



TATA CONSULTANCY SERVICES

Normalisation – Example with data

Version 1.0

Employee Project Allocation

| Employee ID | Employee Name | Job Level | Employee Contact | Project Id | Project Name | Project type | Allocation Type | Client Name | Client Location |
|-------------|---------------|-----------|------------------|------------|-----------------|--------------|-----------------|-------------|-----------------|
| 260444 | Arun | Developer | 2535 | 260145 | CBNA | Billable | Permanent | CitiBank | NewYork |
| 186878 | Sunder | Manager | 2108 | 260145 | CBNA | Billable | Permanent | CitiBank | NewYork |
| 313307 | Pushpa | Designer | 2322 | 180429 | CitiCards | Billable | Permanent | CitiBank | NewYork |
| 260444 | Arun | Developer | 2535 | 180429 | CitiCards | Billable | Permanent | CitiBank | NewYork |
| 198569 | Siva | Manager | 5531 | 180429 | CitiCards | Billable | Permanent | CitiBank | NewYork |
| 516490 | Bharati | Developer | 2406 | 156732 | CitiCollections | Billable | Permanent | CitiBank | NewYork |
| 703131 | Sharath | Developer | 2538 | 385432 | BoACustCare | Billable | Permanent | BoA | Chicago |
| 465821 | Arjun | Tester | 2158 | 385432 | BoACustCare | Billable | Permanent | BoA | Chicago |
| 214652 | Megha | Manager | 6071 | 385432 | BoACustCare | Billable | Permanent | BoA | Chicago |

Entities

Employee
Project
Client

Cardinality

Employee → Project many to many
Project → Client many to one

1NF

Employee_allocation

| Project Id | Employee ID | Allocation Type | Employee Name | Job Level | Employee Contact |
|------------|-------------|-----------------|---------------|-----------|------------------|
| 260145 | 260444 | Permanent | Arun | Developer | 2535 |
| 260145 | 186878 | Permanent | Sunder | Manager | 2108 |
| 180429 | 313307 | Permanent | Pushpa | Designer | 2322 |
| 180429 | 260444 | Permanent | Arun | Developer | 2535 |
| 180429 | 198569 | Permanent | Siva | Manager | 5531 |
| 156732 | 516490 | Permanent | Bharati | Developer | 2406 |
| 385432 | 703131 | Permanent | Sharath | Developer | 2538 |
| 385432 | 465821 | Permanent | Arjun | Tester | 2158 |
| 385432 | 214652 | Permanent | Megha | Manager | 6071 |

Project_Details

| Project Id | Project Name | Project type | Client Name | Client Location |
|------------|-----------------|--------------|-------------|-----------------|
| 260145 | CBNA | Billable | CitiBank | NewYork |
| 180429 | CitiCards | Billable | CitiBank | NewYork |
| 156732 | CitiCollections | Billable | CitiBank | NewYork |
| 385432 | BoACustCare | Billable | BoA | Chicago |

2NF**Project_Details**

| Project Id | Project Name | Project type | Client Name | Client Location |
|------------|-----------------|--------------|-------------|-----------------|
| 260145 | CBNA | Billable | CitiBank | NewYork |
| 180429 | CitiCards | Billable | CitiBank | NewYork |
| 156732 | CitiCollections | Billable | CitiBank | NewYork |
| 385432 | BoACustCare | Billable | BoA | Chicago |

Employee_Details

| Employee ID | Employee Name | Employee Contact | Job Level |
|-------------|---------------|------------------|-----------|
| 260444 | Arun | 2535 | Developer |
| 186878 | Sunder | 2108 | Manager |
| 313307 | Pushpa | 2322 | Designer |
| 198569 | Siva | 5531 | Manager |
| 516490 | Bharati | 2406 | Developer |
| 703131 | Sharath | 2538 | Developer |
| 465821 | Arjun | 2158 | Tester |
| 214652 | Megha | 6071 | Manager |

Project_Allocation_Details

| Project Id | Employee ID | Allocation Type |
|------------|-------------|-----------------|
| 260145 | 260444 | Permanent |
| 260145 | 186878 | Permanent |
| 180429 | 313307 | Permanent |
| 180429 | 260444 | Permanent |
| 180429 | 198569 | Permanent |
| 156732 | 516490 | Permanent |
| 385432 | 703131 | Permanent |
| 385432 | 465821 | Permanent |
| 385432 | 214652 | Permanent |

3NF

Employee_Details

| Employee ID | Employee Name | Employee Contact | Job Level |
|-------------|---------------|------------------|-----------|
| 260444 | Arun | 2535 | Developer |
| 186878 | Sunder | 2108 | Manager |
| 313307 | Pushpa | 2322 | Designer |
| 198569 | Siva | 5531 | Manager |
| 516490 | Bharati | 2406 | Developer |
| 703131 | Sharath | 2538 | Developer |
| 465821 | Arjun | 2158 | Tester |
| 214652 | Megha | 6071 | Manager |

Project_Allocation_Details

| Project Id | Employee ID | Allocation Type |
|------------|-------------|-----------------|
| 260145 | 260444 | Permanent |
| 260145 | 186878 | Permanent |
| 180429 | 313307 | Permanent |
| 180429 | 260444 | Permanent |
| 180429 | 198569 | Permanent |
| 156732 | 516490 | Permanent |
| 385432 | 703131 | Permanent |
| 385432 | 465821 | Permanent |
| 385432 | 214652 | Permanent |

Project_Details

| Project Id | Project Name | Project type | Client Name |
|------------|-----------------|--------------|-------------|
| 260145 | CBNA | Billable | CitiBank |
| 180429 | CitiCards | Billable | CitiBank |
| 156732 | CitiCollections | Billable | CitiBank |
| 385432 | BoACustCare | Billable | BoA |

Client_Details

| Client Name | Client Location |
|-------------|-----------------|
| CitiBank | NewYork |
| BoA | Chicago |