



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

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SEMESTER 1, SESSION 2023/2024

LAB 3 – DML 3 PART 1

SECD2523: DATABASE

SECTION 10

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Section 6 Lesson 9 Exercise 1: Joining Tables Using JOIN

PART 1: Creating Natural Joins

1.

```
1 SELECT *
2 FROM sales_representatives
3 NATURAL JOIN sales_rep_addresses;
```

ID	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	COMMISSION_RATE	SUPERVISOR_ID	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	ZIP_CODE
sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01	12 Cherry Lane	Denton	Detroit	DT48211
sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01	87 Blossom Hill	Uptown	Detroit	DT52314
sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01	12 Junction Row	Skinflats	Detroit	DT52564

3 rows returned in 0.04 seconds [Download](#)

2.

```
1 SELECT
2     s.id, s.first_name,
3     s.last_name,
4     a.address_line_1,
5     a.address_line_2,
6     a.city,
7     s.email, s.phone_number
8 FROM
9     sales_representatives s
10 JOIN
11     sales_rep_addresses a ON s.id = a.id;
```

ID	FIRST_NAME	LAST_NAME	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	EMAIL	PHONE_NUMBER
sr01	Charles	Raymond	12 Cherry Lane	Denton	Detroit	chray@obl.com	0134598761
sr02	Victoria	Wright	87 Blossom Hill	Uptown	Detroit	vwright@obl.com	0134598762
sr03	Barry	Speed	12 Junction Row	Skinflats	Detroit	bspeed@obl.com	0134598763

3 rows returned in 0.00 seconds [Download](#)

PART 2: Creating Joins with the USING Clause

1.

APEX App Builder SQL Workshop Team Development Gallery

Search

Schema: WKSP_SQLALIF

Language: SQL Rows: 10 Clear Command Find Tables Save Run

```
1 SELECT
2     id,
3     first_name, last_name,
4     address_line_1, address_line_2,
5     city, email,
6     phone_number
7 FROM
8     sales_representatives
9 JOIN
10     sales_rep_addresses USING (id);
```

ID	FIRST_NAME	LAST_NAME	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	EMAIL	PHONE_NUMBER
sr01	Charles	Raymond	12 Cherry Lane	Denton	Detroit	chray@obl.com	0134598761
sr02	Victoria	Wright	87 Blossom Hill	Uptown	Detroit	vwright@obl.com	0134598762
sr03	Barry	Speed	12 Junction Row	Skinflats	Detroit	bspeed@obl.com	0134598763

3 rows returned in 0.01 seconds [Download](#)

2.

The screenshot shows the APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Ali Izuddin' are on the right. The 'SQL Commands' panel shows a query:

```
SELECT
  itm_number,
  name AS item_name, description,
  category, color,
  "Size", start_date,
  start_time, price
FROM
  items i
JOIN
  price_history p USING (itm_number);
```

 The 'Results' panel displays a table with 9 columns: ITEM_NUMBER, ITEM_NAME, DESCRIPTION, CATEGORY, COLOR, Size, START_DATE, START_TIME, and PRICE. It contains 4 rows of data.

ITEM_NUMBER	ITEM_NAME	DESCRIPTION	CATEGORY	COLOR	Size	START_DATE	START_TIME	PRICE
im0101044	gloves	catcher mitt	clothing	brown	m	06/17/2017	06/17/2016	4.99
im0101045	under shirt	top worn under the game top	clothing	white	s	11/25/2016	11/25/2016	14.99
im0101045	under shirt	top worn under the game top	clothing	white	s	01/25/2017	01/25/2017	8.99
im0101045	under shirt	top worn under the game top	clothing	white	s	01/26/2017	01/26/2017	15.99

PART 3: Creating Joins with the ON Clause

1.

