
```

## Output

| Field        | Type        | Null | Key | Default |
|--------------|-------------|------|-----|---------|
| FacultyID    | varchar(5)  | NO   | PRI | NULL    |
| FacultyName  | varchar(20) | NO   |     | NULL    |
| ResearcherID | varchar(5)  | NO   | MUL | NULL    |
| Subject      | varchar(50) | NO   |     | NULL    |
| Experience   | int         | NO   |     | NULL    |

# Insertion

```
insert into faculty_info values  
('H1336', 'Abhishek Shrivastav', 'A-11', 'Machine  
Learning', 22);  
insert into faculty_info values  
('H1025', 'Aditi Mukherjee', 'A-12', 'Object-Oriented  
Programming', 15);  
insert into faculty_info values  
('B1075', 'Shrinivas Ega', 'B-11', 'Engineering Drawing',  
12);  
insert into faculty_info values  
('D2568', 'Amit Kedia', 'B-12', 'Artificial Intelligence', 24);  
insert into faculty_info values  
('D2525', 'Shivam Trivedi', 'C-14', 'Machine Learning', 23);  
insert into faculty_info values  
('G4012', 'Gajanand Pore', 'C-15', 'Engineering Physics',  
10);  
insert into faculty_info values  
('G4013', 'Felicia James', 'D-11', 'Communication Skills',  
5);  
insert into faculty_info values  
('A9063', 'Aman Kumar', 'D-12', 'Data Science', 22);  
insert into faculty_info values  
('B4142', 'Udir Ravindran', 'E-11', 'Digital Circuit System',  
15);  
insert into faculty_info values  
('B4150', 'Om Singh', 'E-15', 'Probability and Statics', 7);  
insert into faculty_info values  
('P8050', 'Piyush Warke', 'F-21', 'Engineering Drawing',  
8);  
insert into faculty_info values  
('P4012', 'Priyanka Sharma', 'F-22', 'Electronics', 5);  
insert into faculty_info values  
('K3025', 'Mdhukar Reddy', 'G-31', 'Machine  
Learning', 12);  
insert into faculty_info values  
('J4155', 'Vishal Singh', 'G-32', 'Mechanics-1', 14);  
select *from faculty_info;
```

# Output

| FacultyID | FacultyName         | ResearcherID | Subject                     | Experience |
|-----------|---------------------|--------------|-----------------------------|------------|
| A9063     | Aman Kumar          | D-12         | Data Science                | 22         |
| B1075     | Shrinivas Ega       | B-11         | Engineering Drawing         | 12         |
| B4142     | Udir Ravindran      | E-11         | Digital Circuit System      | 15         |
| B4150     | Om Singh            | E-15         | Probability and Statics     | 7          |
| D2525     | Shivam Trivedi      | C-14         | Machine Learning            | 23         |
| D2568     | Amit Kedia          | B-12         | Artificial Intelligence     | 24         |
| G4012     | Gajanand Pore       | C-15         | Engineering Physics         | 10         |
| G4013     | Felicia James       | D-11         | Communication Skills        | 5          |
| H1025     | Aditi Mukherjee     | A-12         | Object-Oriented Programming | 15         |
| H1336     | Abhishek Shrivastav | A-11         | Machine Learning            | 22         |
| J4155     | Vishal Singh        | G-32         | Mechanics-1                 | 14         |
| K3025     | Mdhukar Reddy       | G-31         | Machine Learning            | 12         |
| P4012     | Priyanka Sharma     | F-22         | Electronics                 | 5          |
| P8050     | Piyush Warke        | F-21         | Engineering Drawing         | 8          |

**Faculty\_info table**

# Researcher\_info tables

## Output

### Table creation Syntax

```
CREATE TABLE `dbms`.`researcher_info` (  
`ResearcherID` VARCHAR(5) NOT NULL,  
`Paper_Published` INT NOT NULL,  
`ResearchField` VARCHAR(45) NOT NULL,  
PRIMARY KEY (`ResearcherID`);
```

| Field           | Type        | Null | Key | Default |
|-----------------|-------------|------|-----|---------|
| ResearcherID    | varchar(5)  | NO   | PRI | NULL    |
| Paper_Published | int         | NO   |     | NULL    |
| ResearchField   | varchar(45) | NO   |     | NULL    |

# Insertion

