1.Q1. Find the total sales by country_id and channel_desc for the US and GB through the Internet and direct sales in September 2000 and October 2000 using ROLL-UP Extension. The query should return the following:
 The aggregation rows that would be produced by GROUP BY ,
 The First-level subtotals aggregating across country_id for each combination of channel_desc and calendar_month.
 Second-level subtotals aggregating across calendar_month_desc and country_id for each channel_desc value.
 A grand total row.

```
SELECT channels.channel_desc, calendar_month_desc,
countries.country_iso_code,
TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
FROM sales, customers, times, channels, countries
WHERE sales.time_id=times.time_id
AND sales.cust_id=customers.cust_id
AND customers.country_id = countries.country_id
AND sales.channel_id = channels.channel_id
AND channels.channel_desc IN ('Direct Sales', 'Internet')
AND times.calendar_month_desc IN ('2000-09', '2000-10')
AND countries.country_iso_code IN ('GB', 'US')
GROUP BY
ROLLUP(channels.channel_desc, calendar_month_desc,
countries.country_iso_code);
```

```
CHANNEL_DESC         CALENDAR CO SALES$
-------------------- -------- -- --------------
Internet             2000-09  GB         16,569
Internet             2000-09  US        124,224
Internet             2000-09            140,793
Internet             2000-10  GB         14,539
Internet             2000-10  US        137,054
Internet             2000-10            151,593
Internet                                292,387
Direct Sales         2000-09  GB         85,223
Direct Sales         2000-09  US        638,201
Direct Sales         2000-09            723,424
Direct Sales         2000-10  GB         91,925

CHANNEL_DESC         CALENDAR CO SALES$
-------------------- -------- -- --------------
Direct Sales         2000-10  US        682,297
Direct Sales         2000-10            774,222
Direct Sales                          1,497,646
                                      1,790,032

15 rows selected.
```

2.Q2. Find the total sales by country_id and channel_desc for the US and GB through

the Internet and direct sales in September 2000 and October 2009 using CUBE aggregation across three dimensions- channel_desc, calendar_month_desc, countries.country_iso_code

```
SELECT channels.channel_desc, calendar_month_desc,
countries.country_iso_code,
TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
FROM sales, customers, times, channels, countries
WHERE sales.time_id=times.time_id
AND sales.cust_id=customers.cust_id
AND customers.country_id = countries.country_id
AND sales.channel_id = channels.channel_id
AND channels.channel_desc IN ('Direct Sales', 'Internet')
AND times.calendar_month_desc IN ('2000-09', '2000-10')
AND countries.country_iso_code IN ('GB', 'US')
GROUP BY
CUBE(channels.channel_desc, calendar_month_desc,
countries.country_iso_code);
```

```
CHANNEL_DESC         CALENDAR CO TOTAL_SALES
-------------------- -------- -- --------------
Direct Sales         2000-09  GB          85,223
Direct Sales         2000-09  US         638,201
Direct Sales         2000-09             723,424
Direct Sales         2000-10  GB          91,925
Direct Sales         2000-10  US         682,297
Direct Sales         2000-10             774,222
Direct Sales                  GB         177,148
Direct Sales                  US       1,320,497
Direct Sales                           1,497,646
Internet             2000-09  GB          16,569
Internet             2000-09  US         124,224

CHANNEL_DESC         CALENDAR CO TOTAL_SALES
-------------------- -------- -- --------------
Internet             2000-09             140,793
Internet             2000-10  GB          14,539
Internet             2000-10  US         137,054
Internet             2000-10             151,593
Internet                      GB          31,109
Internet                      US         261,278
Internet                                 292,387
                     2000-09  GB         101,792
                     2000-09  US         762,425
                     2000-09             864,217
                     2000-10  GB         106,465

CHANNEL_DESC         CALENDAR CO TOTAL_SALES
-------------------- -------- -- --------------
                     2000-10  US         819,351
```

```
                    2000-10            925,815
                             GB        208,257
                             US      1,581,775
                                     1,790,032

27 rows selected.
```

