

Muhammad Arham Khan
21701848
CS353 – Section 2
Homework

Q1)

a)

```
SELECT Product.model, Printer.price
FROM Product
INNER JOIN Printer
ON Product.model = Printer.model
WHERE Printer.color = true;
```

b)

```
SELECT Product.maker
FROM Product
Where type = 'PC' OR type = 'Laptop'
AND Product.maker NOT IN
  (SELECT Product.maker
   FROM Product
   Where type = 'Printer');
```

c)

```
SELECT Product.model, Laptop.price
FROM Product
INNER JOIN Laptop
ON Product.model = Laptop.model
WHERE Laptop.hd > 120 AND Laptop.ram >= 1024 AND Laptop.screen >= 17.0;
```

d)

```
SELECT A.maker
FROM Product A, Product B
WHERE A.model IN (SELECT model FROM PC
                  WHERE speed >= 2.5)
AND A.maker <> B.maker
AND A.model = B.model
AND A.maker < B.maker;
```

e)

i.

```
SELECT DISTINCT A.model
FROM Product A, Product B, Product C
WHERE A.type = 'PC'
AND B.type = 'PC'
AND C.type = 'PC'
AND A.model = B.model
AND B.model = C.model
```

```
AND A.model = C.model  
AND A.maker <> B.maker  
AND B.maker <> C.maker  
AND A.maker <> C.maker;
```

ii.

```
SELECT model  
FROM Product  
WHERE type = 'PC'  
GROUP BY model  
HAVING COUNT(DISTINCT maker) > 2;
```

f)

```
SELECT DISTINCT maker  
FROM Product A  
WHERE (  
    SELECT COUNT(*)  
    FROM Laptop L  
    INNER JOIN Product P  
    ON P.model = L.model  
    WHERE P.maker = A.maker  
    AND speed >= 2.50  
) = (  
    SELECT COUNT(*)  
    FROM Product  
    WHERE maker = A.maker  
    AND type = 'Laptop'  
) AND (  
    SELECT COUNT(*)  
    FROM PC L  
    INNER JOIN Product P  
    ON P.model = L.model  
    WHERE P.maker = A.maker  
    AND speed >= 2.50  
) = (  
    SELECT COUNT(*)  
    FROM Product  
    WHERE maker = A.maker  
    AND type = 'PC'  
) AND (  
    SELECT COUNT(*)  
    FROM Product  
    WHERE maker = A.maker  
    AND type = 'Printer'  
) <> (  
    SELECT COUNT(*)  
    FROM Product
```

```
WHERE maker = A.maker  
);
```

g)

i.

```
SELECT DISTINCT A.maker  
FROM Product A, Product B, Product C, Product D  
WHERE (A.maker = B.maker  
AND A.maker = C.maker)  
AND NOT A.maker = D.maker  
AND A.type = 'Laptop'  
AND B.type = 'PC'  
AND C.type = 'Printer';
```

ii.

```
SELECT DISTINCT A.maker  
FROM Product A, Product B, Product C  
WHERE A.maker = B.maker  
AND A.maker = C.maker  
AND A.type = 'Laptop'  
AND B.type = 'PC'  
AND C.type = 'Printer'  
AND (( SELECT COUNT(*)  
FROM Product  
WHERE maker = A.maker) = 3);
```

h)

i.

```
SELECT maker  
FROM Product  
INNER JOIN Laptop  
ON Laptop.model = Product.model  
WHERE Laptop.speed = (SELECT MAX(speed)  
FROM Laptop);
```

ii.

```
SELECT maker  
FROM Product  
INNER JOIN Laptop  
ON Laptop.model = Product.model  
WHERE Laptop.speed = (SELECT MAX(speed)  
FROM Laptop);
```

i)

```
SELECT A.model, B.model  
FROM Laptop A, Laptop B  
WHERE A.model <> B.model
```

```

AND A.model < B.model
AND A.speed = B.speed
AND A.ram = B.ram
AND A.screen = B.screen;

```

Q2)

a) This query is used to query a list of ships that were damaged or sunk, the respective battle they were damaged in and the battle result and the country of battle.

b)

```

SELECT O.ship, O.battle, O.result, C.country
FROM OUTCOMES O, SHIPS S, CLASSES C
WHERE O.ship = S.name AND S.class = C.class
AND (
    O.RESULT = "sunk" OR
    O.RESULT = "damaged"

```

);

c) This query is used to find the country, name, type and name of the ships that had participated in a battle provided

d)

```

CREATE TABLE result
SELECT O.ship as name
From Outcomes O
WHERE O.battle NOT IN(
    (
        SELECT O1.battle from Outcomes O1)
    ) EXCEPT (
        SELECT O2.battle FROM Outcomes O2
        WHERE O2.ship = O.ship
    )
);

```

```

SELECT S.name, C.country, C.type
FROM Result R, Ship S, Classes C
WHERE R.name = S.name;

```

Q3)

a)

```

DELETE FROM Laptop
WHERE ram <= 1024;

```

b) Assuming that we have to delete the manufacturers that produce Printers only, the query would be:

```

DELETE FROM Printer
WHERE Model IN (
    SELECT Model
    FROM Product
    WHERE maker NOT IN (

```

```
SELECT maker  
FROM Product  
WHERE Product.type = "PC" OR  
Product.type = 'Laptop'
```

```
)
```

```
)
```

```
);
```

```
c) UPDATE Laptop  
SET ram = 2 * ram, price = price - 100, hd = 2 * hd  
WHERE model IN  
(SELECT model  
FROM Product  
WHERE maker = "IMB" );
```

```
d) DELETE FROM SHIPS  
WHERE name IN  
(SELECT ship  
FROM Outcome  
WHERE result= 'sunk');
```