```
insert into researcher_info values  
('A-11', 1, 'Wireless Systems');  
insert into researcher_info values  
('A-12', 1, 'Advanced Electronic Systems');  
insert into researcher_info values  
('B-11', 1, 'Information Security and Privacy');  
insert into researcher_info values  
('B-12', 1, 'GeoInformatics');  
insert into researcher_info values  
('C-14', 2, 'Signal Processing');  
insert into researcher_info values  
('C-15', 0, 'Scalable Systems');  
insert into researcher_info values  
('D-11', 1, 'Machine Learning');  
insert into researcher_info values  
('D-12', 2, 'Artificial Intelligence');  
insert into researcher_info values  
('E-11', 0, 'Image Analysis and Biometrics');  
insert into researcher_info values  
('E-15', 2, 'Robotics');  
insert into researcher_info values  
('F-21', 1, 'Mathematics & Basic Sciences');  
insert into researcher_info values  
('F-22', 2, 'Robotics');  
insert into researcher_info values  
('G-31', 1, 'Networking Communications & Signal  
Processing');  
insert into researcher_info values  
('G-32', 2, 'Data Sciences');  
  
select *from researcher_info;
```

# Output

| ResearcherID | Paper_Published | ResearchField                    |
|--------------|-----------------|----------------------------------|
| A-11         | 1               | Wireless Systems                 |
| A-12         | 1               | Advanced Electronic Systems      |
| B-11         | 1               | Information Security and Privacy |
| B-12         | 1               | GeoInformatics                   |
| C-14         | 2               | Signal Processing                |
| C-15         | 0               | Scalable Systems                 |
| D-11         | 1               | Machine Learning                 |
| D-12         | 2               | Artificial Intelligence          |
| E-11         | 0               | Image Analysis and Biometrics    |
| E-15         | 2               | Robotics                         |
| F-21         | 1               | Mathematics & Basic Sciences     |
| F-22         | 2               | Robotics                         |
| G-31         | 1               | Networking Communications & S... |
| G-32         | 2               | Data Sciences                    |

# Researcher\_info tables

# College\_info table

## Table creation Syntax

```
CREATE TABLE `dbms`.`college_info` (
  `CollegeID` INT NOT NULL,
  `CollegeName` VARCHAR(45) NOT NULL,
  `Type` VARCHAR(45) NOT NULL,
  `NIRFRanking` INT NULL,
  `Location` VARCHAR(45) NOT NULL,
  `Established_in` INT NOT NULL,
  `Fee_Structure` INT NOT NULL,
  PRIMARY KEY (`CollegeID`);
```

## Output

| Field          | Type        | Null | Key | Default |
|----------------|-------------|------|-----|---------|
| CollegeID      | int         | NO   | PRI | NULL    |
| CollegeName    | varchar(45) | NO   |     | NULL    |
| Type           | varchar(45) | NO   |     | NULL    |
| NIRFRanking    | int         | YES  |     | NULL    |
| Location       | varchar(45) | NO   |     | NULL    |
| Established_in | int         | NO   |     | NULL    |
| Fee_Structure  | int         | NO   |     | NULL    |

# Insertion

```
insert into college_info values  
(401, 'IIIT Hyderabad', 'Private', 43, 'Telangana', 1998,  
1600000);  
insert into college_info values  
(402, 'IIIT Bangalore', 'Private', 62, 'Karnataka', 1999,  
2500000);  
insert into college_info values  
(403, 'IIIT Delhi', 'PPP', 56, 'Delhi', 2008, 2400000);  
insert into college_info values  
(404, 'IIIT Lucknow', 'PPP', null, 'Uttar Pradesh', 2015,  
1500000);  
insert into college_info values  
(405, 'IIIT Gwalior', 'Government', 100, 'Madhya Pradesh',  
1997, 800000);  
insert into college_info values  
(406, 'IIIT Allahabad', 'Government', 103, 'Uttar Pradesh',  
1999, 800000);  
insert into college_info values  
(407, 'IIIT Bhubaneshwar', 'Private', null, 'Odisha', 2006,  
1700000);  
insert into college_info values  
(408, 'IIIT Pune', 'Government', null, 'Maharashtra', 2016,  
1500000);  
insert into college_info values  
(409, 'IIIT Kancheepuram', 'Government', 182, 'Tamil  
Naidu', 2007, 800000);  
insert into college_info values  
(410, 'IIIT Jabalpur', 'Government', 81, 'Madhya Pradesh',  
2005, 800000);  
  
select *from college_info;
```

# Output

| CollegeID | CollegeName       | Type       | NIRFRanking | Location       | Established_in | Fee_Structure |
|-----------|-------------------|------------|-------------|----------------|----------------|---------------|
| 401       | IIIT Hyderabad    | Private    | 43          | Telangana      | 1998           | 1600000       |
| 402       | IIIT Bangalore    | Private    | 62          | Karnataka      | 1999           | 2500000       |
| 403       | IIIT Delhi        | PPP        | 56          | Delhi          | 2008           | 2400000       |
| 404       | IIIT Lucknow      | PPP        | NULL        | Uttar Pradesh  | 2015           | 1500000       |
| 405       | IIIT Gwalior      | Government | 100         | Madhya Pradesh | 1997           | 800000        |
| 406       | IIIT Allahabad    | Government | 103         | Uttar Pradesh  | 1999           | 800000        |
| 407       | IIIT Bhubaneshwar | Private    | NULL        | Odisha         | 2006           | 1700000       |
| 408       | IIIT Pune         | Government | NULL        | Maharashtra    | 2016           | 1500000       |
| 409       | IIIT Kancheepuram | Government | 182         | Tamil Naidu    | 2007           | 800000        |
| 410       | IIIT Jabalpur     | Government | 81          | Madhya Pradesh | 2005           | 800000        |

College\_info table

# College\_branch table

## Table creation Syntax

