2025 CpSc H Q12

Section: Database Design and Development
Topic: Implementation Using SQL

Question Summary

Use the sample tables (Customer, Appointment, Photographer, Invoice) to: (a) design a query counting appointments per photographer in July 2025; (b) write an UPDATE to add £20 to the cost of unpaid invoices before 31-03-2025; (c) identify three errors in a given SQL intended to list the highest cost per photographer.

Worked Solution

(a) Query design (appointments per photographer in July 2025)

Field(s) and calculation(s)	FullName: CONCAT(Photographer.fName, ' ', Photographer.s NumAppointments: COUNT(*)
Table(s)	Appointment, Photographer
Search criteria	Appointment.appDate BETWEEN '2025-07-01' AND '2025-0
Grouping	GROUP BY Photographer.staffID, Photographer.fName, Photo
Sort order	ORDER BY NumAppointments DESC

Example SQL (for reference):

```
SELECT CONCAT(p.fName, ' ', p.sName) AS FullName,
COUNT(*) AS NumAppointments
FROM Appointment a
JOIN Photographer p ON p.staffID = a.staffID
WHERE a.appDate BETWEEN DATE '2025-07-01' AND DATE '2025-07-31'
GROUP BY p.staffID, p.fName, p.sName
ORDER BY NumAppointments DESC;
```

(b) Update statement

```
UPDATE Invoice
SET cost = cost + 20
WHERE invoiceDate < DATE '2025-03-31'
AND status = 'Unpaid';
```

This adds £20 only to invoices dated before 31-03-2025 that are still Unpaid.

(c) Three errors in the provided SQL

Error 1	**The FROM clause omits the Appointment table, yet the WHERE references A**
Error 2	**Missing required joins: Invoice → Appointment (on appID) and Appointment**
Error 3	**Selecting non-aggregated columns (fName, sName) with MAX(cost) require**

Corrected SQL (for reference):

```
SELECT p.fName, p.sName, MAX(i.cost) AS "Highest cost"
FROM Photographer p
JOIN Appointment a ON a.staffID = p.staffID
JOIN Invoice i ON i.appID = a.appID
GROUP BY p.fName, p.sName
ORDER BY "Highest cost" DESC;
```

Final Answer

(a) Fields: FullName (fName||' '||sName), NumAppointments COUNT(*). Tables: Appointment, Photographer. Criteria: appDate between 01-07-2025 and 31-07-2025. Grouping by staffID/fName/sName. Sort by NumAppointments DESC.
(b) UPDATE Invoice SET cost = cost + 20 WHERE invoiceDate < DATE '2025-03-31' AND status = 'Unpaid';
(c) Errors: Appointment not listed in FROM; missing joins to relate tables; missing GROUP BY for fName, sName (and ORDER BY should use the alias after grouping).

Revision Tips

- **Apply WHERE before GROUP BY; ORDER BY comes last.**
- **Join through the foreign-key chain (Photographer ↔ Appointment ↔ Invoice).**
- **Use ISO dates (YYYY-MM-DD) to avoid locale issues.**