Assignment 2: Relational Algebra + SQL

1. Show the names and ID’s of all players whose play position is “center”.

select Name, ID

from Player

where PlayPos = ‘center’;

Π­Name, ID (σPlayPos = ‘Center’(Player))

1. Show the total points that player “Pistol Pete” has scored each year (assumer there is only one Pistol Pete).

select S.year, S.TotalPoints

from Stats S, Player P

where S.PlayerID = P.ID and P.name = ‘Pistol Pete’

group by S.year;

S.year GS.TotalPoints ΠS.year, S.TotalPoints(σS.PlayerID = P.ID ∧ P.name = ‘Pistol Pete’ (ρS(Stats) X ρP(Player))

1. Show the names of every player who has played a game at “The Pit” and won (Result = “win”)

select P.name

from Player P, Game, Play

where P.ID = Play.PlayerID and Play.GameID = Game.GameID

and Game.PlayingVenue = ‘The Pit’ and Game.Result = ‘win’;

ΠP.name (σP.ID = Play.PlayerID ∧ Play.GameID = Game.GameID ∧ Game.PlayingVenue = ‘The Pit’ ∧ Game.Result = ‘win’ (ρP(Player) X Game X Play))

1. Find the games that players named “Pistol Pete” and “Lobo Louie” have played in, using set operators (UNION, INTERSECT, MINUS, etc…). Show the game’s date, venue, and result.

(select Game.Date, Game.Venue, Game.Result

from Game, Player P, Play

where Play.PlayerID = P.ID and P.Name = ‘Pistol Pete’

and Play.GameID = Game.GameID)

intersect

(select Game.Date, Game.Venue, Game.Result

from Game, Player P, Play

where Play.PlayerID = P.ID and P.Name = ‘Pistol Pete’

and Play.GameID = Game.GameID);

ΠGame1.Date, Game1.Venue, Game1.Result (σ­Play1.PlayerID = P1.ID ∧ P1.Name = ‘Pistol Pete’

∧ Play1.GameID = Game1.GameID (Game X ρP1 (Player) X Play))

∩

ΠGame2.Date, Game2.Venue, Game2.Result (σ­Play2.PlayerID = P2.ID ∧ P2.Name = ‘Lobo Louie’

∧ Play2.GameID = Game2.GameID (Game X ρP2 (Player) X Play))

1. Find the names and IDs of players who have scored more points than the average player

select P.name, P.ID

from Player P, Stats S

where P.ID = S.PlayerID and S.TotalPoints > (select avg(TotalPoints)

from Stats);

Temp 🡨 Gavg(TotalPoints)(Stats)

ΠP.name, P.ID (σP.ID = S.PlayerID ∧ S.TotalPoints > Temp(ρP (Player) X ρS (Stats)))

**Part 2:**

1. Show the names of members who borrowed books with title “Math”

select M.name

from members M, books, borrowed BR

where M.memb\_no = BR.memb\_no and BR.isbn = books.isbn and books.title = 'Math';

1. Show the details of members whose name does not start with ‘J’.

select \*

from members

where not (name like 'J%');

1. Find the numbers of books borrowed by each member and show them in descending order

select M.memb\_no, count(B.isbn)

from members M, books B, borrowed BR

where M.memb\_no = BR.memb\_no and B.isbn = BR.isbn

group by M.memb\_no

order by M.memb\_no desc;

1. Show the details of members whose name contains ‘A’.

select \*

from members

where name like '%A%';

1. Find the distinct publisher name of the book which has been borrowed by “Sam”.

select distinct (books.publisher)

from books, members M, borrowed BR

where M.name = 'Sam' and M.memb\_no = BR.memb\_no

and BR.isbn = books.isbn;