```
CREATE TABLE `dbms`.`college_branch` (
  `CollegeID` INT NOT NULL,
  `BranchID` INT NOT NULL,
  FOREIGN KEY (CollegeID) REFERENCES college_info(CollegeID),
  FOREIGN KEY (BranchID) REFERENCES branches(BranchID));
```

## Output

| Field     | Type | Null | Key | Default |
|-----------|------|------|-----|---------|
| CollegeID | int  | NO   | MUL | NULL    |
| BranchID  | int  | NO   | MUL | NULL    |

# Insertion

```
insert into college_branch values  
(401,501);  
insert into college_branch values  
(401,1010);  
insert into college_branch values  
(405,4011);  
insert into college_branch values  
(405,1112);  
insert into college_branch values  
(403,4013);  
insert into college_branch values  
(402,1111);  
insert into college_branch values  
(402,502);  
insert into college_branch values  
(404,2001);  
  
insert into college_branch values  
(404,5001);  
insert into college_branch values  
(406,6001);  
insert into college_branch values  
(407,6002);  
insert into college_branch values  
(408,4012);  
insert into college_branch values  
(409,8811);  
insert into college_branch values  
(410,201);  
  
select *from college_branch;
```

# Output

| CollegeID | BranchID |
|-----------|----------|
| 401       | 501      |
| 401       | 1010     |
| 405       | 4011     |
| 405       | 1112     |
| 403       | 4013     |
| 402       | 1111     |
| 402       | 502      |
| 404       | 2001     |
| 404       | 5001     |
| 406       | 6001     |
| 407       | 6002     |
| 408       | 4012     |
| 409       | 8811     |
| 410       | 201      |

**College\_branch  
table**

# Branches table

## Table creation Syntax

```
CREATE TABLE `dbms`.`branches` (
  `BranchID` INT NOT NULL,
  `BranchName` VARCHAR(45) NOT NULL,
  CourseDuration_Years INT NULL,
  PRIMARY KEY (`BranchID`);
```

## Output

| Field                | Type        | Null | Key | Default |
|----------------------|-------------|------|-----|---------|
| BranchID             | int         | NO   | PRI | HULL    |
| BranchName           | varchar(45) | NO   |     | HULL    |
| CourseDuration_Years | int         | NO   |     | HULL    |

# Insertion

```

insert into branches values
(2001, 'B.Tech In CSE', 4);
insert into branches values
(1111, 'Integrated(B.Tech+M.Tech) in
ECE', 5);
insert into branches values
(1112, 'Integrated(B.Tech+M.Tech) in
CSE', 5);
insert into branches values
(501, 'B.Tech in CSAI', 4);
insert into branches values
(502,'B.Tech in CSAM', 4);
insert into branches values
(5001, 'B.Tech in CSAI', 4);
insert into branches values
(4011, 'B.Tech in CSE', 4);
insert into branches values
(4012, 'Integrated(B.Tech+M.Tech) in
I.T.', 5);

insert into branches values
(4013, 'Integrated B.Tech in I.T. and
MBA', 5);
insert into branches values
(7012, 'B.Tech in I.T.', 4);
insert into branches values
(6001, 'B.Tech in E.E.E.', 4);
insert into branches values
(6002, 'B.Tech in Electronics and
Telecom. Eng.', 4);
insert into branches values
(1010, 'B.Tech in ECE', 4);
insert into branches values
(8811, 'B.Tech in Smart Manufacturing',
4);
insert into branches values
(201, 'B.Tech in ME', 4);

select * from branches;

```

# Output

| BranchID | BranchName                            | CourseDuration_Years |
|----------|---------------------------------------|----------------------|
| 201      | B.Tech in ME                          | 4                    |
| 501      | B.Tech in CSAI                        | 4                    |
| 502      | B.Tech in CSAM                        | 4                    |
| 1010     | B.Tech in ECE                         | 4                    |
| 1111     | Integrated(B.Tech+M.Tech) in ECE      | 5                    |
| 1112     | Integrated(B.Tech+M.Tech) in CSE      | 5                    |
| 2001     | B.Tech In CSE                         | 4                    |
| 4011     | B.Tech in CSE                         | 4                    |
| 4012     | Integrated(B.Tech+M.Tech) in I.T.     | 5                    |
| 4013     | Integrated B.Tech in I.T. and MBA     | 5                    |
| 5001     | B.Tech in CSAI                        | 4                    |
| 5001     | B.Tech in E.E.E.                      | 4                    |
| 5002     | B.Tech in Electronics and Telecom.... | 4                    |
| 7012     | B.Tech in I.T.                        | 4                    |
| 8811     | B.Tech in Smart Manufacturing         | 4                    |

# Branches table

# Teaches\_in

## Table creation Syntax