The screenshot shows the APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Ali Izuddin' are on the right. The 'SQL Commands' panel shows a query:

```
SELECT
  c.ctr_number AS customer_number,
  c.first_name AS customer_first_name, c.last_name AS customer_last_name,
  c.phone_number AS customer_phone_number, c.email AS customer_email,
  s.id AS sales_rep_id, s.first_name AS sales_rep_first_name,
  s.last_name AS sales_rep_last_name, s.email AS sales_rep_email
FROM
  customers c
JOIN
  sales_representatives s ON c.sre_id = s.id;
```

 The 'Results' panel displays a table with 8 columns: CUSTOMER_NUMBER, CUSTOMER_FIRST_NAME, CUSTOMER_LAST_NAME, CUSTOMER_PHONE_NUMBER, CUSTOMER_EMAIL, SALES_REP_ID, SALES_REP_FIRST_NAME, and SALES_REP_LAST_NAME. It contains 3 rows of data. At the bottom, it states '3 rows returned in 0.03 seconds' and provides a 'Download' link.

CUSTOMER_NUMBER	CUSTOMER_FIRST_NAME	CUSTOMER_LAST_NAME	CUSTOMER_PHONE_NUMBER	CUSTOMER_EMAIL	SALES_REP_ID	SALES_REP_FIRST_NAME	SALES_REP_LAST_NAME
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond
c00101	John	Doe	03216547808	unknown@here.com	sr01	Charles	Raymond
c01986	Maria	Galant	01442736589	margal87@delphiview.com	sr03	Barry	Speed

PART 4: Creating Three – Way Joins with the ON Clause

1.

```
1 SELECT
2   c.ctr_number AS customer_number,
3   c.first_name AS customer_first_name, c.last_name AS customer_last_name, c.phone_number AS customer_phone_number, c.email AS customer_email,
4   s.id AS sales_rep_id, s.first_name AS sales_rep_first_name, s.last_name AS sales_rep_last_name,
5   s.email AS sales_rep_email,
6   t.name AS team_name
7 FROM
8   customers c
9 JOIN
10  sales_representatives s ON c.sre_id = s.id
11 LEFT JOIN
12  teams t ON c.tem_id = t.id ;
```

CUSTOMER_LAST_NAME	CUSTOMER_PHONE_NUMBER	CUSTOMER_EMAIL	SALES_REP_ID	SALES_REP_FIRST_NAME	SALES_REP_LAST_NAME	SALES_REP_EMAIL	TEAM_NAME
Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com	Rockets
Doe	03216547808	unknown@here.com	sr01	Charles	Raymond	chray@obl.com	Celtics
Galant	01442736589	margal87@delphiview.com	sr03	Barry	Speed	bspeed@obl.com	Rovers

PART 5: Applying Additional Conditions to a Join

1.

```
1 SELECT
2   c.ctr_number AS customer_number, c.first_name AS customer_first_name,
3   c.last_name AS customer_last_name,
4   c.phone_number AS customer_phone_number, c.email AS customer_email,
5   s.id AS sales_rep_id, s.first_name AS sales_rep_first_name,
6   s.last_name AS sales_rep_last_name, s.email AS sales_rep_email, t.name AS team_name
7 FROM
8   customers c
9 JOIN
10  sales_representatives s ON c.sre_id = s.id
11 LEFT JOIN
12  teams t ON c.tem_id = t.id
13 WHERE
14   c.ctr_number = 'c00001';
15
```

CUSTOMER_NUMBER	CUSTOMER_FIRST_NAME	CUSTOMER_LAST_NAME	CUSTOMER_PHONE_NUMBER	CUSTOMER_EMAIL	SALES_REP_ID	SALES_REP_FIRST_NAME	SALES_REP_LAST_NAME
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond

1 rows returned in 0.00 seconds [Download](#)

PART 6: Retrieving Records with Nonequijoins

1.

```
1 SELECT
2   'The cost of the ' || i.name || ' on this day was ' || ph.price AS result
3 FROM
4   items i
5 JOIN
6   price_history ph ON i.itm_number = ph.itm_number
7 WHERE
8   i.itm_number = '1m01101045'
9   AND TO_DATE('12-Dec-2016', 'DD-Mon-YYYY') BETWEEN ph.start_date AND ph.end_date;
10
```

RESULT
The cost of the under shirt on this day was 14.99

1 rows returned in 0.01 seconds [Download](#)