3.Q3. Find the total sales by country_iso and channel_desc for the US and France through the Internet and direct sales in September 2000

```
SELECT channels.channel_desc, calendar_month_desc,
countries.country_iso_code,
TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
FROM sales, customers, times, channels, countries
WHERE sales.time_id=times.time_id
AND sales.cust_id=customers.cust_id
AND customers.country_id = countries.country_id
AND sales.channel_id = channels.channel_id
AND channels.channel_desc IN ('Direct Sales', 'Internet')
AND times.calendar_month_desc IN ('2000-09')
AND countries.country_iso_code IN ('FR', 'US')
GROUP BY
ROLLUP(channels.channel_desc, calendar_month_desc,
countries.country_iso_code);
```

```
CHANNEL_DESC         CALENDAR CO SALES$
-------------------- -------- -- --------------
Internet             2000-09  FR           9,597
Internet             2000-09  US         124,224
Internet             2000-09             133,821
Internet                                 133,821
Direct Sales         2000-09  FR          61,202
Direct Sales         2000-09  US         638,201
Direct Sales         2000-09             699,403
Direct Sales                             699,403
                                         833,224

9 rows selected.
```

4.Q4. Find the total sales by country_id and channel_desc for the US and GB through the Internet and direct sales in September 2000 and October 2009 using PARTIAL ROLL-UP. The query should return the following:
 Regular aggregation rows that would be produced by GROUP BY without using ROLLUP.
 First-level subtotals aggregating across country_id for each combination of channel_desc and calendar_month_desc.

 Second-level subtotals aggregating
across calendar_month_desc and country_id for each channel_desc value.
 It does not produce a grand total row.

```
SELECT channels.channel_desc, calendar_month_desc,
countries.country_iso_code,
TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
FROM sales, customers, times, channels, countries
WHERE sales.time_id=times.time_id
AND sales.cust_id=customers.cust_id
AND customers.country_id = countries.country_id
AND sales.channel_id = channels.channel_id
AND channels.channel_desc IN ('Direct Sales', 'Internet')
AND times.calendar_month_desc IN ('2000-09', '2000-10')
AND countries.country_iso_code IN ('GB', 'US')
GROUP BY channel_desc,
ROLLUP( calendar_month_desc,
countries.country_iso_code);
```

```
CHANNEL_DESC         CALENDAR CO SALES$
-------------------- -------- -- --------------
Internet             2000-09  GB          16,569
Internet             2000-09  US         124,224
Internet             2000-09             140,793
Internet             2000-10  GB          14,539
Internet             2000-10  US         137,054
Internet             2000-10             151,593
Internet                                 292,387
Direct Sales         2000-09  GB          85,223
Direct Sales         2000-09  US         638,201
Direct Sales         2000-09             723,424
Direct Sales         2000-10  GB          91,925

CHANNEL_DESC         CALENDAR CO SALES$
-------------------- -------- -- --------------
Direct Sales         2000-10  US         682,297
Direct Sales         2000-10             774,222
Direct Sales                           1,497,646

14 rows selected.
```

5.
Q5. Find the total sales by country_id and channel_desc for the US and GB through the Internet and direct sales in September 2000 and October 2009 using PARTIAL CUBE aggregation on month and country code and GROUP BY on channel_desc.

```
SELECT CHANNELS.CHANNEL_DESC,
COUNTRIES.COUNTRY_ISO_CODE,CALENDAR_MONTH_DESC,
TO_CHAR(SUM(AMOUNT_SOLD), '9,999,999,999') TOTAL_SALES
FROM SALES, CUSTOMERS, TIMES, CHANNELS, COUNTRIES
WHERE SALES.TIME_ID=TIMES.TIME_ID
AND SALES.CUST_ID=CUSTOMERS.CUST_ID
AND CUSTOMERS.COUNTRY_ID = COUNTRIES.COUNTRY_ID
AND SALES.CHANNEL_ID = CHANNELS.CHANNEL_ID
AND UPPER(CHANNELS.CHANNEL_DESC) IN ('DIRECT SALES', 'INTERNET')
AND TIMES.CALENDAR_MONTH_DESC IN ('2000-09','2000-10')
AND UPPER(COUNTRIES.COUNTRY_ISO_CODE) IN ('GB', 'US')
GROUP BY CHANNELS.CHANNEL_DESC  ,
CUBE  (COUNTRIES.COUNTRY_ISO_CODE,CALENDAR_MONTH_DESC);


CHANNEL_DESC         CO CALENDAR TOTAL_SALES
-------------------- -- -------- --------------
Internet                              292,387
Internet                2000-09       140,793
Internet                2000-10       151,593
Internet             GB                31,109
Internet             GB 2000-09         16,569
Internet             GB 2000-10         14,539
Internet             US                261,278
Internet             US 2000-09        124,224
Internet             US 2000-10        137,054
Direct Sales                         1,497,646
Direct Sales            2000-09        723,424

CHANNEL_DESC         CO CALENDAR TOTAL_SALES
-------------------- -- -------- --------------
Direct Sales            2000-10        774,222
Direct Sales         GB                177,148
Direct Sales         GB 2000-09         85,223
Direct Sales         GB 2000-10         91,925
Direct Sales         US              1,320,497
Direct Sales         US 2000-09        638,201
Direct Sales         US 2000-10        682,297

18 rows selected.
```

