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CPE 231 Database Systems

Lab Assignment 1 for Lab Weeks 2-3. **Score: _____/20**

Due Lab Week 4 (2020-Aug-31). Demo to Lab Instructors. Submit code on MyLE.
Computer Engineering Department, KMUTT.

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1. In your database use a GUI to create the following tables, fields, and put the following data in as well.

PRODUCT_TYPE Table

*ProductType	Description
HDD	Hard Disk Drive
CASE	CASE
CPU	Processors

PRODUCT Table

*Code	Name	Units	ProductType (FKey of PRODUCT_TYPE)
HD01	Seagate HDD 80 GB	PCS	HDD
HD02	IBM HDD 60 GB	PCS	HDD
INT01	Intel Pentium IV 3.6 GHz	PCS	CPU

CUSTOMER Table

*CustomerCode	Name	Address	CreditLimit	Country
Sam	Sam Co., Ltd.	122 Bangkok	500,000	Thailand
CP	Charoen Pokaphan	14 Sukhumvit, Bangkok	2,000,000	Thailand

INVOICE Table

*InvoiceNo	Date	CustomerCode (Fkey of CUSTOMER)	Due Date	Total	VAT	AmountDue
IN100/20	2/1/20	Sam		11,000	770	11,770
IN101/20	4/1/20	Sam		3,000	210	3,210
IN102/20	10/1/20	CP		6,000	420	6,420

INVOICE_LINE_ITEM Table

*InvoiceNo (Fkey of INVOICE)	*ItemNo	ProductCode (Fkey of PRODUCT)	Quantity	UnitPrice	ProductTotal
IN100/20	1	HD01	2	3,000.00	6,000.00
IN100/20	2	HD02	1	2,000.00	2,000.00
IN101/20	1	HD02	1	2,000.00	2,000.00
IN102/20	1	INT01	1	6,000.00	6,000.00

2. BASIC SQL via simple JOINS. Data from different tables can be linked together via "JOINS".

By joining 2 tables it is like we get a new table with fields available from both tables. For example, if we join Invoice with [Invoice Line Item] tables we will get the following table (relation) as a result:

INVOICE. [Invoice No]	Date	Customer Code	Due Date	Total	VAT	Amount Due	INVOICE_LINE_ITEM.[Invoice No]	Item No	Product Code	Quantity	Unit Price	Product Total
IN100/20	2/1/20	Sam		11,000	770	11,770	IN100/20	1	HD01	2	3,000.00	6,000.00
IN100/20	2/1/20	Sam		11,000	770	11,770	IN100/20	2	HD02	1	2,000.00	2,000.00
IN101/20	4/1/20	Sam		3,000	210	3,210	IN101/20	1	HD02	1	2,000.00	2,000.00
IN102/20	10/1/20	Sam		6,000	420	6,420	IN102/20	1	INT01	1	6,000.00	6,000.00

The above can be obtained by SQL Statement:

SELECT * FROM "INVOICE" as I JOIN "INVOICE_LINE_ITEM" L ON I."InvoiceNo" = L."InvoiceNo";

Syntax: Select <field1, field2, …> from <one joined table> where <conditions>

The lab instructors will show you how to write basic SQL statements using JOIN.

Lab Points: 20

You can add more data to the above table to make it more interesting, but you must at least have the above data in your tables. Then, write SQL Statements to show the following results after running the QUERY:

List Invoice Details for Jan-2020 with following information:

INVOICE.[Invoice No]	Date	Customer Name	INVOICE_LINE_ITEM.[Invoice No]	Product Name	Quantity	Unit Price	Product Total

List products purchased from 2020-Jan-1 to 2020-Jan-9.

Product Code	Product Name	Invoice No	Invoice Date	Quantity

List products sold to Customer Sam from 2020-Jan-1 to 2020-Jan-9:

Customer Code	Customer Name	Product Code	Product Name	Quantity

List all sales by product type sorted by product type in this format:

Product Type Description	Product Code	Product Name	Date Sold	Sold to Customer Name	Quantity Sold

Submission

Show run during class to lab instructors on the 4 Week of Lab. Then submit your queries as 1 PDF file via upload to MyLE under topic "Lab Assignment 1" before 2020-Aug-31 at time 23:59. Your score will be based on the run demo, but the PDF file will be used to check for copied work.

Reminder: Copied work will receive negative 20 score (not just zero) and also a yellow card warning. Two yellow card means a red card, which is 'F' grade for the course.

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Lab Points: 20

You can add more data to the above table to make it more interesting, but you must at least have the above data in your tables. Then, write SQL Statements to show the following results after running the QUERY:

1) List Invoice Details for Jan-2020 with following information:

INVOICE.[Invoice No]	Date	Customer Name	INVOICE_LINE_ITEM.[Invoice No]	Product Name	Quantity	Unit Price	Product Total

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Query Editor | Query History

```
1  SELECT I."InvoiceNo" AS "Invoice No", I."Date", C."Name" AS "Customer Name", L."InvoiceNo", P."Name" AS "Product Name",
2         L."Quantity", L."UnitPrice" AS "Unit Price", L."ProductTotal" AS "Product Total"
3  FROM "INVOICE" I
4
5  JOIN "INVOICE_LINE_ITEM" L
6  ON I."InvoiceNo" = L."InvoiceNo"
7
8  JOIN "CUSTOMER" C
9  ON C."CustomerCode" = I."CustomerCode"
10
11 JOIN "PRODUCT" P
12 ON P."Code" = L."ProductCode"
13
14 WHERE I."Date" BETWEEN '2020-01-01' and '2020-01-31'
15
16 ORDER BY I."Date";
```

