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Part A:

● step1

——Using 8A for PERSON : EMPLOYEE CUSTOMER CONTACT
PERSON(PersonID, homePH, workPH, email,lastNM, firstNM,
streetNAME, City, State, Zip, StreetNumber)

——Using 8C for EMPLOYEE : TRADEPERSON
EMPLOYEE (PersonID, startDT, endDT, birthDT, type)
FK: EMPLOYEE.PersonID —> PERSON.PersonID

CONTACT (PersonID,supplierID)
FK: CONTACT.PersonID —> PERSON.PersonID
CONTACT.supplierID—>SUPPLIER.supplierID

PROJECT(ProjectID, inInside, createDT,
description,PersonID,com_ProjectID)
FK:PROJECT.PersonID—> CUSTOMER.PersonID
PROJECT.com_ProjectID—>PARTOF.com_ProjectID

CORPPRATE(PersonID, discountRATE)
FK:CORPPRATE.PersonID —> CUSTOMER.PersonID

RESIDENTIAL(PersonID, birthDate,markstSector)
FK: RESIDENTIAL.PersonID —> CUSTOMER.PersonID

SUPPLIER(supplierID, isPreferred, supplierNM)

——Using 8A for RESOURCE : SERVICE MATERIAL
RESOURCE(resourceID, description)

SERVICE (resourceID, serviceShortNM)
FK: SERVICE.resourceID, —> RESOURCE.resourceID

MATERIAL(resourceID, minUnitStock)

FK: MATERIAL.resourceID, —-> RESOURCE.resourceID

- step2 : weak entites

JOB(jobID, ProjectID, PersonID, resourceID, actualCost, endDT, startDT, estimatedCost)

FK: JOB.ProjectID—->PROJECT.ProjectID

JOB.PersonID—->EMPLOYEE.PersonID

JOB.resourceID —->SERVICE.resourceID

- step3: 1:1 relationship none

- step4: 1:N

PARTOF(com_ProjectID, indivi_ProjectID)

FK: PARTOF.com_ProjectID—->PROJECT.ProjectID

PARTOF.indivi_ProjectID—->PROJECT.ProjectID

- STEP5:M:N relationship

PCONTACT(EMPLOYEE.PersonID, CUSTOMER.PersonID, assignDT)

SKILLEDIN(PersonID, resourceID, certNM, certDT)

FK:SKILLEDIN.PersonID—->EMPLOYEE .PersonID

SKILLEDIN.resourceID—->SERVICE.resourceID

REQUIRES(ProjectID, resourceID)

FK: REQUIRES.ProjectID—->PROJECT.ProjectID

REQUIRES.resourceID—->RESOURCE.resourceID

SOURCEDFROM(supplierID,resourceID, restockDT, cost)

FK:SOURCEDFORM.PersonID—->SUPPLIER.supplierID

SOURCEDFORM.resourceID—->MATERIAL.resourceID

● STEP6: MULTIVALUED

LOCATION(Location, ProjectID)

FK:LOCATION.ProjectID—->PROJECT.ProjectID

● STEP 7: 3 or more participating

RETURN(ProjectID,resourceID, PersonID,returnDT,reason)

FK:RETURN.ProjectID—->PROJECT.ProjectID

RETURN.resourceID—->MATERIAL.resourceID

RETURN.PersonID—->PERSON.PersonID

Part B: superclass/subclass relationship

(1)Superclass : PERSON

Subclass: EMPLOYEE CUSTOMER CONTACT

This is a overlapping and partial relationship. Because 8B can be used only with total participation, so 8B is not a possible mapping. And 8C can only used with disjoint subclasses, therefore 8C is not a possible mapping method. And 8A can be used in any combination of situations. As a result, the mapping available are 8A and 8D.

I choose 8A, because 8D is not recommended it there are many attributes defined in the table.

(2)Superclass:EMPLOYEE
Subclass: TRADESPERSON

This is a disjoint and partial relationship. Because 8B can be used only with total participation, so 8B is not a possible mapping. And 8D is used only for overlapping subclasses in practice. As a result, the mapping available are 8A and 8C.

Because there will be only one attribute in TRADESPERSON table by using 8A and the table should be discard in this situation, so I use 8C to map this relationship.

(3) Superclass:CUSTOMER
Subclass: RESIDENTIAL CORPORATE

This is a disjoint and totally relationship. Since 8D is used only for overlapping subclasses in practice. As a result, the mapping available are 8A , 8B and 8C.

Because the table is more concise with 8A, so I choose 8A in this relationship.

(4) RESOURCE : SERVICE MATERIAL

This is a disjoint and partial relationship, which is similar to the EMPLOYEE: TRADESPERSON one. Therefore, the mapping available are 8A and 8C. And the table are more concise with 8A, so I choose 8A.

PART C:

(1)For Superclass/Subclass—PERSON : EMPLOYEE CUSTOMER
CONTACT

Questions: How many customers (including individual and corporate) does your company ever have ?

In this situation, it is difficult to get the answer with 8A. On the other hand, it is quite easy to get the answer by using 8D.

(2) For Superclass/Subclass—RESOURCE : SERVICE MATERIAL

Question:

What is the proportion of the amount of SERVICE and MATERIAL take in the RESOURCE?

In this situation, it is better to apply 8A when the proportion rather low, since it will make the table more concise. And 8C is a good choice when the proportion is rather high, because it can reduce the number of table.