

Assumption and Design Choices

First we will go through already available facts from problem statement followed by assumptions.

Available Facts and their respective counterparts in the ER Diagram:

1. Customer which is in M: N relationship with three different types of Publication and the relationship being Subscription. Hence we have a customer with id number, name and address with id number as the primary key.
2. Each Publication is categorized based on their types and they are: Magazine, Daily Newspaper and Weekly Newspaper.
3. Customer entity is involved in a subscription relationship with each of the counterparts of Publication which is many to many. Many to many because, more than 1 customer can subscribe to more than one publication irrespective of its type and vice versa.

Assumptions and Design Choices:

1. Magazine: Each Magazine can be either weekly, monthly or quarterly which will be its frequency. A magazine which is weekly falls under monthly and yearly as well but not the other way around. A magazine subscription can have a different number of issues. Each of these issues can have different subscription rate. We have a subscription start date. There is also cost, end date and actual end date which can either be deduced or entered as required.
2. Newspaper Daily: Each Daily Newspaper subscription is measured in terms of number of months. But in week a customer can have a customized delivery in terms of from Monday to Sunday, or from Monday to Friday, or just on Saturday and Sunday. This data is captured by the sub_type field. Sub_type coupled with number of months field captures number of issues.
3. Newspaper Weekly: Each weekly newspaper is governed by same rules as the magazine.
4. The publication name forms the primary key for each of the above three entity types of the Publication
5. There are 3 more entities called Subscription_Magazine, Subscription_Daily_Newspaper and Subscription_Weekly_Newspaper which will have id number and publication name as the primary key which will also be a foreign key referenced by Customer and Magazine, Daily Newspaper and Weekly Newspaper respectively.
6. Also the rates field in each of Subscription_Magazine, Subscription_Daily_Newspaper and Subscription_Weekly_Newspaper is a multi-valued attribute. A new relation would be created with primary key of parent subscription table be taken as primary key of corresponding rates table. For example, Magazine_Subscription_Rate had id number and publication name from subscription magazine which is also a foreign key referenced from the same table. Similar is the case with weekly newspaper rate and Daily newspaper rate.