Solution of Tutorial 8

1. a. 7

   b. How many author are not book editors

   c. $\pi_{first\_name,last\_name}(author \bowtie_{author\_id=editor} book)$

   d. $\pi_{first\_name,last\_name}((\pi_{author\_id}(author) - \pi_{editor}(book)) * author)$

   e. $\pi_{first\_name,last\_name}(author * author\_pub)$

   f. 11

   g. Which authors authored a pub that was published in July?

2. {X2 Y2 Z2 Y2 V2} will be the only tuple that satisfies the given

query πx(σ(P.Y = R.Y ∧ R.V = V(P X R))), its output will be {X2}

Three tuples {X1 Y2 5 Y2 V3} , {X1 Y2 5 Y2 V2} , {X1 Y1 6

Y1 V1} will satisfy the query

πx(σ(Q.Y = R.Y ∧ Q.T > 2(Q X R))), so Its output will be {X1}

πx(σ(P.Y = R.Y ∧ R.V = V(P X R))) - πx(σ(Q.Y = R.Y ∧ Q.T > 2(Q X R)))

= {X2} – {X1}

= {X2}

So number of tuples returned = 1

3.

A	B	C
1	5	7
3	7	NULL
4	NULL	9

This will be the resultant Relation R. So, option C is the correct answer.

4.

$$\Pi_{empId}(employee) - \Pi_{empId}(employee \bowtie_{(empId = eID) \wedge (empAge \leq depAge)} dependent)$$

5.

a. (σ fdate = 01/12/2020 ^ time = 16:00 (flight)) ∪ (σ fdate = 02/12/2020 ^ time =16:00 (flight))

b. Πaname (agency ⋈ (Πaid (agency) – Πaid (σ pid = 123 (booking)))

c. Πrname ((Πpid (passenger) - Πpid (booking)) ⋈ passenger)

6. Option A