6.

Q6. Use GROUPING to create a set of mask columns for the result set of Q1.

- Create grouping on channel_desc and name it as CH
- Create grouping calendar_month_desc and name it as MO
- Create grouping on country_iso_code and name it as CO

```
SELECT channels.channel_desc, calendar_month_desc,
countries.country_iso_code,
TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES,GROUPING(channel_desc)as
CH,GROUPING(calendar_month_desc) as MO ,GROUPING(country_iso_code) as CO
FROM sales, customers, times, channels, countries
WHERE sales.time_id=times.time_id
AND sales.cust_id=customers.cust_id
AND customers.country_id = countries.country_id
AND sales.channel_id = channels.channel_id
AND channels.channel_desc IN ('Direct Sales', 'Internet')
AND times.calendar_month_desc IN ('2000-09','2000-10')
AND countries.country_iso_code IN ('GB', 'US')
GROUP BY ROLLUP(channel_desc,calendar_month_desc,
countries.country_iso_code);

CHANNEL_DESC         CALENDAR CO SALES                CH         MO         CO
-------------------- -------- -- -------------- ---------- ---------- ----------
Internet             2000-09  GB          16,569          0          0          0
Internet             2000-09  US         124,224          0          0          0
Internet             2000-09             140,793          0          0          1
Internet             2000-10  GB          14,539          0          0          0
Internet             2000-10  US         137,054          0          0          0
Internet             2000-10             151,593          0          0          1
Internet                                 292,387          0          1          1
Direct Sales         2000-09  GB          85,223          0          0          0
Direct Sales         2000-09  US         638,201          0          0          0
Direct Sales         2000-09             723,424          0          0          1
Direct Sales         2000-10  GB          91,925          0          0          0

CHANNEL_DESC         CALENDAR CO SALES                CH         MO         CO
-------------------- -------- -- -------------- ---------- ---------- ----------
Direct Sales         2000-10  US         682,297          0          0          0
Direct Sales         2000-10             774,222          0          0          1
Direct Sales                           1,497,646          0          1          1
                                       1,790,032          1          1          1

15 rows selected.
```

