IM101 – Advanced Database System
FT Lab Activity 1

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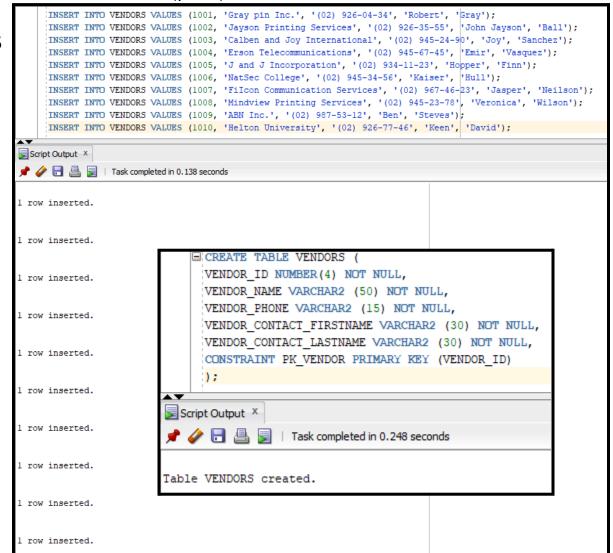**YEAR/SECTION: 2ND YR/SBIT-2C**

DATE: 13/4/2025

SCORE	PERCENTAGE

WEEK 10 – SUBQUERIES (Vendor AND Invoice)
*refer to lecture ppt for the table and output
Submission Guidelines:
- Source code
- Table (input and output)
- Gclass and Portfolio file (print)

VENDORS

```
INSERT INTO VENDORS VALUES (1001, 'Gray pin Inc.', '(02) 926-04-34', 'Robert', 'Gray');
INSERT INTO VENDORS VALUES (1002, 'Jayson Printing Services', '(02) 926-35-55', 'John Jayson', 'Ball');
INSERT INTO VENDORS VALUES (1003, 'Calben and Joy International', '(02) 945-24-90', 'Joy', 'Sanchez');
INSERT INTO VENDORS VALUES (1004, 'Erson Telecommunications', '(02) 945-67-45', 'Emir', 'Vasquez');
INSERT INTO VENDORS VALUES (1005, 'J and J Incorporation', '(02) 934-11-23', 'Hopper', 'Finn');
INSERT INTO VENDORS VALUES (1006, 'NatSec College', '(02) 945-34-56', 'Kaiser', 'Hull');
INSERT INTO VENDORS VALUES (1007, 'Filcon Communication Services', '(02) 967-46-23', 'Jasper', 'Neilson');
INSERT INTO VENDORS VALUES (1008, 'Mindview Printing Services', '(02) 945-23-78', 'Veronica', 'Wilson');
INSERT INTO VENDORS VALUES (1009, 'ABN Inc.', '(02) 987-53-12', 'Ben', 'Steves');
INSERT INTO VENDORS VALUES (1010, 'Helton University', '(02) 926-77-46', 'Keen', 'David');
```

Script Output ✕

🖈 ✏ 🖫 🖨 ▤ | Task completed in 0.138 seconds

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

```
CREATE TABLE VENDORS (
    VENDOR_ID NUMBER(4) NOT NULL,
    VENDOR_NAME VARCHAR2 (50) NOT NULL,
    VENDOR_PHONE VARCHAR2 (15) NOT NULL,
    VENDOR_CONTACT_FIRSTNAME VARCHAR2 (30) NOT NULL,
    VENDOR_CONTACT_LASTNAME VARCHAR2 (30) NOT NULL,
    CONSTRAINT PK_VENDOR PRIMARY KEY (VENDOR_ID)
);
```

Script Output ✕

🖈 ✏ 🖫 🖨 ▤ | Task completed in 0.248 seconds

Table VENDORS created.

