0 NF

Bill# [PK], Date, Table#, #Guests, ServerID, ServerName, (MenuItem#, Description, ItemCost, Quantity, ~~LineTotal~~) , ~~SubTotal~~, ~~GST~~, Discount, ~~Total~~

Assumptions:

1. LineTotal is a calculated field   : Not required
2. SubTotal is a calculated field   : Not required
3. GST is a calculated field   : Not required
4. Total is a calculated field   : Not required

1NF - [ATOMIC, No Repeated Group]

Violations:

Servername not atomic ServerName => ServerFirst, ServerLast

Repeating Groups: Menu entry: Highlighted in Parenthesis

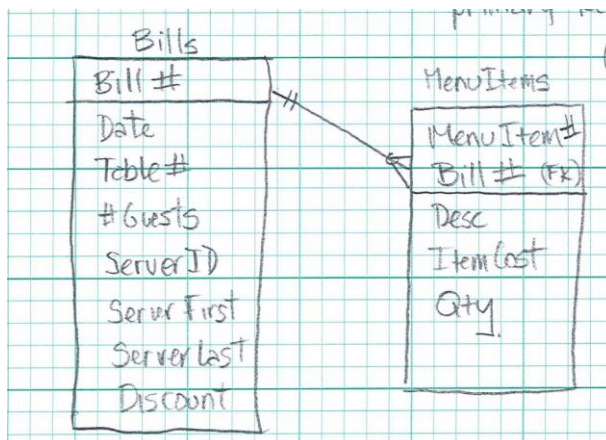   Correction: Remove them and take to a new table

Bills

Bill# [PK], Date, Table#, #Guests, ServerID, ServerFirst, ServerLast, Discount

MenuItems

Bill# [FK][PK], MenuItem# [PK], Description, ItemCost, Quantity

Relationship between Bills and MenuItems 1 to many

2NF [No Partial Dependencies] : Only on composite keys and where non key fields don't depend on entire Primary key.

Violations

Bills

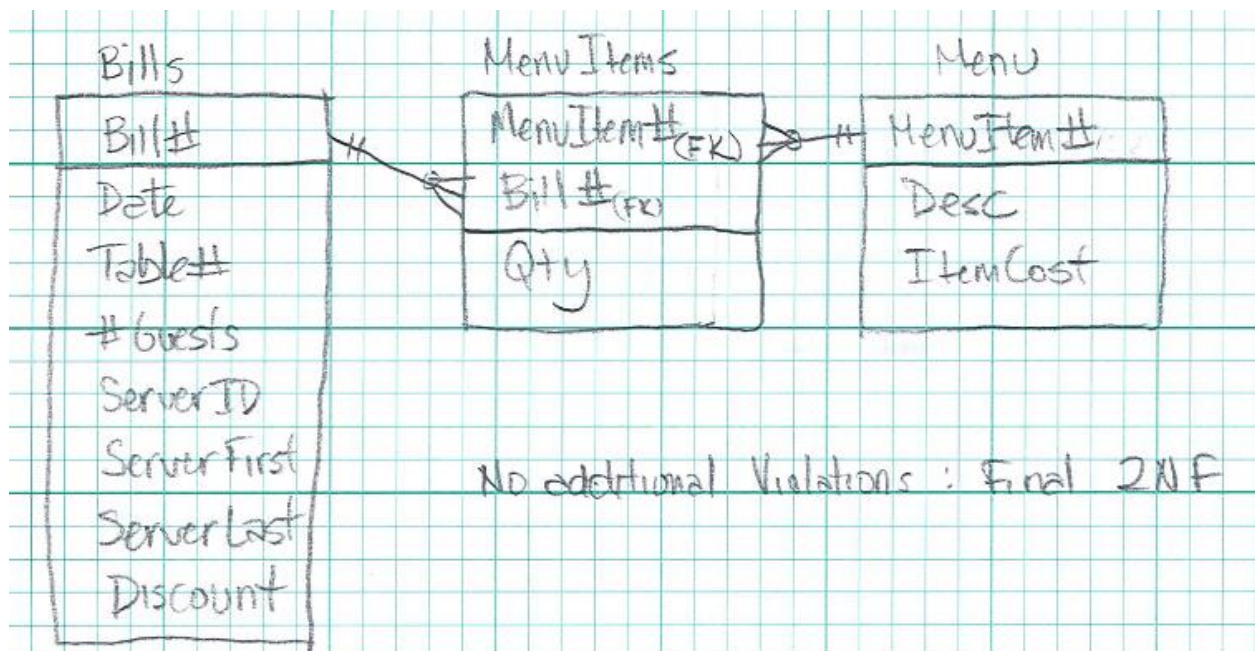Bill# [PK], Date, Table#, #Guests, ServerID, ServerFirst, ServerLast, Discount

MenuItems

Bill# [FK][PK], MenuItem# [PK][FK], Quantity

Menu

MenuItem# [PK], Description, ItemCost

Relation between Menu and MenuItems 1 to many

3Normal Form [No Transitive Dependencies]: Non- Key field is depending upon another non-key field

Violations:

Bills

Bill# [PK], Date, Table#, #Guests, ServerID[FK], Discount

One to many

Servers

ServerID[PK] , ServerFirst, ServerLast

MenuItems

Bill# [FK][PK], MenuItem# [PK][FK], Quantity

Menu

MenuItem# [PK], Description, ItemCost

Relation between Menu and MenuItems 1 to many

Final ERD [Entity Relation Diagram]