```
CREATE TABLE `dbms`.`teaches_in`(  
    `CollegeID` INT NOT NULL,  
    `ResearcherID` VARCHAR(5) NOT NULL,  
    `FacultyID` VARCHAR(5) NOT NULL);  
  
ALTER TABLE teaches_in  
ADD FOREIGN KEY (CollegeID)  
REFERENCES  
college_info(CollegeID);  
  
ALTER TABLE teaches_in  
ADD FOREIGN KEY (ResearcherID)  
REFERENCES  
researcher_info(ResearcherID);  
  
ALTER TABLE teaches_in  
ADD FOREIGN KEY (FacultyID)  
REFERENCES  
faculty_info(FacultyID);
```

## Output

|   | Field        | Type       | Null | Key | Default | Extra |
|---|--------------|------------|------|-----|---------|-------|
| ▶ | CollegeID    | int        | NO   | MUL | HULL    |       |
|   | ResearcherID | varchar(5) | NO   | MUL | HULL    |       |
|   | FacultyID    | varchar(5) | NO   | MUL | HULL    |       |

# Insertion

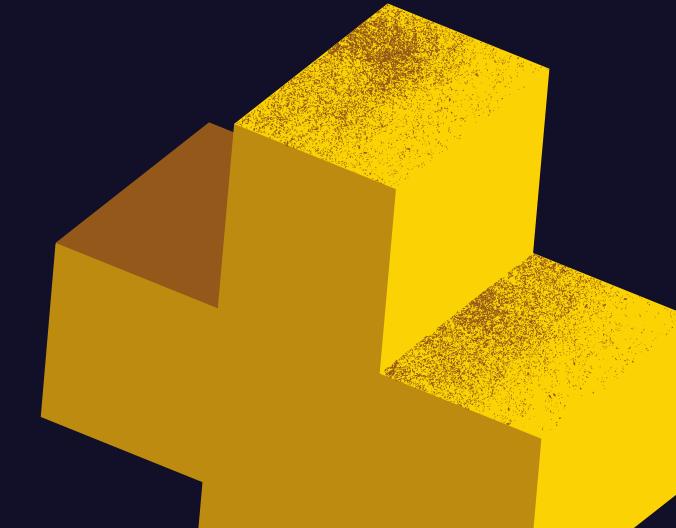
```
insert into teaches_in values  
(401, 'A-11', 'H1336');  
insert into teaches_in values  
(401, 'A-12', 'H1025');  
insert into teaches_in values  
(402, 'B-11', 'B1075');  
insert into teaches_in values  
(403, 'B-12', 'D2568');  
insert into teaches_in values  
(403, 'C-14', 'D2525');  
insert into teaches_in values  
(405, 'C-15', 'G4012');  
insert into teaches_in values  
(405, 'D-11', 'G4013');  
insert into teaches_in values  
(406, 'D-12', 'A9063');  
  
insert into teaches_in values  
(407, 'E-11', 'B4142');  
insert into teaches_in values  
(407, 'E-15', 'B4150');  
insert into teaches_in values  
(408, 'F-21', 'P8050');  
insert into teaches_in values  
(408, 'F-22', 'P4012');  
insert into teaches_in values  
(409, 'G-31', 'K3025');  
insert into teaches_in values  
(410, 'G-32', 'J4155');  
  
select *from teaches_in;
```

# Output

| CollegeID | ResearcherID | FacultyID |
|-----------|--------------|-----------|
| 401       | A-11         | H1336     |
| 401       | A-12         | H1025     |
| 402       | B-11         | B1075     |
| 403       | B-12         | D2568     |
| 403       | C-14         | D2525     |
| 405       | C-15         | G4012     |
| 405       | D-11         | G4013     |
| 406       | D-12         | A9063     |
| 407       | E-11         | B4142     |
| 407       | E-15         | B4150     |
| 408       | F-21         | P8050     |
| 408       | F-22         | P4012     |
| 409       | G-31         | K3025     |
| 410       | G-32         | J4155     |

**Teaches\_in  
Table**

# Problems in RA



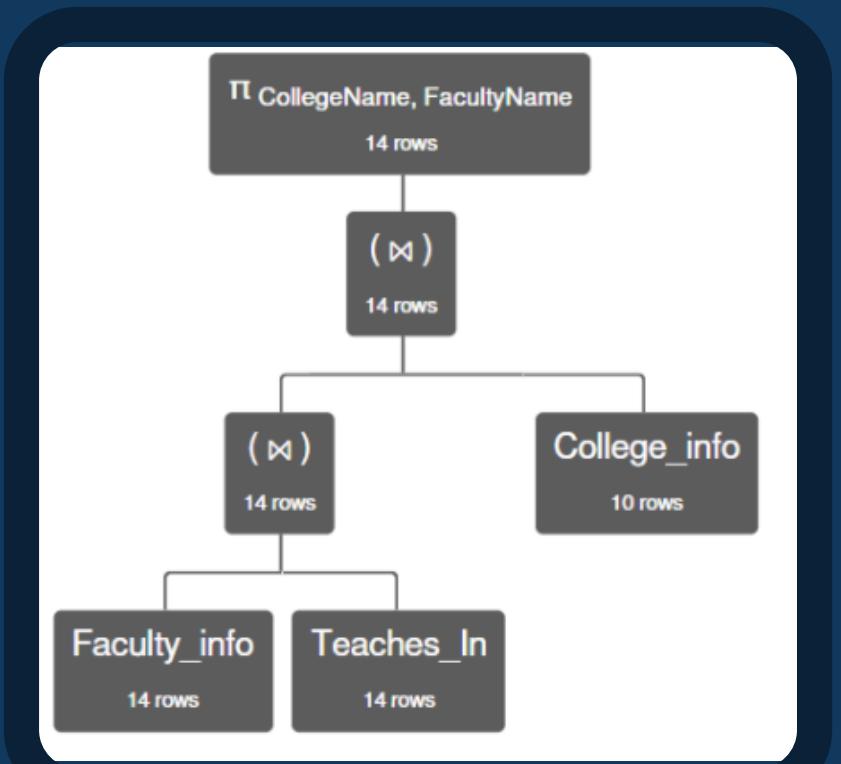
# OUTPUT

## Problem statement-1

- Display the names of faculties and the college where they teach.

## Input

