0.1 Comparison of Algebra and SQL

Operation	Algebra	SQL
union	$S1 \bigcup S2$	SELECT * FROM S1 UNION SELECT * FROM S2
intersection	$S1 \bigcap S2$ (key S1 = S1.S#) (key S2 = S2.S#)	SELECT * FROM S1 WHERE S1.S# IN (SELECT S2.S# FROM S2)
difference	$S1 - S2$	SELECT * FROM S1 WHERE S1.S# NOT IN (SELECT S2.S# FROM S2)
product	$S1 \times S2$	SELECT * FROM S1,S2
self -product	$S \times S$ (S2 alias for S, S3 alias for S)	SELECT * FROM S S2, S S3
select	$\sigma_{NAME='JONES' \cdots}$ $\cdots \wedge_{ADDRESS='CARDIFF'} S$	SELECT * FROM S WHERE S.NAME = 'JONES' AND S.ADDRESS = 'CARDIFF'
project	$\pi_{S\#,ADDRESS} S$	SELECT S#,ADDRESS FROM S
natural join	$S * SP$	SELECT * FROM S,SP WHERE S.S# = SP.S#
divide	$\pi_{S\#,P\#} SP / \pi_{P\#} P$	SELECT S# FROM S WHERE NOT EXISTS (SELECT * FROM P WHERE NOT EXISTS (SELECT * FROM SP WHERE SP.P# = P.P# AND SP.S# = S.S#))

Notes: all SQL queries end in ; strictly
union, intersection, difference require union-compatible relations

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