2024 CpSc Q13

Section: Database Design and Development

Topic: SQL — UPDATE, DELETE, GROUP BY with Aggregate and ORDER BY

Question Summary

(a) Increase the quantity of oranges in stock by 20 with a single SQL statement.
(b) Remove details of all private sellers from the database (supplierRef begins with 'P').
(c) Show the largest profit for each type (Fruit, Veg), listing the largest first. Profit = sellingPrice − buyingPrice. Output: type, Profit.

Worked Solution

(a) From the sample data, the oranges row uses itemName = 'Orange'. We add 20 to the current quantity:

```
UPDATE Item
SET quantity = quantity + 20
WHERE itemName = 'Orange';
```

(b) Private sellers have supplierRef starting with ‘P’. Remove all such suppliers:

```
DELETE FROM Supplier
WHERE supplierRef LIKE 'P%';
```

Note: In a real system with foreign-key constraints, you would handle dependent Item rows (e.g., ON DELETE RESTRICT/CASCADE). For this question, only the supplier details are removed.

(c) We need the largest profit per type and the largest listed first. Use MAX() of the profit expression, group by type, then order by the calculated alias descending:
SELECT type, MAX(sellingPrice - buyingPrice) AS Profit
FROM Item
GROUP BY type
ORDER BY Profit DESC;

Final Answer

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(a) UPDATE Item SET quantity = quantity + 20 WHERE itemName = 'Orange';
(b) DELETE FROM Supplier WHERE supplierRef LIKE 'P%';
(c) SELECT type, MAX(sellingPrice - buyingPrice) AS Profit FROM Item GROUP BY type ORDER BY Profit DESC;

Revision Tips

- UPDATE can modify a value based on its current value: quantity = quantity + 20.
- Use LIKE 'P%' to match any supplierRef that begins with ‘P’.
- Aggregate with MAX() and group by the category column (type).
- Use ORDER BY the alias (e.g., Profit) to sort by the calculated column.

Exam Alignment

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Matches the 2024 MI: (a) updates the oranges quantity correctly; (b) deletes suppliers whose supplierRef starts

with 'P'; (c) returns the largest profit per type using MAX(sellingPrice - buyingPrice), grouped by type and sorted descending.