Assignment 2 Points: Total 100 points

Qu1: 30 points

Qu2: 30 points

Qu3: 40 points

Common Mistakes:

I graded homework, paid particular attention to Qu1 and Qu3(a)

Qu3 (a) has the most mistakes

I tested using Budget 2000, speed 2, the output should be “1007” and “3001” if your database table content is the same as in the Assignment.

If your program output is “1007” and “3001” does not mean that your program has no problem. The question statement says “the cheapest system” and “color printer if possible”.

So the output should be CHEAPEST pair(s) of (pc_model, printer_model), not all the systems within the budget, NOT all pairs within the budget.

For “color printer if possible”, the program should not ask the user explicitly for an input of “Yes/No” for the option of printer colors.

In this Assignment data, the cheapest printer is a color printer and some program only work in this case; when the cheapest printer is not a color printer, then the program breaks.

Student Sample Solution

Disclaimer: The following solutions are from students. These might not be perfect solutions. And more than one solution for some questions is acceptable.

Qu1

```
SQL> SELECT DISTINCT l.maker FROM product l WHERE l.type = 'laptop' AND
l.maker NOT IN (SELECT c.maker FROM product c WHERE c.type = 'pc');

MAKER
-----
F
G

SQL> SELECT c1.model, c2.model FROM pc c1, pc c2 WHERE c1.speed = c2.speed
AND c1.ram = c2.ram AND c1.model < c2.model;

     MODEL      MODEL
---------- ----------
      1004       1012

SQL> SELECT DISTINCT p.maker FROM product p WHERE model IN (SELECT s1.model
FROM (SELECT l1.model, l1.speed FROM laptop l1 UNION SELECT p1.model,
p1.speed FROM pc p1) s1 WHERE s1.speed = (SELECT max(s2.speed) FROM (SELECT
l2.model, l2.speed FROM laptop l2 UNION SELECT p2.model, p2.speed FROM pc p2)
s2));

MAKER
-----
B

SQL> SELECT AVG(s.price) FROM product p, (SELECT c.model, c.price FROM pc c
UNION SELECT l.model, l.price FROM laptop l) s WHERE p.model = s.model and
p.maker = 'D';

AVG(S.PRICE)
------------
         730

SQL> SELECT speed, AVG(price) FROM pc WHERE speed > 2.0 GROUP BY speed;

     SPEED AVG(PRICE)
---------- ----------
       2.2        640
       2.8 689.333333
       3.2      839.5
      2.66       2114
       2.1        995
      3.06        529

6 rows selected.

SQL> SELECT AVG(c.hd) FROM product p1, pc c WHERE p1.maker IN (SELECT
DISTINCT p.maker FROM product p, printer r WHERE p.model = r.model) AND
p1.model = c.model;
```

```
 AVG(C.HD)
----------
       200

SQL> spool off
```

Qu2:

```
CREATE ASSERTION duplicate
CHECK (NOT EXISTS(
      SELECT DISTINCT maker FROM product p WHERE p.type='PC' AND p.maker IN
(SELECT p2.maker FROM product p2 WHERE p2.type='Laptop')
      )
);


CREATE ASSERTION  priceCheck
CHECK (NOT EXISTS(
SELECT l.model,l.ram,l.price,pc.model,pc.ram,pc.price FROM PC, Laptop l WHERE
l.ram > pc.ram AND l.price <= pc.price
      )
);


CREATE OR REPLACE TRIGGER check1 BEFORE UPDATE OF ram,hd ON PC FOR EACH ROW
BEGIN
    IF (:new.hd < 100*:new.ram/1000) THEN
        RAISE_APPLICATION_ERROR(-20000, 'PC has at least 100 times as much
hard disk as RAM');
    END IF;
END check1
```