Q7. Find the total sales by country_id and channel_desc for the US and GB through the Internet and direct sales in September 2000 and October 2009 using GROUPING SETS.
Calculate aggregates over three groupings:
- (channel_desc, calendar_month_desc, country_iso_code)
- (channel_desc, country_iso_code)
- (calendar_month_desc, country_iso_code)

```
SELECT channels.channel_desc, calendar_month_desc,
```

```
countries.country_iso_code,
TO_CHAR(SUM(amount_sold), '9,999,999,999') SALES$
FROM sales, customers, times, channels, countries
WHERE sales.time_id=times.time_id
AND sales.cust_id=customers.cust_id
AND customers.country_id = countries.country_id
AND sales.channel_id = channels.channel_id
AND channels.channel_desc IN ('Direct Sales', 'Internet')
AND times.calendar_month_desc IN ('2000-09', '2000-10')
AND countries.country_iso_code IN ('GB', 'US')
GROUP BY GROUPING SETS((channel_desc, calendar_month_desc, country_iso_code),
(channel_desc, country_iso_code), (calendar_month_desc, country_iso_code));



CHANNEL_DESC         CALENDAR CO SALES$
-------------------- -------- -- --------------
Internet             2000-09  GB          16,569
Direct Sales         2000-09  GB          85,223
Internet             2000-09  US         124,224
Direct Sales         2000-09  US         638,201
Internet             2000-10  GB          14,539
Direct Sales         2000-10  GB          91,925
Internet             2000-10  US         137,054
Direct Sales         2000-10  US         682,297
                     2000-09  GB         101,792
                     2000-09  US         762,425
                     2000-10  GB         106,465

CHANNEL_DESC         CALENDAR CO SALES$
-------------------- -------- -- --------------
                     2000-10  US         819,351
Direct Sales                  GB         177,148
Internet                      GB          31,109
Direct Sales                  US       1,320,497
Internet                      US         261,278

16 rows selected.

8.Q: 8 Perform aggregation on amount sold. It should get aggregated by month first,
then by all the months in each quarter, and then across all months and quarters in
the year.

SELECT
TIMES.CALENDAR_MONTH_DESC,TIMES.CALENDAR_QUARTER_DESC,TIMES.CALENDAR_YEAR,SUM(AMOUNT
_SOLD) SUM_AMOUNT_SOLD
FROM SALES, CUSTOMERS, TIMES, CHANNELS, COUNTRIES
WHERE SALES.TIME_ID=TIMES.TIME_ID AND SALES.CUST_ID=CUSTOMERS.CUST_ID AND
CUSTOMERS.COUNTRY_ID = COUNTRIES.COUNTRY_ID
AND SALES.CHANNEL_ID = CHANNELS.CHANNEL_ID
```

```
AND UPPER(CHANNELS.CHANNEL_DESC) IN ('DIRECT SALES', 'INTERNET')
AND TIMES.CALENDAR_YEAR = 1999
AND UPPER(COUNTRIES.COUNTRY_ISO_CODE) IN ('GB', 'US')
GROUP BY
ROLLUP(TIMES.CALENDAR_YEAR,TIMES.CALENDAR_QUARTER_DESC,TIMES.CALENDAR_MONTH_DESC);


CALENDAR CALENDA CALENDAR_YEAR SUM_AMOUNT_SOLD
-------- ------- ------------- ---------------
1999-01  1999-01          1999       974627.95
1999-02  1999-01          1999      1089255.92
1999-03  1999-01          1999        754026.7
         1999-01          1999      2817910.57
1999-04  1999-02          1999       708060.57
1999-05  1999-02          1999       818055.52
1999-06  1999-02          1999       729677.52
         1999-02          1999      2255793.61
1999-07  1999-03          1999       893452.47
1999-08  1999-03          1999       883460.92
1999-09  1999-03          1999       923577.01

CALENDAR CALENDA CALENDAR_YEAR SUM_AMOUNT_SOLD
-------- ------- ------------- ---------------
         1999-03          1999       2700490.4
1999-10  1999-04          1999       715831.36
1999-11  1999-04          1999       742248.42
1999-12  1999-04          1999       841572.17
         1999-04          1999      2299651.95
                          1999      10073846.5
                                    10073846.5

18 rows selected.

9.Q: 9 Implement concatenated rollup. First roll up on (channel_total,
channel_class)
and second roll up on(country_region and country_iso_code)

SELECT CHANNELS.CHANNEL_TOTAL, CHANNELS.CHANNEL_CLASS, COUNTRIES.COUNTRY_REGION,
COUNTRIES.COUNTRY_ISO_CODE,
SUM(AMOUNT_SOLD) TOTAL_SALES
FROM SALES, CUSTOMERS, TIMES, CHANNELS, COUNTRIES
WHERE SALES.TIME_ID=TIMES.TIME_ID
AND SALES.CUST_ID=CUSTOMERS.CUST_ID
AND CUSTOMERS.COUNTRY_ID = COUNTRIES.COUNTRY_ID
AND SALES.CHANNEL_ID = CHANNELS.CHANNEL_ID
AND TIMES.CALENDAR_MONTH_DESC IN ('2000-09', '2000-10')
AND UPPER(COUNTRIES.COUNTRY_ISO_CODE) IN ('GB', 'US')
GROUP BY
ROLLUP(CHANNELS.CHANNEL_TOTAL, CHANNELS.CHANNEL_CLASS),
ROLLUP(COUNTRIES.COUNTRY_REGION, COUNTRIES.COUNTRY_ISO_CODE);
```

```
CHANNEL_TOTAL CHANNEL_CLASS        COUNTRY_REGION       CO TOTAL_SALES
------------- -------------------- -------------------- -- -----------
                                   Europe               GB   266785.98
                                   Europe                    266785.98
                                   Americas             US  2382646.81
                                   Americas                 2382646.81
                                                            2649432.79
Channel total                      Europe               GB   266785.98
Channel total                      Europe                    266785.98
Channel total                      Americas             US  2382646.81
Channel total                      Americas                 2382646.81
Channel total                                               2649432.79
Channel total Direct               Europe               GB   177148.35

CHANNEL_TOTAL CHANNEL_CLASS        COUNTRY_REGION       CO TOTAL_SALES
------------- -------------------- -------------------- -- -----------
Channel total Direct               Europe                    177148.35
Channel total Direct               Americas             US   1320497.4
Channel total Direct               Americas                  1320497.4
Channel total Direct                                        1497645.75
Channel total Others               Europe               GB    58529.13
Channel total Others               Europe                    58529.13
Channel total Others               Americas             US   800871.37
Channel total Others               Americas                  800871.37
Channel total Others                                          859400.5
Channel total Indirect             Europe               GB     31108.5
Channel total Indirect             Europe                      31108.5

CHANNEL_TOTAL CHANNEL_CLASS        COUNTRY_REGION       CO TOTAL_SALES
------------- -------------------- -------------------- -- -----------
Channel total Indirect             Americas             US   261278.04
Channel total Indirect             Americas                  261278.04
Channel total Indirect                                       292386.54

25 rows selected.
```