INVOICE_TBL

```
CREATE TABLE INVOICE_IBL (
INVOICE_ID NUMBER (5) NOT NULL,
VENDOR_ID NUMBER (4) NOT NULL,
INVOICE_NUMBER VARCHAR2 (10) NOT NULL,
INVOICE_DATE DATE NOT NULL,
INVOICE_TOTAL NUMBER(10,2) NOT NULL,
PAYMENT_TOTAL NUMBER(10,2) DEFAULT 0 NOT NULL,
CREDIT_TOTAL NUMBER(10,2) DEFAULT 0 NOT NULL,
TERMS_ID NUMBER (2) NOT NULL,
CONSTRAINT PK_INVOICE PRIMARY KEY (INVOICE_ID),
CONSTRAINT FK_INVOICE_VENDOR FOREIGN KEY (VENDOR_ID)
REFERENCES VENDORS (VENDOR_ID)
);
```

Script Output x

Task completed in 0.06 seconds

Table INVOICE_IBL created.

```
1 row inserted.
1 row inserted.
1 row inserted.
1 row inserted.
1 row inserted.
1 row inserted.
1 row inserted.
1 row inserted.
1 row inserted.
1 row inserted.
1 row inserted.

Commit complete.
```

```
INSERT INTO INVOICE_TBL (INVOICE_ID, VENDOR_ID, INVOICE_NUMBER, INVOICE_DATE, INVOICE_TOTAL, PAYMENT_TOTAL, CREDIT_TOTAL, TERMS_ID)
VALUES (101, 1002, 'AJM46812', TO_DATE('14-FEB-2020', 'DD-MON-YYYY'), 200.75, 200.75, 0.00, 1);
INSERT INTO INVOICE_TBL VALUES (102, 1002, 'AJM68014', TO_DATE('06-MAR-2020', 'DD-MON-YYYY'), 1250.00, 0.00, 1000.00, 5);
INSERT INTO INVOICE_TBL VALUES (103, 1008, 'AJM1733', TO_DATE('06-MAR-2020', 'DD-MON-YYYY'), 4670.75, 4670.75, 0.00, 2);
INSERT INTO INVOICE_TBL VALUES (104, 1008, 'AJM02418', TO_DATE('15-MAR-2020', 'DD-MON-YYYY'), 10540.00, 10540.00, 0.00, 4);
INSERT INTO INVOICE_TBL VALUES (105, 1003, 'AJM24610', TO_DATE('15-MAR-2020', 'DD-MON-YYYY'), 3467.50, 3467.50, 0.00, 4);
INSERT INTO INVOICE_TBL VALUES (106, 1004, 'AJM2864', TO_DATE('16-MAR-2020', 'DD-MON-YYYY'), 9630.50, 9630.50, 0.00, 4);
INSERT INTO INVOICE_TBL VALUES (107, 1006, 'AJM80216', TO_DATE('17-MAR-2020', 'DD-MON-YYYY'), 12400.00, 0.00, 0.00, 4);
INSERT INTO INVOICE_TBL VALUES (108, 1004, 'AJM0642', TO_DATE('01-APR-2020', 'DD-MON-YYYY'), 38400.00, 38400.00, 0.00, 4);
INSERT INTO INVOICE_TBL VALUES (109, 1004, 'AJM35711', TO_DATE('01-APR-2020', 'DD-MON-YYYY'), 4078.50, 4078.50, 0.00, 2);
INSERT INTO INVOICE_TBL VALUES (110, 1005, 'AJM91317', TO_DATE('03-APR-2020', 'DD-MON-YYYY'), 115.60, 0.00, 0.00, 4);

COMMIT;
```
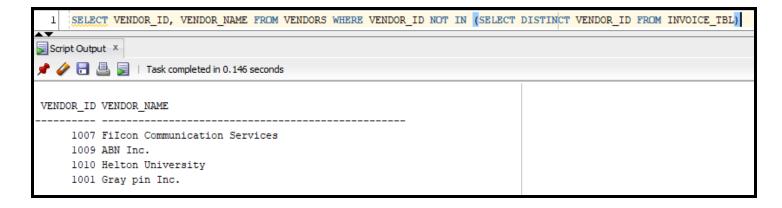
Subqueries in WHERE clause - Using IN Operator

```
1    SELECT VENDOR_ID, VENDOR_NAME FROM VENDORS WHERE VENDOR_ID NOT IN (SELECT DISTINCT VENDOR_ID FROM INVOICE_TBL)
```