```
π CollegeName , FacultyName (( Faculty_info ⋈ Teaches_in )  
    ⋈ College_info )
```



| College_info.CollegeName | Faculty_info.FacultyName |
|--------------------------|--------------------------|
| 'IIIT Hyderabad'         | 'Abhishek Shrivastav'    |
| 'IIIT Hyderabad'         | 'Aditi Mukherjee'        |
| 'IIIT Bangalore'         | 'Shrinivas Ega'          |
| 'IIIT Delhi'             | 'Amit Kedia'             |
| 'IIIT Delhi'             | 'Shivam Trivedi'         |
| 'IIIT Gwalior'           | 'Gajanand Pore'          |
| 'IIIT Gwalior'           | 'Felicia James'          |
| 'IIIT Allahabad'         | 'Aman Kumar'             |
| 'IIIT Bhubaneshwar'      | 'Udir Ravindran'         |
| 'IIIT Bhubaneshwar'      | 'Om Singh'               |
| 'IIIT Pune'              | 'Piyush Warke'           |
| 'IIIT Pune'              | 'Priyanka Sharma'        |
| 'IIIT Kancheepuram'      | 'Mdhukar Reddy'          |
| 'IIIT Jabalpur'          | 'Vishal Singh'           |

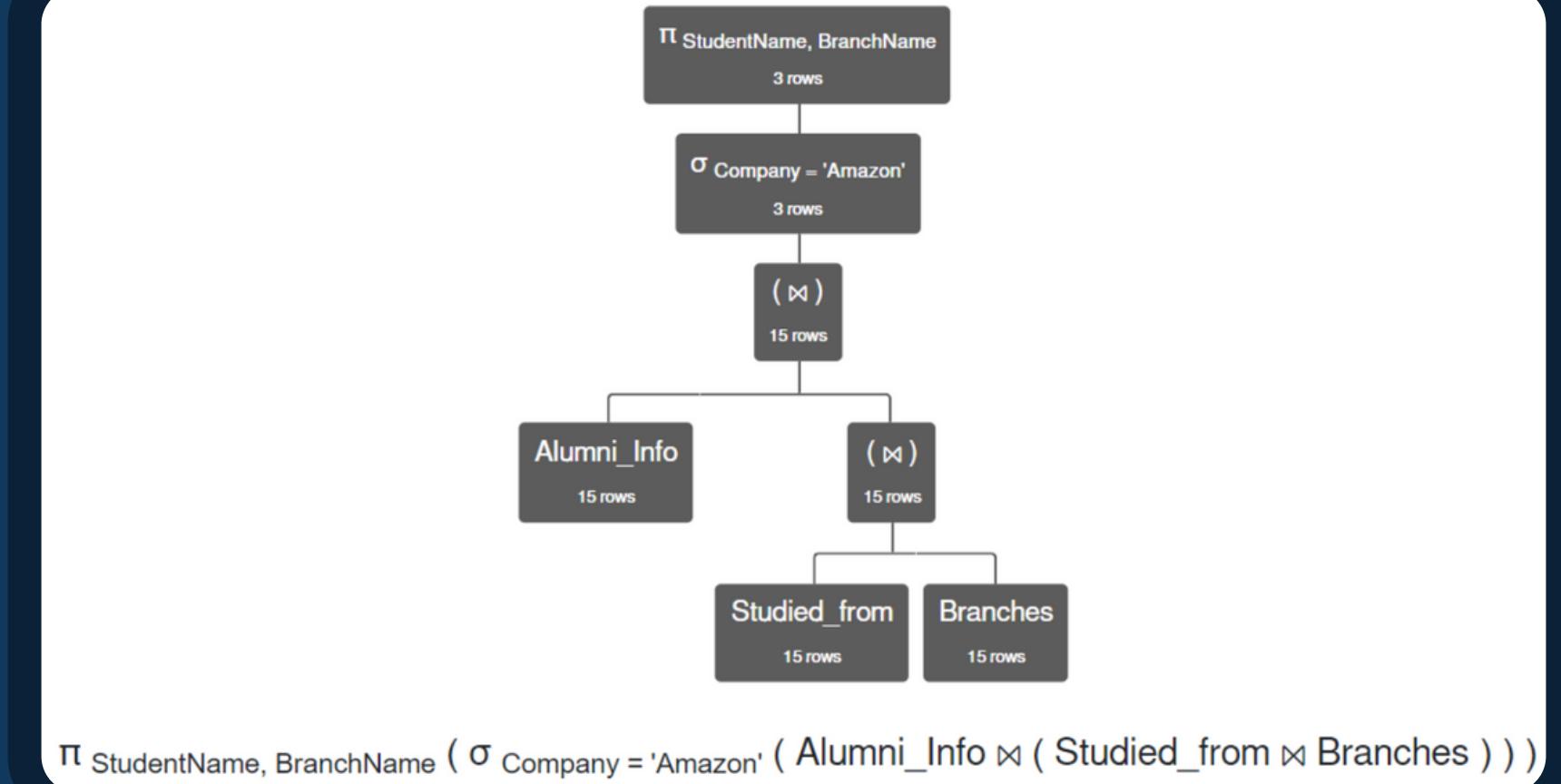
# Problem statement-2

- Display the name of the alumni and their branch name, who are placed in 'Amazon'.

## Input

