Practical No. 05

SQL> set timing on;

QUERY 1:

<u>With Materialized View</u>

```
SQL> CREATE MATERIALIZED VIEW state_sales_mv
  2  AS
  3  SELECT c.cust_state_province, cn.country_iso_code, m.fiscal_month_desc,
  4  MIN(amount_sold) min_amount, MAX(amount_sold) max_amount,
  5  avg(amount_sold) avg_amount, COUNT(amount_sold) cnt_amount,
  6  COUNT(*) count_all
  7  FROM sales s, times m, customers c,countries cn
  8  WHERE s.time_id = m.time_id AND s.cust_id = c.cust_id
  9  GROUP BY c.cust_state_province,cn.country_iso_code, m.fiscal_month_desc;
Materialized view created.
Elapsed: 00:00:18.37
```

```
SQL> SELECT * FROM state_sales_mv;
134044 rows selected.
Elapsed: 00:01:39.19
```

<u>Without Materialized View</u>

```
SQL> SELECT c.cust_state_province, cn.country_iso_code, m.fiscal_month_desc,
  2  MIN(amount_sold) min_amount, MAX(amount_sold) max_amount,
  3  avg(amount_sold) avg_amount, COUNT(amount_sold) cnt_amount,
  4  COUNT(*) count_all
  5  FROM sales s, times m, customers c,countries cn
  6  WHERE s.time_id = m.time_id AND s.cust_id = c.cust_id
  7  GROUP BY c.cust_state_province,cn.country_iso_code, m.fiscal_month_desc;

Elapsed: 00:01:57.14
```

QUERY 2:

<u>Without Materialized View</u>

```
SQL> SELECT channels.channel_desc, calendar_month_desc,
  2          countries.country_iso_code,
  3
SUM(amount_sold),min(amount_sold),max(amount_sold),avg(amount_sold),count(amount_sold),co
unt(*)
  4    FROM sales, customers, times, channels, countries
  5  WHERE sales.time_id=times.time_id
  6    AND sales.cust_id=customers.cust_id
  7    AND customers.country_id = countries.country_id
  8    AND sales.channel_id = channels.channel_id
  9  GROUP BY
 10    ROLLUP(channels.channel_desc, calendar_month_desc, countries.country_iso_code));

Elapsed: 00:00:02.91
```

<u>With Materialized View</u>

```
SQL> create materialized view mv11 as (
  2  SELECT channels.channel_desc, calendar_month_desc,
  3         countries.country_iso_code,
  4
SUM(amount_sold),min(amount_sold),max(amount_sold),avg(amount_sold),count(amount_sold),co
unt(*)
  5   FROM sales, customers, times, channels, countries
  6  WHERE sales.time_id=times.time_id
  7    AND sales.cust_id=customers.cust_id
  8    AND customers.country_id = countries.country_id
  9    AND sales.channel_id = channels.channel_id
 10  GROUP BY
 11    ROLLUP(channels.channel_desc, calendar_month_desc, countries.country_iso_code));

Materialized view created.
Elapsed: 00:00:01.53

SQL> SELECT * FROM mv11;
1893 rows selected.
Elapsed: 00:00:01.53
```

QUERY 3: CUBE

<u>With Materialized View</u>

```
SQL> create materialized view mv12 as (
  2  SELECT channel_desc, calendar_month_desc, countries.country_iso_code,
  3         TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  4  FROM sales, customers, times, channels, countries
  5  WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id AND
  6    sales.channel_id= channels.channel_id
  7   AND customers.country_id = countries.country_id
  8   AND channels.channel_desc IN
  9    ('Direct Sales', 'Internet') AND times.calendar_month_desc IN
 10    ('2000-09', '2000-10') AND countries.country_iso_code IN ('GB', 'US')
 11  GROUP BY CUBE(channel_desc, calendar_month_desc, countries.country_iso_code));

Materialized view created.
Elapsed: 00:00:00.45

SQL> SELECT * FROM mv12;
27 rows selected.
Elapsed: 00:00:00.05
```

<u>Without Materialized View</u>

```
SQL> SELECT channel_desc, calendar_month_desc, countries.country_iso_code,
  2         TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  3  FROM sales, customers, times, channels, countries
  4  WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id AND
  5    sales.channel_id= channels.channel_id
  6   AND customers.country_id = countries.country_id
  7   AND channels.channel_desc IN
```

```
  8     ('Direct Sales', 'Internet') AND times.calendar_month_desc IN
  9     ('2000-09', '2000-10') AND countries.country_iso_code IN ('GB', 'US')
 10   GROUP BY CUBE(channel_desc, calendar_month_desc, countries.country_iso_code);
```