Script Output x

Task completed in 0.146 seconds

```
VENDOR_ID VENDOR_NAME
---------- -------------------------------------------------
      1007 FiIcon Communication Services
      1009 ABN Inc.
      1010 Helton University
      1001 Gray pin Inc.
```

Subqueries in WHERE clause - Using EXPRESSION

```sql
SELECT
    INVOICE_NUMBER,
    INVOICE_DATE,
    (PAYMENT_TOTAL + CREDIT_TOTAL) AS "Balance Due"
FROM
    INVOICE_TBL
WHERE
    (PAYMENT_TOTAL + CREDIT_TOTAL) > 0
    AND (PAYMENT_TOTAL + CREDIT_TOTAL) < (
        SELECT AVG(PAYMENT_TOTAL + CREDIT_TOTAL)
        FROM INVOICE_TBL
        WHERE PAYMENT_TOTAL + CREDIT_TOTAL > 0
    );
```

INVOICE_NU	INVOICE_DA	Balance Due
AJM46812	02/14/2020	200.75
AJM68014	03/06/2020	1000
AJM1733	03/06/2020	4670.75
AJM24610	03/15/2020	3467.5
AJM35711	04/01/2020	4078.5

ANY and SOME keywords

Worksheet   Query Builder

```sql
SELECT VENDOR_NAME, INVOICE_NUMBER, INVOICE_TOTAL
FROM
INVOICE_TBL i JOIN VENDORS V ON i.VENDOR_ID = v. VENDOR_ID
WHERE
INVOICE_TOTAL < ANY
(
SELECT INVOICE_TOTAL FROM INVOICE_TBL WHERE VENDOR_ID = 1004 );
```

VENDOR_NAME	INVOICE_NU	INVOICE_TOTAL
Jayson Printing Services	AJM46812	200.75
Jayson Printing Services	AJM68014	1250
Calben and Joy International	AJM24610	3467.5
Erson Telecommunications	AJM35711	4078.5
Erson Telecommunications	AJM2864	9630.5
J and J Incorporation	AJM91317	115.6
NatSec College	AJM80216	12400
Mindview Printing Services	AJM1733	4670.75
Mindview Printing Services	AJM02418	10540

9 rows selected.

Subquery in FROM clause

```sql
SELECT
    i.VENDOR_ID,
    MAX(i.INVOICE_DATE) AS "LAST_INVOICE_DATE",
    AVG(i.INVOICE_TOTAL) AS "AVERAGE_INVOICE_TOTAL"
FROM
    INVOICE_TBL i
JOIN
    (
        SELECT
            VENDOR_ID,
            AVG(INVOICE_TOTAL) AS "AVERAGE_INVOICE_TOTAL"
        FROM
            INVOICE_TBL
        GROUP BY
            VENDOR_ID
        HAVING
            AVG(INVOICE_TOTAL) > 5500
    ) v
ON
    i.VENDOR_ID = v.VENDOR_ID
GROUP BY
    i.VENDOR_ID;
```

```
VENDOR_ID LAST_INVOI AVERAGE_INVOICE_TOTAL
--------- ---------- ---------------------
     1008 03/15/2020              7605.375
     1004 04/01/2020            17369.6667
     1006 03/17/2020                 12400
```

Subquery in SELECT clause

```sql
SELECT
    VENDOR_NAME,
    (SELECT MAX(INVOICE_DATE)
     FROM INVOICE_TBL
     WHERE INVOICE_TBL.VENDOR_ID = VENDORS.VENDOR_ID)
    AS "LATEST_INVOICE_DATE"
FROM
    VENDORS;
```

```
VENDOR_NAME                                        LATEST_INV
-------------------------------------------------- ----------
Jayson Printing Services                           03/06/2020
Mindview Printing Services                         03/15/2020
Calben and Joy International                        03/15/2020
Erson Telecommunications                           04/01/2020
NatSec College                                     03/17/2020
J and J Incorporation                              04/03/2020
FiIcon Communication Services
ABN Inc.
Helton University
Gray pin Inc.

10 rows selected.
```