```
π StudentName,BranchName ( σ Company= 'Amazon' ( Alumni_Info ⋈ ( Studied_from ⋈ Branches )) )
```

## OUTPUT



| Alumni_Info.StudentName | Branches.BranchName                |
|-------------------------|------------------------------------|
| 'Robert Williams'       | 'B.Tech in CSAI'                   |
| 'Mortesin Gayle'        | 'B.Tech in Smart Manufacturing'    |
| 'Chris Evans'           | 'Integrated(B.Tech+M.Tech) in CSE' |

# OUTPUT

## Problem statement-3

- Display all the Government colleges in Uttar Pradesh, and their foundation year.

## Input

```
π CollegeName,Established_In ( σ (Location = 'Uttar Pradesh'  
^ Type = 'Government' ) College_info)
```

$\pi$  CollegeName, Established\_In

1 row

$\sigma$  (Location = 'Uttar Pradesh' and Type = 'Government')

1 row

College\_info

10 rows

| College_info.CollegeName | College_info.Established_In |
|--------------------------|-----------------------------|
|--------------------------|-----------------------------|

'IIT Allahabad'

1999

# OUTPUT

## Problem statement-4

- Display the name and NIRF Ranking of the college, available to a student, having rank in the range 4000-8000. (College Predictor Query)

## Input

```
π CollegeName, NIRF_Ranking ( σ (Opening_Rank>4000 ∧  
Closing_Rank <8000) ( College_info ⋈ Cutoffs ))
```

π CollegeName, NIRF\_Ranking  
2 rows

σ (Opening\_Rank > 4000 and Closing\_Rank < 8000)  
2 rows

(⋈)  
15 rows

College\_info  
10 rows

Cutoffs  
15 rows

College\_info.CollegeName      College\_info.NIRF\_Ranking

|             |    |
|-------------|----|
| 'IIT Delhi' | 56 |
|-------------|----|

|               |      |
|---------------|------|
| 'IIT Lucknow' | null |
|---------------|------|

# OUTPUT

$\pi$  CollegeName, StudentName, GraduationYear

2 rows

$\sigma$  Company = 'Google'

2 rows

( $\bowtie$ )

15 rows

Alumni\_Info

15 rows

( $\bowtie$ )

15 rows

Studied\_from

15 rows

College\_info

10 rows

# Problem statement-5

- Which colleges have alumni in 'Google' ?  
Also display the name and graduation year of each alumnus.

# Input

```
 $\pi$  CollegeName, StudentName, GraduationYear ( $\sigma$ 
Company='Google' (( Alumni_Info  $\bowtie$  (Studied_from  $\bowtie$ 
College_info))))
```

| College_info.CollegeName | Alumni_Info.StudentName | Alumni_Info.GraduationYear |
|--------------------------|-------------------------|----------------------------|
| 'IIIT Hyderabad'         | 'Harry Styles'          | 2011                       |
| 'IIIT Gwalior'           | 'Mark Strong'           | 2015                       |

# Problems in SQL



# Problem statement-1

- Display the fees per semester of every college

## Query

