

%QUESTION 1

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%-----njoin on song, composed, and cd table%
songs:= {S.songCode, S.songTitle,C.cdCode, E.cdTitle,C.trackNumber | song(S) and composedOf(C) and
cd(E) and S.songCode = C.songCode and C.cdCode = E.cdCode};
%-----njoin on topSongs, writtenBy, and artist table with year born more than 1970 and song rating
in top 10%
songsWrittenBy:= {T.songCode, W.artistID, A.yearBorn | topSongs(T) and writtenBy(W) and artist(A) and
T.songCode = W.songCode and W.artistID = A.artistID and A.yearBorn > 1970 and T.rating < 11 };
%-----njoin on songs, and songsWrittenBy%
qQUESTION_1:= { F.songCode,T.songTitle, T.cdCode, T.cdTitle,T.trackNumber | songs(T) and
songsWrittenBy(F) and T.songCode = F.songCode };
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%QUESTION 2

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%-----finding the oldest artist by finding the minimum year born
minYearBorn:={ M | artist(M) and not (exists MIN)(artist(MIN) and MIN.yearBorn < M.yearBorn) };
%-----njoin on member, musical group and minYearBorn with toDate = 0
qQUESTION_2:={X.groupCode, Y.groupName, Z.artistID, Z.lastName, M.yearBorn | member(X) and
musicalGroup(Y) and artist(Z) and minYearBorn(M) and X.groupCode = Y.groupCode and X.artistID =
Z.artistID and Z.artistID = M.artistID and X.toDate = 0 };
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%QUESTION 3

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%-----setting up abTable(consisting of the groups that clients have rented cds from) and bTable
(consisting of detroit clients) for division
group:= {G.groupCode, G.groupName, C.cdCode | musicalGroup(G) and cd(C) and G.groupCode =
C.groupCode};
abTable:={G.groupCode, G.groupName, R.clientID | group(G) and rentedBy(R) and G.cdCode =
R.cdCode};
bTable:={A.clientID | client(A) and A.address = 'Detroit'};
%-----TRC Division
qQUESTION_3:={T.groupCode, T.groupName | abTable(T) and (forall B) (not bTable(B) or (exists AB)
(abTable(AB) and AB.groupCode = T.groupCode and AB.clientID = B.clientID)))};
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%QUESTION 4

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%-----All clients
allClients:={C.clientID, C.firstName, C.lastName | client(C)};
%-----All clients that have rented a number 1 rated CD
allClients1:={D.clientID, C.firstName, C.lastName | client(C) and rentedBy(D) and C.clientID = D.clientID
and (exists E)(topCDs(E) and D.cdCode = E.cdCode and E.rating < 2)};
%-----All clients minus all clients who have rented a number 1 rated CD
qQUESTION_4:= { T | allClients(T) and not allClients1(T)};
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%QUESTION 5

%-----all current members of every group

allCurrentMembers:= {G.groupCode,G.groupName, A.artistID, A.lastName | musicalGroup(G) and artist(A) and (exists T) (member(T) and G.groupCode = T.groupCode and T.artistID = A.artistID and T.toDate = 0)};

%-----repeated groups with current members

repeatedMembers:={C1 | allCurrentMembers(C1) and (exists C2) (allCurrentMembers(C2) and C1.groupCode=C2.groupCode and C1.artistID <> C2.artistID)};

%-----all groups with current members minus repeated groups with current members

qUESTION_5:={T | allCurrentMembers(T) and not repeatedMembers(T)};

Q1

songCode/char	songTitle/char	cdCode/char	cdTitle/char	trackNumber/numeric
'S4'	'I Have A Dream'	'C2'	'Sweet Dreams'	1
'S4'	'I Have A Dream'	'C13'	'Rain'	2
'S10'	'Fire'	'C5'	'Hot As Hell'	1
'S10'	'Fire'	'C18'	'Summer Fiesta'	2
'S12'	'Goldilocks'	'C6'	'Golden Hits'	1
'S14'	'Mamma Mia'	'C6'	'Golden Hits'	3
'S14'	'Mamma Mia'	'C20'	'Celebrate'	2
'S15'	'Broken'	'C7'	'Broken'	1
'S16'	'Life Or Death'	'C7'	'Broken'	2
'S17'	'Days Go By'	'C8'	'Golden Road'	1

Q2

groupCode/char	groupName/char	artistID/char	lastName/char	yearBorn/numeric
'G2'	'Sweet Symphony'	'A1'	'Friedman'	1,945
'G1'	'Deutsch Moss'	'A2'	'Helmut'	1,945
'G7'	'Backstreet Boys'	'A1'	'Friedman'	1,945
'G2'	'Sweet Symphony'	'A14'	'Chen'	1,945

Q3

groupCode/char	groupName/char
'G2'	'Sweet Symphony'
'G6'	'Beyond'

Q4

clientID/char	firstName/char	lastName/char
'Client1'	'James'	'Smith'
'Client2'	'Alen'	'Black'
'Client4'	'Mallisa'	'Johns'

Q5

groupCode/char	groupName/char	artistID/char	lastName/char
'G5'	'Keith Urban'	'A4'	'Agnelo'
'G6'	'Beyond'	'A10'	'Brown'
'G7'	'Backstreet Boys'	'A1'	'Friedman'