Q_1: $\pi_{sid, sname, age}\left(\sigma_{age > 35}(S_1)\right)$

sid	sname	rating	age
22	dustin	7	45.0
31	lubber	8	55.5

sid	sname	age
22	dustin	45.0
31	lubber	55.5

Q_2 $\pi_{sname, rating}\left(\sigma_{S_1.sid > R_1.sid}(S_1 \times R_1)\right)$

S1.sid	sname	rating	age	R1.sid	bid	day
~~22~~	~~dustin~~	~~7~~	~~45.0~~	22	101	~~10/10/96~~
~~22~~	~~dustin~~	~~7~~	~~45.0~~	58	103	~~11/12/96~~
31	lubber	8	55.5	22	101	10/10/96
~~31~~	~~lubber~~	~~8~~	~~55.5~~	~~58~~	~~103~~	~~11/12/96~~
58	rusty	10	35.0	22	101	10/10/96
58	rusty	10	35.0	58	103	11/12/96

sname	rating
lubber	8
rusty	10

Q_3 : $\pi_{sid, bname}(\sigma_{bid}(R_1 \times B_1))$

sid	bid	day	bname	color
22	101	10/10/96	tiger	red
58	103	11/12/96	lion	green

sid	bname
22	tiger
58	lion

Q_4 :

① $\pi_{sname, rating, age, bname, color}(((S_1 \cup S_2) \bowtie_{sid} R_1) \bowtie_{bid} \sigma_{color='red'} B_1)$

② $\pi_{sname, rating, age, bname, color}(\sigma_{bid}(\sigma_{sid}((S_1 \cup S_2) \times R_1) \times (\sigma_{color='red'} B_1)))$

③ $\sigma_{sid}((S_1 \cup S_2) \times \pi_{sid, bid, bname, color}(\sigma_{bid}(R_1 \times (\sigma_{color='red'} B_1))))$

$Q_5 : \pi_{sid}(\pi_{sid, sname} S_2) - \pi_{sid}\left(\left(\pi_{sid}(\pi_{sid, sname} S_2) \times \pi_{sname}(\sigma_{rating>7} S1)\right) - \pi_{sid, sname} S_2\right)$

sid	sname
28	yuppy
31	lubber
44	guppy
58	rusty

sid
28
31
44
58

sname
[redacted]
lubber
rusty

sid	sname
28	yuppy
31	lubber
44	guppy
58	rusty

sid	sname
28	lubber
28	rusty
31	lubber
31	rusty
44	lubber
44	rusty
58	lubber
58	rusty

sid
28
31
44
58

sid	sname
28	lubber
28	rusty
31	rusty
44	lubber
44	rusty
58	lubber

sid
28
31
44
58

null

original $= (\pi_{sid, sname} S_2) \div (\sigma_{rating>7} S1)$