```
SELECT
    A.CollegeName AS CollegeName,
    C.BranchName AS Branch,
    A.fee_structure/(2*CourseDuration_Years) AS
    Fee_per_semester
FROM
    College_info AS A,
    College_Branch AS B,
    branches AS C
WHERE
    A.CollegeID = B.CollegeID AND C.BranchID = B.BranchID;
```

## OUTPUT

| CollegeName      | Branch                                | Fee_per_semester |
|------------------|---------------------------------------|------------------|
| IIIT Jabalpur    | B.Tech in ME                          | 100000.0000      |
| IIIT Hyderabad   | B.Tech in CSAI                        | 200000.0000      |
| IIIT Bangalore   | B.Tech in CSAM                        | 312500.0000      |
| IIIT Hyderabad   | B.Tech in ECE                         | 200000.0000      |
| IIIT Bangalore   | Integrated(B.Tech+M.Tech) in ECE      | 250000.0000      |
| IIIT Gwalior     | Integrated(B.Tech+M.Tech) in CSE      | 80000.0000       |
| IIIT Lucknow     | B.Tech In CSE                         | 187500.0000      |
| IIIT Gwalior     | B.Tech in CSE                         | 100000.0000      |
| IIIT Pune        | Integrated(B.Tech+M.Tech) in I.T.     | 150000.0000      |
| IIIT Delhi       | Integrated B.Tech in I.T. and MBA     | 240000.0000      |
| IIIT Lucknow     | B.Tech in CSAI                        | 187500.0000      |
| IIIT Allahabad   | B.Tech in E.E.E.                      | 100000.0000      |
| IIIT Bhubanes... | B.Tech in Electronics and Telecom.... | 212500.0000      |
| IIIT Kancheep... | B.Tech in Smart Manufacturing         | 100000.0000      |

# Problem statement-2

- Display the names of the faculty with maximum experience for each college.

## Query

```
SELECT
    C.CollegeID AS CollegeID,
    C.CollegeName AS College,
    A.FacultyName AS Faculty,
    MAX(Experience) as Max_experience
FROM
    dbms.Faculty_info AS A
    INNER JOIN dbms.Teaches_In AS B
    ON A.FacultyID = B.FacultyID
    INNER JOIN dbms.College_info AS C
    ON C.CollegeID = B.CollegeID
GROUP BY
    C.CollegeID, C.CollegeName
```

## OUTPUT

| CollegeID | College           | Faculty         | Max_experience |
|-----------|-------------------|-----------------|----------------|
| 406       | IIIT Allahabad    | Aman Kumar      | 22             |
| 402       | IIIT Bangalore    | Shrinivas Ega   | 12             |
| 407       | IIIT Bhubaneshwar | Udir Ravindran  | 15             |
| 403       | IIIT Delhi        | Shivam Trivedi  | 24             |
| 405       | IIIT Gwalior      | Gajanand Pore   | 10             |
| 401       | IIIT Hyderabad    | Aditi Mukherjee | 22             |
| 410       | IIIT Jabalpur     | Vishal Singh    | 14             |
| 409       | IIIT Kancheepuram | Mdhukar Reddy   | 12             |
| 408       | IIIT Pune         | Priyanka Sharma | 8              |

# Problem statement-3

- What are the opening and closing ranks for the college having the maximum students placed? Also, display the overall percentage of students placed in that college.

## Query

```
SELECT
    college_info .CollegeName AS College,
    cutoff.Opening_Rank AS Opening_Rank,
    cutoff.Closing_Rank AS Closing_Rank,
    MAX(placements.Percentage_Placed) AS
Overall_Percentage_Placed
FROM
    placements
NATURAL JOIN cutoff
NATURAL JOIN college_info
```

## OUTPUT

| College        | Opening_Rank | Closing_Rank | Overall_Percentage_Placed |
|----------------|--------------|--------------|---------------------------|
| IIIT Hyderabad | 200          | 1200         | 99                        |

# Problem statement-4

- Display the name of the colleges having the highest average package.

## Query

