Relational algebraic symbols: σ, π, ρ, γ, **δ,** ⋈, 🡨, ∩, **∪,** τ

1:

τtourname, fullname(πtraveldate, firstname || ‘ ‘ || lastname as fullname, age, tourname  (σC.age > 65(C) ⋈C.customerID = RT.customerID RT ⋈RT.tourID = T.tourID σT.vehicletype = ‘boat’(T)))

2:

γtitle, count(licensetype) as mismatches (σlicensetype = ‘land’ and vehicletype = ‘boat’ or licensetype = ‘sea’ and vehicletype = ‘bus’ or licensetype = ‘sea’ and vehicletype = ‘car’ (T ⋈ T.tourID = RT.tourID RT ⋈ RT.guideID = G.guideID G))

3:

NG 🡨 NewGuide (newGuideID PK, firstName, lastName, driverLicense, title, salary, licenseType)

γG.title, sum(G.salary) (G) **∪** γNG.title, sum(NG.salary) (NG)

4:

J1 🡨 γC.customerID, C.firstame, C.lastname πcount(L.locationID) as Visits, C.firstame, C.lastname, C.customerID(L ⋈L.tourID = RT.tourID ­RT ⋈RT.customerID = C.customerID  C)

J2 🡨 πmax(Visits)(J1)

γC.firstname, C.lastname, count(L.locationID) as Visits σcount(L.locationID = J2 (L ⋈L.tourID = RT.tourID ­RT ⋈RT.customerID = C.customerID  C)

5:

πwarehouseCode, city (σnumberOfBooks < 10 (S) ⋈S.ISBN = SF.ISBN σpublisherName = ‘Wiley’ (SF))

Part 2:

1.

|  |  |  |  |
| --- | --- | --- | --- |
| **T** | **A** | **B** | **Q** |
| 6 | 6 | 4 | David |
| 3 | 3 | 1 | Tom |
| 3 | 3 | 2 | Susan |

2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **A** | **B** | **Q** | **Z** | **G** | **H** |
| 2 | 3 | 4 | α | 2 | 1 |
| 2 | 5 | 10 | α | 2 | 1 |
| 8 | 2 | 3 | β | 3 | 3 |