Data Output | Explain | Messages | Notifications

	Invoice No character (10)	Date date	Customer Name character (100)	InvoiceNo character (10)	Product Name character varying (100)	Quantity integer	Unit Price numeric (18,2)	Product Total numeric (18,2)
1	IN100/20	2020-01-02	Sam Co., Ltd	IN100/20	IBM HDD 60 GB	1	2000.00	2000.00
2	IN100/20	2020-01-02	Sam Co., Ltd	IN100/20	Seagate HDD 80 GB	2	3000.00	6000.00
3	IN101/20	2020-01-04	Sam Co., Ltd	IN101/20	IBM HDD 60 GB	1	2000.00	2000.00
4	IN102/20	2020-01-10	Charoen Pokaphan	IN102/20	Intel Pentium IV 3.6 GHz	1	6000.00	6000.00

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② List products purchased from 2020-Jan-1 to 2020-Jan-9.

Product Code	Product Name	Invoice No	Invoice Date	Quantity

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Query Editor | Query History

```
1  SELECT P."Code" AS "Product Code",P."Name" AS "Product Name", I."InvoiceNo" AS "Invoice No",
2         I."Date" AS "Invoice Date" , L."Quantity"
3  FROM "INVOICE" I
4
5  JOIN "INVOICE_LINE_ITEM" L
6  ON I."InvoiceNo" = L."InvoiceNo"
7
8  JOIN "PRODUCT" P
9  ON P."Code" = L."ProductCode"
10
11 WHERE I."Date" BETWEEN '2020-01-01' and '2020-01-09';
12
```

Data Output | Explain | Messages | Notifications

	Product Code character (10)	Product Name character varying (100)	Invoice No character (10)	Invoice Date date	Quantity integer
1	HD01	Seagate HDD 80 GB	IN100/20	2020-01-02	2
2	HD02	IBM HDD 60 GB	IN100/20	2020-01-02	1
3	HD02	IBM HDD 60 GB	IN101/20	2020-01-04	1

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③ List products sold to Customer Sam from 2020-Jan-1 to 2020-Jan-9:

Customer Code	Customer Name	Product Code	Product Name	Quantity

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Query Editor | Query History

```
1  SELECT C."CustomerCode" AS "Customer Code", C."Name" AS "Customer Name",
2         P."Code" AS "Product Code", P."Name" AS "Product Name", L."Quantity"
3
4  FROM "INVOICE" I
5
6  JOIN "INVOICE_LINE_ITEM" L
7      ON I."InvoiceNo" = L."InvoiceNo"
8
9  JOIN "CUSTOMER" C
10     ON C."CustomerCode" = I."CustomerCode"
11
12 JOIN "PRODUCT" P
13     ON P."Code" = L."ProductCode"
14
15 WHERE C."CustomerCode" = 'Sam' AND I."Date" BETWEEN '2020-01-01' and '2020-01-31'
16 ORDER BY I."Date";
```

Data Output | Explain | Messages | Notifications

	Customer Code character (10)	Customer Name character (100)	Product Code character (10)	Product Name character varying (100)	Quantity integer
1	Sam	Sam Co., Ltd	HD01	Seagate HDD 80 GB	2
2	Sam	Sam Co., Ltd	HD02	IBM HDD 60 GB	1
3	Sam	Sam Co., Ltd	HD02	IBM HDD 60 GB	1

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List all sales by product type sorted by product type in this format:

Product Type Description	Product Code	Product Name	Date Sold	Sold to Customer Name	Quantity Sold

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Query Editor | Query History

```
1  SELECT T."Description" AS "Product Type Description", P."Code" AS "Product Code", P."Name" AS "Product Name",
2         I."Date" AS "Date Sold", C."Name" AS "Sold to Customer Name", L."Quantity" AS "Quantity Sold"
3
4  FROM "INVOICE" I
5
6  JOIN "INVOICE_LINE_ITEM" L
7      ON I."InvoiceNo" = L."InvoiceNo"
8
9  JOIN "PRODUCT" P
10     ON P."Code" = L."ProductCode"
11
12 JOIN "PRODUCT_TYPE" T
13     ON T."ProductType" = P."ProductType"
14
15 JOIN "CUSTOMER" C
16     ON C."CustomerCode" = I."CustomerCode"
17
18 ORDER BY T."ProductType";
```

Data Output | Explain | Messages | Notifications

	Product Type Description character varying (100)	Product Code character (10)	Product Name character varying (100)	Date Sold date	Sold to Customer Name character (100)	Quantity Sold integer
1	Processor	INT01	Intel Pentium IV 3.6 GHz	2020-01-10	Charoen Pokaphan ...	1
2	Hard Disk Drive	HD01	Seagate HDD 80 GB	2020-01-02	Sam Co., Ltd ...	2
3	Hard Disk Drive	HD02	IBM HDD 60 GB	2020-01-02	Sam Co., Ltd ...	1
4	Hard Disk Drive	HD02	IBM HDD 60 GB	2020-01-04	Sam Co., Ltd ...	1