

The strategy for representing subtypes, or IS-A relationship, is somewhat different from strategy used for a HAS-A relationship. Consider for example of CLIENT with attributes ClientNumber, ClientName, and AmountDue. Suppose that there are three subtypes of CLIENT, namely, INDIVIDUAL-CLIENT, PARTNERSHIP-CLIENT, and CORPORATE-CLIENT, with the following attributes:

INDIVIDUAL-CLIENT: Address, SocialSecurityNumber

PARTNERSHIP-CLIENT: ManagingPartnerName, Address, TaxIdentificationNumber

CORPORATE-CLIENT: ContactPerson, Phone, TaxIdentificationNumber

To represent this structure by means of relations, we define one relation for the subtype(CLIENT) and one relation for each subtype. Then we place each other of the attributes of the subtype into the relation that represents it and each of the attributes of the subtypes into the relations that represent them. At this point, the subtype relations do not have a key. To create a key, we add the key of the supertype, or ClientNumber, to each of the subtypes. The final list of relations is

CLIENT(ClientNumber, AmountDue)

INDIVIDUAL-CLIENT(ClientNumber, Address, SocialSecurityNumber)

PARTNERSHIP-CLIENT(ClientNumber, ManagingPartnerName, Address,
TaxIdentificationNumber)

CORPORATE-CLIENT(ClientNumber, ContactPerson, Phone,
TaxIdentificationNumber)

Note that with this structure, the relationship between a row in CLIENT and a row in one of the subtypes is 1:1. No client has more than one row in a subtype relation, and each subtype corresponds uniquely to one row of the subtype. Depending on the restrictions of the application, it might be possible for a row in CLIENT to correspond to multiple rows, each in a different subtype. But no row of CLIENT can correspond to more than one row in the *same* subtype relation.

It is possible for one or more of the subtypes to have a key of its own. For example, the application may call for a CorporateClientNumber that is distinct from ClientNumber. In that case, the key of CORPORATE-CLIENT is CorporateClientNumber. Since the relationship between CLIENT and CORPORATE-CLIENT is 1:1, it can be established by placing the key of one in the other.