

CS340: Introduction to Databases
 Assignment 3: Final Solutions
 Eddie C. Fox

Question 1:

π (flight-number(flight), airline(flight), amount(fare),
 scheduled-departure-time(flight-leg)) (σ leg-number(~~flight-leg~~)
 = 1 (flight-leg) \sqsupset (~~flight~~) \bowtie flight.flight-number =
 fare.flight-number (fare) \bowtie flight-leg.flight-number =
 flight.flight-number (flight-leg))

select symbol

Question 2:

Departure \leftarrow (σ flight-leg.leg-number = 1 (flight-leg))

Arrival \leftarrow (σ flight-leg.leg-number = 3 (flight-leg))

departure-airports \leftarrow (π (flight-number, departure-airport-code)
 (Departure))

arrival-airports \leftarrow (π (flight-number, arrival-airport-code) (Arrival))

~~Result \leftarrow (π (flight-number(flight), departure-airport-code(
 departure-airports), arrival-airport-code (arrival-airports))~~

Result \leftarrow (π ((flight-number, departure-airport-code, arrival-airport-code)
 ((flight) \bowtie flight.flight-number = departure-airports.flight-number (
 departure-airports)) \bowtie flight.flight-number = arrival-airports.flight-number
 (arrival-airports))

Question 3:

lands-in-km14i \leftarrow (π (flight-number(flight-leg), departure-airport-code(flight-leg)) (σ ~~leg-number = 1~~ AND arrival-airport-code(flight-leg) = 'PHOG'))

Result \leftarrow (π (~~amount~~(fare), departure-airport-code(flight-leg))
($[\sigma$ leg-number = 1 (flight-leg)] (flight \bowtie flight.flight-number
= flight-leg.flight-number(flight-leg)) ~~\bowtie ~~fare~~ flight.flight-number
= fare.flight-number(fare))))~~

Question 4:

π (total-number-of-seats(airplane)) ($[\sigma$ date = '3/12/2014'
(leg-instance) AND leg-number = 2 (leg-instance)
(leg-instance) \bowtie airplane-id(leg-instance) = airplane-id(airplane)
(airplane))

~~Question 5: π (foo(a), bar(b), baz(c)) ((foo) \bowtie
id(bar) = id bar(id) = foo(bar-id) (bar)) \bowtie (~~baz~~
~~baz(id) = foo(baz-id) (baz)~~)~~

Question 5 on other page.

Question 5: $\pi(\text{foo}(a), \text{bar}(b), \text{baz}(c)) ([\sigma^{\text{letter}(c)} \text{th.s.says bar} \downarrow]$
 $\text{foo} = \text{SD}(z) [(\text{foo}) \wedge \text{bar}(id) = \text{foo}(\text{bar-id}) (\text{bar})]$
 $\wedge \text{baz}(id) = \text{foo}(\text{baz-id})(\text{baz})])$