Assignment 2B Task-1

Nidhi Chowdary Gadde

ID: 34228683

project: π, select: σ, join: ⋈, intersect: ∩, union: ∪, minus: **TASK**

1: Relational Database Queries - Relational Algebra

(a) List the id and description of all items which have never been used in any appointment service.

Ans a)

- Required item id and item description from all items

  ➔ A1a = $\boldsymbol{\pi}_{item\_id,item\_desc}$ (ITEM)

- Required item_id used in apptservice_item

  ➔ A1b = $\boldsymbol{\pi}_{item\_id}$(APPTSERVICE_ITEM)

- Required item_id with appointment service

  ➔ A1c = A1a ⋈ A1b

- All items MINUS appointment service

  ➔ A1d = A1a - A1c

R = A1d

(b) List the patient number, patient first name, patient last name, emergency contact first name, emergency contact last name and emergency contact phone number of all patients who live in a city named Mooroolbark and had appointment/s on 08 September 2023.

Ans b)

- Required patient number, patient first name, patient last name, patient city from PATIENT

  ➔ A2a = $\boldsymbol{\pi}_{\text{patient\_no,patient\_fname,patient\_lname,ec\_id}}$ ($\boldsymbol{\sigma}_{\text{patient\_city}}$ = Mooroolbark (PATIENT))

- Required emergency contact firstname, emergency contact lastname, emergency contact phone from EMERGENCY_CONTACT

  ➔ A2b = $\boldsymbol{\pi}_{\text{ec\_fname,ec\_lname,ec\_id}}$ ($\boldsymbol{\sigma}_{\text{ec\_phone}}$ (EMERGENCY_CONTACT))

- Then we combine A2a and A2b

  ➔ A2c = A2a ⋈ A2b

- Taking what we require from A2c

  ➔ A2d = $\boldsymbol{\pi}_{\text{patient\_no,patient\_fname,patient\_lname,ec\_fname,ec\_lname,ec\_phone}}$(A2c)

- Required appointment datetime from APPOINTMENT.

  ➔ A2e = $\boldsymbol{\pi}_{\text{patient\_no}}$ ($\boldsymbol{\sigma}_{\text{appt\_datetime}}$ = 08/SEP/2023(APPOINTMENT))

R = A2d ⋈ A2e

(c) List the number, first name, last name and email address of all patients who have been attended by endodontists (i.e. providers who specialise in ENDODONTICS).

Ans c)

- Required patient details from PATIENT

  ➔ A3a = $\boldsymbol{\pi}_{\text{patient\_no,patient\_fname,patient\_lname,patient\_contactemail}}$ (PATIENT)

- Required patient number and provider code from APPOINTMENT

  ➔ A3b = $\boldsymbol{\pi}_{\text{patient\_no,provider\_code}}$(APPOINTMENT)

- Then combining A3a and A3b

  ➔ A3c = A3a ⋈ A3b

- Required provider code and specialisation id from PROVIDER

  ➔ A3d = $\boldsymbol{\pi}_{\text{provider\_code,spec\_id}}$ (PROVIDER)

- Required specialisation id, specialisation name = ENDODONTICS from SPECIALISATION

➔ A3e = π_{spec_id} (σ_{spec_name} = 'ENDODONTICS'(SPECIALISATION))

❖ Now combine A3d and A3e

➔ A3f = A3d ⋈ A3e

❖ Now combine A3c and A3f

➔ A3g = A3c ⋈ A3f

R = $\pi_{patient\_no,patient\_fname,patient\_lname,patient\_contactemail}$ (A3g)