 Elapsed: 00:00:00.08

QUERY 4: PARTIAL CUBE

<u>With Materialized View</u>

```
SQL> create materialized view mv13 as (
  2   SELECT channels.channel_desc, countries.country_iso_code,
  3     TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  4   FROM sales, customers, times, channels, countries
  5   WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id AND
  6     sales.channel_id= channels.channel_id AND channels.channel_desc IN
  7     ('Direct Sales', 'Internet') AND times.calendar_month_desc='2000-09'
  8     AND customers.country_id=countries.country_id
  9     AND countries.country_iso_code IN ('US','FR')
 10   GROUP BY CUBE(channels.channel_desc, countries.country_iso_code));
```

Materialized view created.
Elapsed: 00:00:00.08

```
SQL> SELECT * FROM mv13;
CHANNEL_DESC          CO SALES$
-------------------- -- --------------
                            833,224
                     FR      70,799
                     US     762,425
Internet                    133,821
Internet             FR       9,597
Internet             US     124,224
Direct Sales                699,403
Direct Sales         FR      61,202
Direct Sales         US     638,201
```

9 rows selected.

Elapsed: 00:00:00.00

<u>Without Materialized View</u>

```
SQL> SELECT channels.channel_desc, countries.country_iso_code,
  2     TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  3   FROM sales, customers, times, channels, countries
  4   WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id AND
  5     sales.channel_id= channels.channel_id AND channels.channel_desc IN
  6     ('Direct Sales', 'Internet') AND times.calendar_month_desc='2000-09'
  7     AND customers.country_id=countries.country_id
  8     AND countries.country_iso_code IN ('US','FR')
  9   GROUP BY CUBE(channels.channel_desc, countries.country_iso_code)
 10   ;
```

```
CHANNEL_DESC          CO SALES$
```

```
-------------------- -- --------------
                             833,224
                    FR        70,799
                    US       762,425
Internet                     133,821
Internet            FR         9,597
Internet            US       124,224
Direct Sales                 699,403
Direct Sales        FR        61,202
Direct Sales        US       638,201


9 rows selected.


Elapsed: 00:00:00.04


QUERY 5: PARTIAL ROLL UP
```

<u>With Materialized View</u>

```
SQL> create materialized view mv14 as (
  2  SELECT channel_desc, calendar_month_desc, countries.country_iso_code,
  3      TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  4  FROM sales, customers, times, channels, countries
  5  WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id
  6    AND customers.country_id = countries.country_id
  7    AND sales.channel_id= channels.channel_id
  8    AND channels.channel_desc IN ('Direct Sales', 'Internet')
  9    AND times.calendar_month_desc IN ('2000-09', '2000-10')
 10  GROUP BY channel_desc, ROLLUP(calendar_month_desc, countries.country_iso_code));


Materialized view created.


Elapsed: 00:00:00.20


SQL> SELECT * FROM mv14;
51 rows selected.
Elapsed: 00:00:00.01
```

<u>Without Materialized View</u>

```
SQL> SELECT channel_desc, calendar_month_desc, countries.country_iso_code,
  2      TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  3  FROM sales, customers, times, channels, countries
  4  WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id
  5    AND customers.country_id = countries.country_id
  6    AND sales.channel_id= channels.channel_id
  7    AND channels.channel_desc IN ('Direct Sales', 'Internet')
  8    AND times.calendar_month_desc IN ('2000-09', '2000-10')
  9  GROUP BY channel_desc, ROLLUP(calendar_month_desc, countries.country_iso_code);


Elapsed: 00:00:00.09


QUERY 6: PARTIAL CUBE
```

<u>With Materialized View</u>

```
SQL> create materialized view mv15 as (
  2  SELECT channel_desc, calendar_month_desc, countries.country_iso_code,
  3         TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  4  FROM sales, customers, times, channels, countries
  5  WHERE sales.time_id = times.time_id
  6    AND sales.cust_id = customers.cust_id
  7    AND customers.country_id=countries.country_id
  8    AND sales.channel_id = channels.channel_id
  9    AND channels.channel_desc IN ('Direct Sales', 'Internet')
 10  GROUP BY channel_desc, CUBE(calendar_month_desc, countries.country_iso_code));

Materialized view created.
Elapsed: 00:00:01.08


SQL> SELECT * FROM MV15;
1275 rows selected.
Elapsed: 00:00:00.37
```

