

Practical 5 Solution - Relational modelling and normalisation

Exercise 1 (realisation of N:1 and N:M relationships)

1a)

N:1 relationship -> Primary key attribute of the 1-side goes as a foreign key attribute to the N-side.

PERSON

<u>PersonNo</u>	Name	FirstName	PLZ
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PLACE

<u>PLZ</u>	PName
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1b)

M:N relationship -> a new relation/table with primary key attributes of related entities inserted as foreign key attributes. Both foreign key attributes serve together as a primary key of the new relation

PERSON

<u>PersonNo</u>	Name	FirstName
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PLACE

<u>PLZ</u>	PName
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LIVES

<u>PersonNo</u>	<u>PLZ</u>
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Exercise 2 (multi-valued attributes, and relationships with degree $n > 2$)

Multi-valued attribute is realised with its own relation/table.

N-ary relationships are realised in its own relation (Step 7). Related entity types give their primary key attributes as foreign key attributes. These foreign key attributes define the new primary key of the new relation. Exception according to the transformation rules: If the cardinality constraints on any of the entity types E (i.e., "FUNCTION" in this example) participating in R is 1, then the primary key of the new relation should not include the foreign key attribute that references the relation corresponding to E. Therefore, the PARTICIPATE relation has a primary key over MatrNo and CouseNo.

STUDENT

<u>MatrNo</u>	Name	FirstName
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COURSE

<u>CourseNo</u>	CName
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COURSE_ROOM

<u>CourseNo</u>	<u>RName</u>
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FUNCTION

<u>FuncNo</u>	FuncName
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PARTICIPATES

<u>MatrNo</u>	<u>CourseNo</u>	FuncNo
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Exercise 3 (Weak entity types)

Weak entity types also become relations with foreign key attributes.

As weak entity type ROUTEPOINT's owner ROUTE is also a weak entity type, then ROUTE should be mapped before ROUTEPOINT to determine its primary key first.

PERSON

<u>MatrNo</u>	Name	FirstName
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ROUTE

<u>RID</u>	RName	<u>MatrNo</u>
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ROUTEPOINT

<u>RID</u>	<u>RPID</u>	<u>MatrNo</u>	DateTime	Shape
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Exercise 4

ARTIST

<u>name</u>	placeofbirth	dateofbirth	styledesc
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ARTWORK

<u>title</u>	year	price	name	typeofartid
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ARTGROUP

<u>artgroupid</u>	artgroupname
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CUSTOMER

<u>custid</u>	custname	dateofbirth	totamaount	addresstxt
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CLASSIFIES

<u>artgroupid</u>	<u>title</u>
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LIKESARTGROUP

<u>custid</u>	<u>artgroupid</u>
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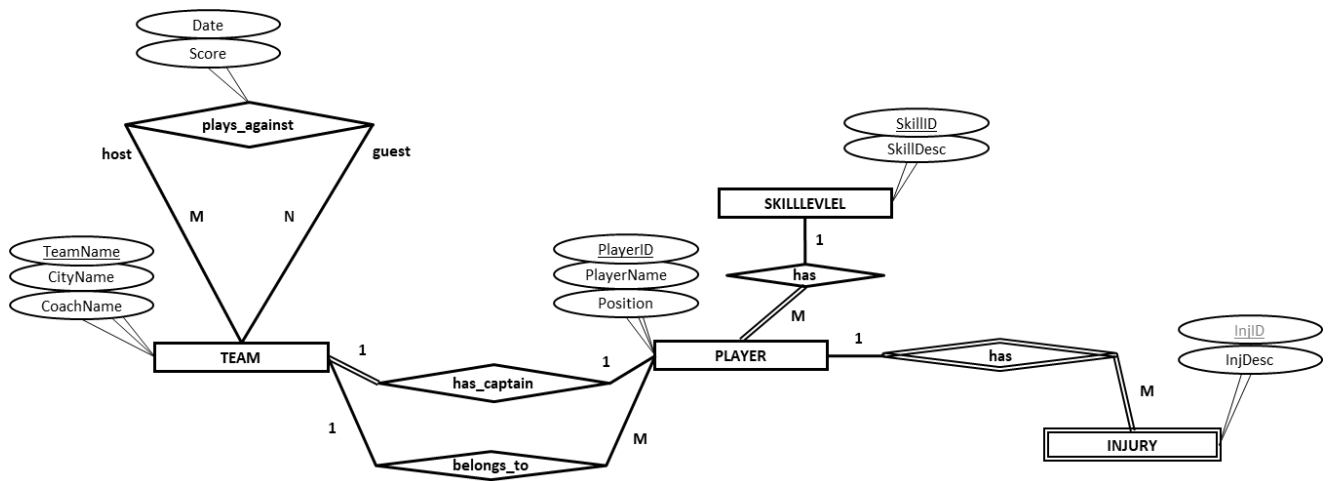
LIKESARTIST

<u>custid</u>	<u>name</u>
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TYPOFART

<u>typeofartid</u>	tyofadesc
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Exercise 5



TEAM

<u>teamname</u>	cityname	coachname	captainplayerid
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PLAYER

<u>playerid</u>	playername	position	skillid	teamname
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INJURY

<u>playerid</u>	<u>injid</u>	injdesc
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PLAYAGAINST

<u>hostteamname</u>	<u>guestteamname</u>	date	score
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SKILLEVEL

<u>skillid</u>	skilldesc
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