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**Metropolitan State University**

**ICS 311 —Database Management Systems**

**Homework #5 Total: 20 Points**

**Question 1: Group by and Aggregates:**

**Write SQL statements to answer the following questions using Assignment 4’s schema (Customer-Invoice-Line-Product-Vendor). Make sure that your SQL script runs *without any errors*. Submit your answers in a .SQL file.**

1 (2 Points) - Find the count of distinct vendors that supplied products that are priced lower than 185?

*select count(distinct vend\_code) 'Count Vendor' from product where prod\_price < 185;*

2 (2 Points) - For each vendor, find their product that has the lowest product quantity. Your output should include vendor code, vendor name, product description and product quantity for each vendor.

*Hint: Use subquery to get minimum quantity*

*select V.vend\_code, V.vend\_name , P.prod\_desc , P.prod\_quant from vendor V natural join*

*(select prod\_quant, prod\_desc, vend\_code from product natural join*

*(select min(prod\_quant) prod\_quant, vend\_code from product group by vend\_code) P1) P ;*

3 (2 Points) - Find how many products are there in each invoice. The output should include invoice number and number of products in the invoice.

*select IL.inv\_number 'Invoice Number', sum(IL.counts) 'Count Product'*

*from ((select inv\_number, count(counts) counts*

*from (select inv\_number, null counts from invoice) I group by I.inv\_number)*

*union (select inv\_number, count(inv\_number) counts from line group by inv\_number) )IL*

*group by IL.inv\_number;*

4 (2 Points) - Find how many invoices are made by each customer. The output should be a list of cus\_code and for each cus\_code, the number of invoices made by this customer.

*select IL.cus\_code 'Customer Code', sum(IL.counts) 'Count Customer'*

*from ((select C.cus\_code, count(counts) counts*

*from (select cus\_code, null counts from customer) C group by C.cus\_code)*

*union (select cus\_code, count(I.cus\_code) counts from invoice I group by I.cus\_code) )IL*

*group by IL.cus\_code;*

5 (2 Points) - Find the total value for all products in the inventory. The total value in the inventory is the sum of product quantity \* product price for all products listed in the product table.

*select sum(prod\_price \* prod\_quant) 'Total Value' from product;*

6 (2 Points) - Find vendor code, vendor contact, and the number of products supplied by each vendor.

*select vend\_code 'Vendor Code', vend\_contact 'Vendor Contact', prod\_quant 'Product Quantity' from*

*(select vend\_code, sum(prod\_quant) prod\_quant from product group by vend\_code) P*

*natural join (select vend\_code, vend\_contact from vendor) V;*

7 (2 Points) - Find product description, price, and vendor code for the cheapest (lowest price) product.

*select prod\_desc, prod\_price, vend\_code from product*

*where prod\_price = (select min(prod\_price) prod\_price from product);*

8 (3 Points) - For each invoice, find the total price. The total invoice price is the sum of product price\* line units for each product purchased in the invoice.

*select LP.inv\_number 'Invoice Number', sum(LP.prod\_price \* LP.line\_units) 'Total Price'*

*from (select \* from line natural join (select prod\_price, prod\_code from product) P*

*where P.prod\_code = prod\_code) LP group by LP.inv\_number;*

9 (3 Points) - Find how many products are bought by each customer. The output should be a list of cus\_code and for each cus\_code, the number of products purchased by this customer. A more complex query (if you want to try it), would be to list the name of the customer, along with the cus\_code.

*select cus\_code 'Customer Code', name 'Customer Name', line\_units 'Total Products'*

*from (select cus\_code, sum(line\_units) line\_units*

*from (select cus\_code, sum(line\_units) line\_units*

*from (select \* from (select inv\_number, sum(line\_units) line\_units*

*from (select \* from (select inv\_number, sum(line\_units) line\_units*

*from line group by inv\_number)L*

*union (select inv\_number, 0 line\_units from invoice)) LI*

*group by inv\_number) LII*

*natural join (select inv\_number, cus\_code from invoice) I) LIII*

*group by cus\_code*

*Union select cus\_code, 0 line\_units from customer) LL*

*group by cus\_code) LIC natural join*

*(select cus\_code, concat(cus\_fname, ' ', cus\_lname) name from customer) C;*