Without Materialized View

```
SQL> SELECT channel_desc, calendar_month_desc, countries.country_iso_code,
  2         TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  3  FROM sales, customers, times, channels, countries
  4  WHERE sales.time_id = times.time_id
  5    AND sales.cust_id = customers.cust_id
  6    AND customers.country_id=countries.country_id
  7    AND sales.channel_id = channels.channel_id
  8    AND channels.channel_desc IN ('Direct Sales', 'Internet')
  9  GROUP BY channel_desc, CUBE(calendar_month_desc, countries.country_iso_code);

Elapsed: 00:00:01.36
```

QUERY 7: GROUPING

With Materialized View

```
SQL> create materialized view mv16 as (
  2  SELECT channel_desc, calendar_month_desc, country_iso_code,
  3  TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$, GROUPING(channel_desc) AS Ch,
  4     GROUPING(calendar_month_desc) AS Mo, GROUPING(country_iso_code) AS Co
  5  FROM sales, customers, times, channels, countries
  6  WHERE sales.time_id=times.time_id
  7    AND sales.cust_id=customers.cust_id
  8    AND customers.country_id = countries.country_id
  9    AND sales.channel_id= channels.channel_id
 10  GROUP BY ROLLUP(channel_desc, calendar_month_desc, countries.country_iso_code));

Materialized view created.

Elapsed: 00:00:01.37


SQL> SELECT* FROM MV16;
1893 rows selected.
Elapsed: 00:00:00.58
```

Without Materialized View

```
SQL> SELECT channel_desc, calendar_month_desc, country_iso_code,
  2  TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$, GROUPING(channel_desc) AS Ch,
  3    GROUPING(calendar_month_desc) AS Mo, GROUPING(country_iso_code) AS Co
  4  FROM sales, customers, times, channels, countries
  5  WHERE sales.time_id=times.time_id
  6    AND sales.cust_id=customers.cust_id
  7    AND customers.country_id = countries.country_id
  8    AND sales.channel_id= channels.channel_id
  9  GROUP BY ROLLUP(channel_desc, calendar_month_desc, countries.country_iso_code);
```

Elapsed: 00:00:01.83

QUERY 8: GROUPING SETS

With Materialized View

```
SQL> create materialized view mv17 as (
  2  SELECT channel_desc, calendar_month_desc, country_iso_code,
  3        TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  4  FROM sales, customers, times, channels, countries
  5  WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id AND
  6    sales.channel_id= channels.channel_id
  7  GROUP BY GROUPING SETS((channel_desc, calendar_month_desc, country_iso_code),
  8      (channel_desc, country_iso_code), (calendar_month_desc, country_iso_code)));
Materialized view created.
Elapsed: 00:00:23.17
```

```
SQL> SELECT * FROM MV17;
```

4646 rows selected.
Elapsed: 00:00:01.21

Without Materialized View

```
SQL> SELECT channel_desc, calendar_month_desc, country_iso_code,
  2        TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
  3  FROM sales, customers, times, channels, countries
  4  WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id AND
  5    sales.channel_id= channels.channel_id
  6  GROUP BY GROUPING SETS((channel_desc, calendar_month_desc, country_iso_code),
  7      (channel_desc, country_iso_code), (calendar_month_desc, country_iso_code));
```

Elapsed: 00:00:23.38

QUERY 9: GROUP ID()

With Materialized View

```
SQL> create materialized view mv18 as (
  2  SELECT channel_desc, calendar_month_desc, countries.country_iso_code,
  3      TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$,group_id()
  4  FROM sales, customers, times, channels, countries
```

```
 5  WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id
 6    AND customers.country_id = countries.country_id
 7    AND sales.channel_id= channels.channel_id
 8    AND channels.channel_desc IN ('Direct Sales', 'Internet')
 9  GROUP BY channel_desc, ROLLUP(calendar_month_desc, countries.country_iso_code),
10  ROLLUP(calendar_month_desc, countries.country_iso_code) );
```

Materialized view created.
Elapsed: 00:00:03.82

```
SQL> SELECT * FROM MV18;
6005 rows selected.
```

Elapsed: 00:00:01.62

<u>Without Materialized View</u>

```
SQL> SELECT channel_desc, calendar_month_desc, countries.country_iso_code,
 2      TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$,group_id()
 3  FROM sales, customers, times, channels, countries
 4  WHERE sales.time_id=times.time_id AND sales.cust_id=customers.cust_id
 5    AND customers.country_id = countries.country_id
 6    AND sales.channel_id= channels.channel_id
 7    AND channels.channel_desc IN ('Direct Sales', 'Internet')
 8  GROUP BY channel_desc, ROLLUP(calendar_month_desc, countries.country_iso_code),
 9  ROLLUP(calendar_month_desc, countries.country_iso_code);
```

Elapsed: 00:00:03.68