**Assume the following schema about World War II ships.**

Classes(class, type, country, numGuns, bore, displacement) (*classes of ships e.g. battleship or*

*battlecruiser*)

Ships(name, class, launched)

Battles(name, date)

Outcomes(ship, battle, result)

Write the following queries in both SQL and RA.

1. Find the names of the ships whose number of guns was the largest for those ships of the same bore

SQL:

SELECT s1.name

FROM Ships s1, Classes c1, (SELECT MAX(c2.numGuns), c2.bore

FROM Ships s2, Classes c2,

WHERE s2.class = c2.class

GROUP BY c2.bore) AS temp

WHERE s1.class = c1.class AND c1.bore = temp.bore AND c1.numGuns = temp.numGuns

RA:

(temp, γMAX(numGuns),bore (Ships Classes))



name(Ships Classestemp)



1. Find for each class with at least three ships, the number of ships of that class sunk in battle.

SQL:

SELECT COUNT(s.name)

FROM Ships s1, Outcomes o, (SELECT c.class

FROM Ships s2, Classes c2

WHERE s2.class = c2.class

GROUP BY c2.class

HAVING COUNT(s2.name) >= 3) AS temp

WHERE o.result = ‘sunk’ AND o.ship = s1.name AND s1.class = temp.class

GROUP BY s1.class

RA:

(temp, γCOUNT(name) >= 3,class (Ships  Classes))

count (γCOUNT(name) ,class (result=’sunk’ (Outcome  Ships temp)))