```
SELECT
    C.CollegeName AS College,
    MAX(C.Avg_package) AS Max_avg_package
FROM
    (SELECT
        B.CollegeName AS CollegeName,
        avg(A.package_offered) AS Avg_package
    FROM
        Placements AS A
        INNER JOIN college_info AS B
        ON A.CollegeID = B.CollegeID
    GROUP BY
        A.CollegeID)
    AS C
```

## OUTPUT

| College       | Max_avg_package   |
|---------------|-------------------|
| IIT Hyderabad | 41.33333333333336 |

# Problem statement-5

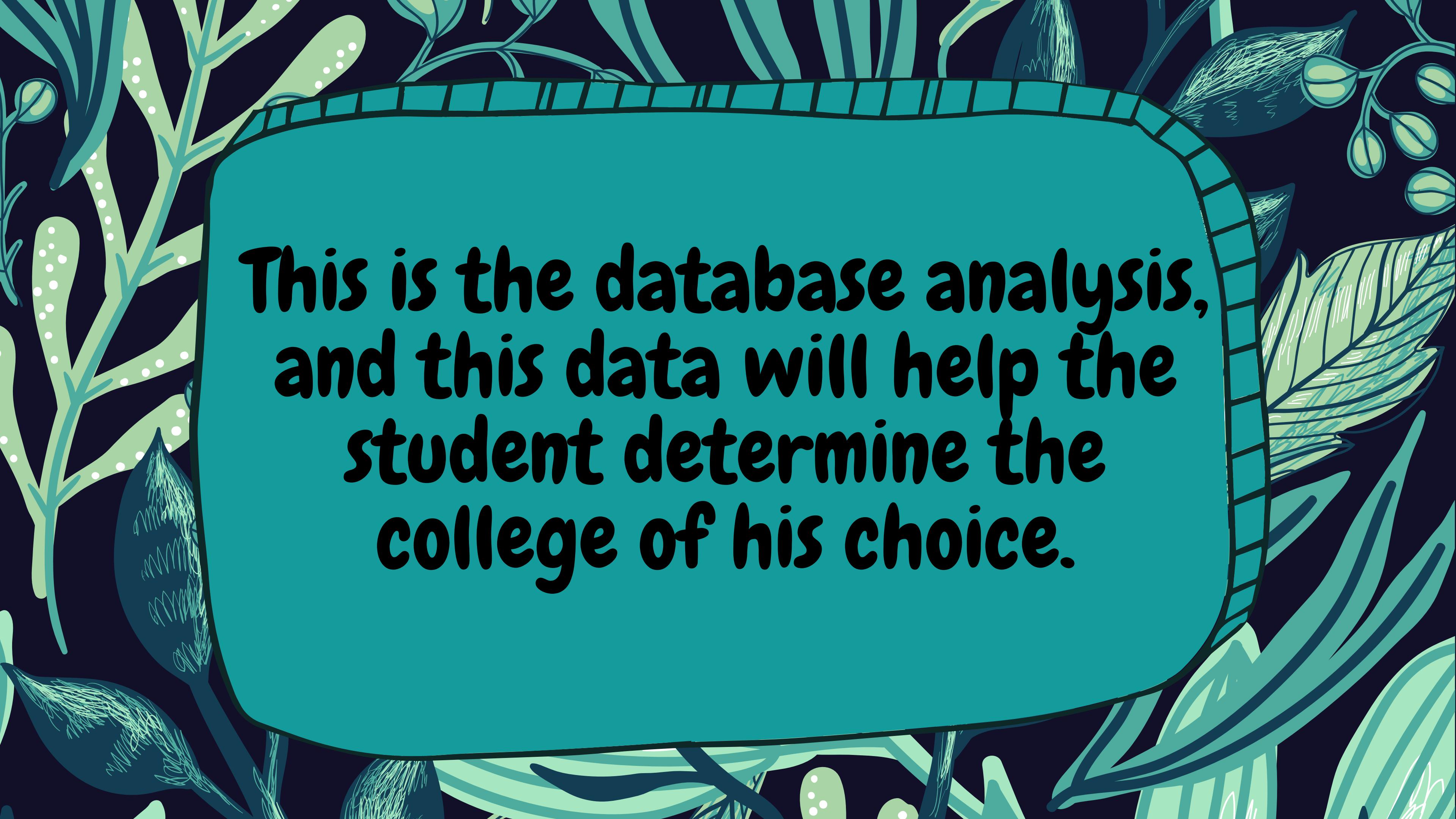
- Display the list of faculties who teach Machine Learning, and their college, in order of their experience.

## Query

```
SELECT  
    C.CollegeName AS College,  
    A.FacultyName AS Faculty,  
    A.Experience ,  
    A.Subject  
  
FROM  
    ( faculty_info AS A  
    INNER JOIN teaches_in AS B  
    ON A.FacultyID = B.FacultyID )  
    INNER JOIN college_info AS C  
    ON C.CollegeID = B.CollegeID  
  
WHERE  
    A.Subject= "Machine Learning"  
ORDER BY A.Experience DESC
```

## OUTPUT

| College           | Faculty             | Experience | Subject          |
|-------------------|---------------------|------------|------------------|
| IIIT Delhi        | Shivam Trivedi      | 23         | Machine Learning |
| IIIT Hyderabad    | Abhishek Shrivastav | 22         | Machine Learning |
| IIIT Kancheepuram | Mdhukar Reddy       | 12         | Machine Learning |



This is the database analysis,  
and this data will help the  
student determine the  
college of his choice.

A night scene of a city street. In the foreground, there's a large, ornate fountain with water spraying upwards. To the left of the fountain is a multi-story building with many windows, some of which have lights on. To the right is another building with a balcony and a small lamp post. In the bottom center, there's a red, tufted sofa. The overall atmosphere is dark and moody.

T•H•A•N•K Y•O•U