10.Q10. Consider the following Query and make conclusion from the result obtained.
Query: (scott Schema)

```
SELECT deptno, job, SUM(sal)
FROM emp
GROUP BY CUBE(deptno, job)
```

```
    DEPTNO JOB         SUM(SAL)
---------- --------- ----------
                          29025
           CLERK           4150
```

```
           ANALYST         6000
           MANAGER         8275
           SALESMAN        5600
           PRESIDENT       5000
        10                 8750
        10 CLERK           1300
        10 MANAGER         2450
        10 PRESIDENT       5000
        20                10875

    DEPTNO JOB         SUM(SAL)
---------- --------- ----------
        20 CLERK           1900
        20 ANALYST         6000
        20 MANAGER         2975
        30                 9400
        30 CLERK            950
        30 MANAGER         2850
        30 SALESMAN        5600

18 rows selected.
```

11.

Q11. Find the total sales by country name and channel_desc for the country name starting from U through the Internet and direct sales in September 2000 and October

```
SELECT CHANNELS.CHANNEL_DESC, COUNTRIES.COUNTRY_NAME, TO_CHAR(SUM(AMOUNT_SOLD),
'9,999,999,999') TOTAL_SALES
FROM SALES, CUSTOMERS, TIMES, CHANNELS, COUNTRIES
WHERE SALES.TIME_ID=TIMES.TIME_ID
AND SALES.CUST_ID=CUSTOMERS.CUST_ID
AND CUSTOMERS.COUNTRY_ID = COUNTRIES.COUNTRY_ID
AND SALES.CHANNEL_ID = CHANNELS.CHANNEL_ID
AND UPPER(CHANNELS.CHANNEL_DESC) IN ('DIRECT SALES', 'INTERNET')
AND TIMES.CALENDAR_MONTH_DESC IN ('2000-09', '2000-10')
AND UPPER(COUNTRIES.COUNTRY_NAME) LIKE 'U%'
GROUP BY
ROLLUP ( CHANNELS.CHANNEL_DESC,TIMES.CALENDAR_MONTH_DESC,COUNTRIES.COUNTRY_NAME, );

CHANNEL_DESC         COUNTRY_NAME                              TOTAL_SALES
-------------------- ---------------------------------------- --------------
Internet             United Kingdom                                16,569
Internet             United States of America                     124,224
Internet                                                          140,793
Internet             United Kingdom                                14,539
Internet             United States of America                     137,054
Internet                                                          151,593
Internet                                                          292,387
```

```
Direct Sales         United Kingdom                                85,223
Direct Sales         United States of America                     638,201
Direct Sales                                                      723,424
Direct Sales         United Kingdom                                91,925

CHANNEL_DESC         COUNTRY_NAME                             TOTAL_SALES
-------------------- ---------------------------------------- --------------
Direct Sales         United States of America                     682,297
Direct Sales                                                      774,222
Direct Sales                                                    1,497,646
                                                                1,790,032

15 rows selected.
```