BIT222\_BIT22113796\_WEEK3\_2024

***FIRST NORMAL FORM***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| MOTEL-ID | ROOM\_ID | CUSTOMER\_ID | EMPLOYEE\_ID | RESERVATION\_ID | BOOKING\_ID | TRANSACTION\_ID |

|  |  |  |
| --- | --- | --- |
| HR\_ID | SECURITY\_ID | HOUSEKEEPING \_ID |

In the first normal form (1NF), we ensure that each column contains only atomic values and ensure that they are no repeating groups or arrays.

STEPS TO ACHIEVE FIRST NORMAL FORM

1. identify the entities in the diagram.
2. Ensure each attribute contains atomic values and examine each entity to ensure they contain atomic values.
3. All the columns in the table should be unique
4. Remove all multivalued attributes

***EXPLANATION (1NF)***

In achieving the first normal form,the main focus is to ensure that each column in the table contains only atomic values and there is no repeating of groups or arrays in the diagram provided they entities were already atomic and they were no repeating groups hence the tables were directly created based on the entities .

**SECOND NORMAL FORM**

MOTEL

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| MOTEL\_ID | ROOM\_ID | MOTEL CATEGORY | PHONE NUMBER | EMAIL | RATING | WEBSIITE |

EMPLOYEE

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| EMPLOYEE\_ID | FIRST NAME | SECOND NAME | MOTEL\_ID | PHONE NUMBER | ROLE | EMAIL |

|  |  |  |
| --- | --- | --- |
| SALARY | GENDER |  |

ROOM

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ROOM\_NO | PRICE | CATEGORY | CAPACITY | DESCRIPTION |

CUSTOMER

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CUSTOMER\_ID | MOTEL-ID | FIRST NAME | LAST NAMEE | PHONE NUMBER | EMAIL | GENDER | CHECK IN DATE | CHECK  OUT DATE |

FINANCE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| TRANSACTION\_ID | BOOKING ID | TRANSACTION METHOD | CUSTOMER ID | AMOUNT | DATE |

\_

RESERVATIONS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| BOOKING\_ID | CUSTOMER\_ID | ROOM\_NO | PAYMENT-ID | RESERVATION  DATE | RESERVATION SOURCE | SPECIAL REQUESTS | RESERVATION STATUS |

SECURITY

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SECURITY PERSONNEL\_ID | SECURITY SHIF | SECURITY REPORTS | ACCESS CONTROL LOSS | SECURITY CAMERA INFO | SECURITY TRAINING RECORDS | SECURITY  EQUIPMENTT | EMPLOYEE ID |

HOUSEKEEPING

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| HOUSEKEEPING TASK ID | TASK DESCRIPTION | TASK STATUS | EMPLOYEE ID | TASK DURATION | CLEANING SUPPLIES USED | HOUSEKEEPING SCHEDULE |

INVENTORY

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ITEM ID | ITEM NAME | ITEM DESCRIPTION | PURCHASE DATE | EXPIRY DATE | ITEM PRICE |

In the second normal form , we remove partial dependencies by ensuring that non-key attributes are fully dependant on the primary key.

STEPS TO ACHIEVE THE SECOND NORMAL FORM

1. Identify the primary keys and determine the primary keys for each table.
2. The table should be in first normal form
3. Remove all partial dependencies
4. Examine each table to ensure that non key attributes are fully functionally dependant on the primary key

EXPLANATION OF THE SECOND NORMAL FORM .

To achieve the second normal form we focus on eliminating partial dependencies

**THIRD NORMAL FORM**

MOTEL

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MOTEL\_ID | ROOM\_ID | MOTEL CATEGORY | MOTEL  TITLE | COUNTRY | CITY | STREET | EMAIL | PHONE NUMBER | RATING |

EMPLOYEE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EMPLOYEE ID | MOTEL ID | FIRST NAME | LAST NAME | PHONE NUMBER | EMAIL | ROLE | SALARY | GENDER |

ROOM

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ROOM NO | PRICE | CATEGORY | CAPACITY | DESCRIPTION | MOTEL ID |

CUSTOMER

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CUSTOMER ID | MOTEL ID | FIRST NAME | LAST NAME | EMAIL | GENDER | CHECK IN DATE | CHECK OUT DATE |

FINANCE

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| TRANSACTION ID | TRANSACTION DATE | TRANSACTION  TYPE | AMOUNT | DESCRIPTION | BOOKING ID | CUSTOMER ID | EMPLOYEE ID |

SECURITY

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SECURITY PERSONNEL ID | SECURITY SHIFT | SECURITY REPORTS | ACCESS CONTROL | CAMERAS | RECORDS | SECURITY EQIPMENT | EMPLOYEE ID |

HOUSE KEEPING

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| HOUSE KEEPING ID | EMPLOYEE ID | HOUSEKEEPING SCHEDULE | TASK STATUS | TASK DURATION | HOUSEKEEPING  SCHEDULE |

INVENTORY

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ITEM ID | ITEM NAME | STOCK ID | ITEM PRICE | EXPIRY DATE | QUANITITY IN STPCK |

In the third normal form,we eliminate transitive dependencies by ensuring that non key attributes are not dependent on other non key attributes.

STEPS TO ACHIEVE 3NF

1. Identify transitive dependencies and examine each table to identify any transitive dependencies where non key attributes depend on other non key attributes .
2. It should be in second normal form
3. Create additional tables if necessary if transitive dependcies exist create additional tables to remove them

TO ACHIEVE THIIRD NORMAL FORM THE GOAL IS TO ELIMINATE TRANSITIVE DEPENDCIES OF WHICH EACH ATTRIBUTE IS SUPPOSED TO BE DEPENDANT ONLY ON THE PRIMARY KEY.