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1  -- UNIVERSITY OF MASSACHUSETTS - LOWELL
2  -- COMP3090: DATABASE I
3  -- STUDENT: PHONG VO - SID: 01790283
4  -- HOMEWORK 5
5  -----
6  -- Product(maker, model, type) |
7  -- PC(model, speed, ram, hd, price) |
8  -- Laptop(model, speed, ram, hd, screen, price) |
9  -- Printer(model, color, type, price) |
10 -----
11
12 -- a) Find the average speed of PC's.
13 SELECT AVG(speed) AS Average_PC_Speed
14 FROM pc;
15 -----+
16 -- | Average_PC_Speed |
17 -- +-----+
18 -- | 2.4846153809474063 |
19 -- +-----+
20
21 -- b) Find the average speed of laptops costing over $1000.
22 SELECT AVG(speed) AS Avg_Speed_laptop_over1K
23 FROM laptop
24 WHERE price > 1000;
25 -----+
26 -- | Avg_Speed_laptop_over1K |
27 -- +-----+
28 -- | 1.9983333547910054 |
29 -- +-----+
30
31 -- c) Find the average price of PC's made by manufacturer "A"
32 SELECT AVG(price) AS Avg_Price_PC_A
33 FROM pc
34 WHERE model IN (SELECT model
35                 FROM product
36                 WHERE maker='A');
37 -- or
38 SELECT AVG(price) AS Avg_Price_PC_A
39 FROM pc, product
40 WHERE pc.model=product.model AND product.maker='A';
41 -----+
42 -- | Avg_Price_PC_A |
43 -- +-----+
44 -- | 1195.6666666666667 |
45 -- +-----+
46
47 -- ! d) Find the average price of PC's and laptops made by manufacturer "D"
48 SELECT AVG(price) AS PCLaptop_Avg_Price_By_D
49 FROM (SELECT model, price FROM pc
50       UNION
51       SELECT model, price FROM laptop) pclaptop
52 WHERE pclaptop.model IN (SELECT model
53                         FROM product
54                         WHERE maker='D')
55 ;
56 -- or
57 SELECT AVG(price) AS PCLaptop_Avg_Price_By_D
58 FROM (SELECT model, price FROM pc
59       UNION
60       SELECT model, price FROM laptop) pclaptop, product p
61 WHERE p.model=pclaptop.model AND p.maker='D'
62 ;
63 -----+
64 -- | PCLaptop_Avg_Price_By_D |
65 -- +-----+
66 -- | 730 |
67 -- +-----+

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68
69 -- e) Find, for each different speed, the average price of a PC.
70 SELECT speed, AVG(price) AS PC_Average_Price
71 FROM pc
72 GROUP BY speed;
73 -- +-----+-----+
74 -- | speed | PC_Average_Price |
75 -- +-----+-----+
76 -- | 1.42 | 478 |
77 -- | 1.86 | 959 |
78 -- | 2 | 650 |
79 -- | 2.1 | 995 |
80 -- | 2.2 | 640 |
81 -- | 2.66 | 2114 |
82 -- | 2.8 | 689.3333333333334 |
83 -- | 3.06 | 529 |
84 -- | 3.2 | 839.5 |
85 -- +-----+-----+
86
87 -- ! f) Find for each manufacturer, the average screen size of its laptops.
88 SELECT maker, AVG(screen) AS Average_Screen_Size
89 FROM product p, laptop l
90 WHERE l.model IN (SELECT p.model
91 FROM product)
92 GROUP BY maker;
93 -- or
94 SELECT maker, AVG(screen) AS Average_Screen_Size
95 FROM product, laptop
96 WHERE product.model = laptop.model
97 GROUP BY maker;
98 -- +-----+-----+
99 -- | maker | Average_Screen_Size |
100 -- +-----+-----+
101 -- | A | 15.233333269755045 |
102 -- | B | 13.300000190734863 |
103 -- | E | 17.5 |
104 -- | F | 14.75 |
105 -- | G | 15.3999999618530273 |
106 -- +-----+-----+
107
108 -- ! g) Find the manufacturers that make at least three different models of PC.
109 SELECT maker AS PC_Makers
110 FROM product
111 WHERE type='pc'
112 GROUP BY maker
113 HAVING COUNT(maker) >=3;
114 -- or
115 SELECT maker AS PC_Makers
116 FROM product
117 WHERE model IN (SELECT model FROM pc)
118 GROUP BY maker
119 HAVING COUNT(maker) >= 3;
120 -- or
121 SELECT maker AS PC_Makers
122 FROM product, pc
123 WHERE product.model = pc.model
124 GROUP BY maker
125 HAVING COUNT(maker) >= 3;
126 -- +-----+
127 -- | PC_Makers |
128 -- +-----+
129 -- | A |
130 -- | B |
131 -- | D |
132 -- | E |
133 -- +-----+
134

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135 -- ! h) Find for each manufacturer who sells PC's the maximum price of a PC.
136 SELECT maker, MAX(pc.price) AS Max_Price
137 FROM product p, pc pc
138 WHERE p.model=pc.model
139 GROUP BY maker;
140
141 -- +-----+-----+
142 -- | maker | Max_Price |
143 -- +-----+-----+
144 -- | A      |      2114 |
145 -- | B      |      1049 |
146 -- | C      |       510 |
147 -- | D      |       770 |
148 -- | E      |       959 |
149 -- +-----+-----+
150
150 -- ! i) Find, for each speed of PC above 2.0, the average price.
151 SELECT speed, AVG(price) AS Average_Price
152 FROM pc
153 WHERE speed IN (SELECT DISTINCT speed
154                 FROM pc
155                 WHERE speed > 2.0)
156 GROUP BY speed;
157
158 -- +-----+-----+
159 -- | speed | Average_Price |
160 -- +-----+-----+
161 -- | 2.1  |          995 |
162 -- | 2.2  |          640 |
163 -- | 2.66 |         2114 |
164 -- | 2.8  | 689.3333333333334 |
165 -- | 3.06 |          529 |
166 -- | 3.2  |         839.5 |
167 -- +-----+-----+
168
168 -- !! j) Find the average hard disk size of a PC for all those manufacturers that make
169 -- printers.
169 SELECT AVG(hd) AS Average_HD_size
170 FROM pc
171 WHERE model IN (SELECT model
172                 FROM product
173                 WHERE maker IN (SELECT maker
174                                 FROM product
175                                 WHERE type='printer'));
176
177 -- +-----+
178 -- | Average_HD_size |
179 -- +-----+
180 -- |          200 |
181 -- +-----+

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