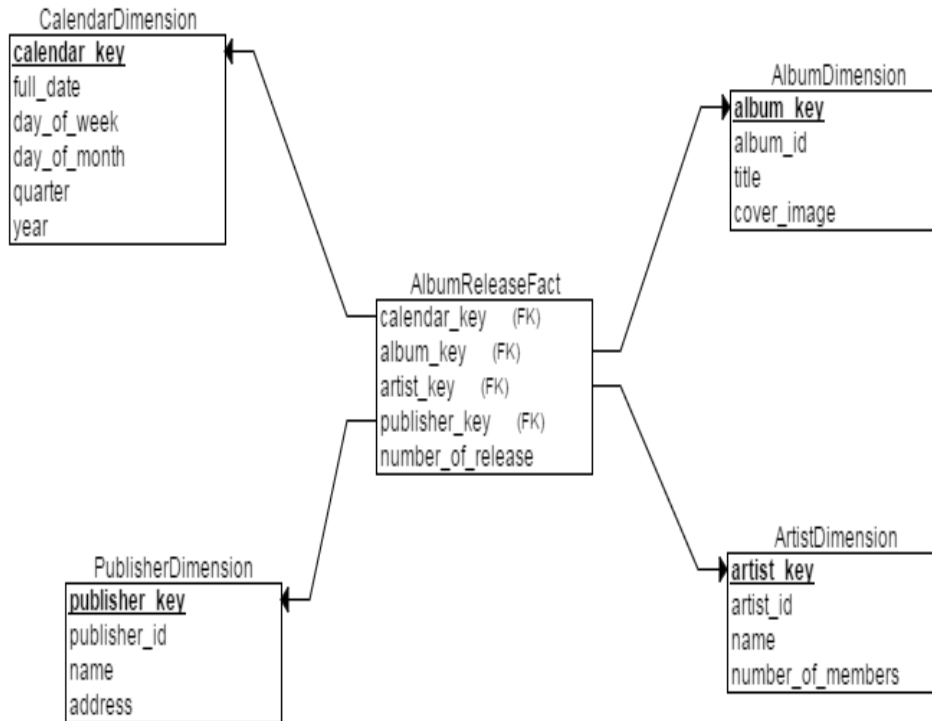


1. Dimensional Model of Jukebox



1) OLAP OPERATION

i) DRILL DOWN OPERATION:

Q. What are the number of artists who released their albums in the given years on a particular day by different publishers having different publisher id ?

BEFORE

a. SQL QUERY >

```
SELECT C.year, R.Name, C.day_of_week, P.name, p.publisher_id from
CalendarDimension C, AlbumDimension A, ArtistDimension R,
PublisherDimension P, AlbumReleaseFact AR where C.calendar_key =
AR.calendar_key AND A.album_key = AR.album_key AND R.artist_key =
AR.artist_key AND P.publisher_key = AR.publisher_key AND C.year
BETWEEN 2001 AND 2015 GROUP BY C.year LIMIT 0, 25 ;
```

SQLOUTPUT–Original Table (BEFORE)

year	Name	day_of_week	name	publisher_id
2001	John Mayer	Tu	Aware Records	3001
2005	Talor Swift	Mo	Big Machine Records	3003
2006	P!nk	Fr	Jive	3002
2008	Britney Spears	Fr	Jive	3002

AFTER (Now the Table will show the the number of artists who released their album in the given years by quarter)

See below:

Q. What are the number of artists who released their albums in the quarter from 1 to 12?

b. SQL QUERY>

```
SELECT C.year,C.quarter, R.Name, C.day_of_week, P.name, P.publisher_id
from CalendarDimension C, AlbumDimension A, ArtistDimension R,
PublisherDimension P, AlbumReleaseFact AR where C.calendar_key =
AR.calendar_key AND A.album_key = AR.album_key AND R.artist_key =
AR.artist_key AND P.publisher_key = AR.publisher_key AND C.year
BETWEEN 2001 AND 2015 GROUP BY C.quarter LIMIT 0, 25 ;
```

SQL OUTPUT (AFTER)- DRILL DOWN OPERATION

year	quarter	Name	day_of_week	name	publisher_id
2001	1	John Mayer	Tu	Aware Records	3001
2006	3	P!nk	Fr	Jive	3002
2005	4	Talor Swift	Mo	Big Machine Records	3003

-The results above are displayed by quarter.

Q.)What are the number of artists who released their albums in the given months?

AFTER

SQL QUERY>

```
SELECT C.year, C.quarter, C.day_of_month, R.Name, C.day_of_week, P.name,
P.publisher_id from CalendarDimension C, AlbumDimension A,
ArtistDimension R, PublisherDimension P, AlbumReleaseFact AR where
C.calendar_key = AR.calendar_key AND A.album_key = AR.album_key AND
R.artist_key = AR.artist_key AND P.publisher_key = AR.publisher_key AND
C.year BETWEEN 2001 AND 2015 GROUP BY C.day_of_month LIMIT 0,
25 ;
```

SQL OUTPUT :- AFTER(DRILL DOWN OPERATION)

year	quarter	day_of_month	Name	day_of_week	name	publisher_id
2006	3	Aug	P!nk	Fr	Jive	3002
2008	1	Feb	Britney Spears	Fr	Jive	3002
2001	1	Jan	John Mayer	Tu	Aware Records	3001
2005	4	Oct	Talor Swift	Mo	Big Machine Records	3003

-The results displayed above are shown by Month which is drilled down operation from previous table.

ii) DRILL UP OPERATION:

Q.What are the number of artists who released their albums in the given months and in a given quarter on a given day of week by certain publishers?

SQL QUERY> BEFORE:

```
SELECT C.day_of_month,C.quarter,R.Name, C.day_of_week, P.name,  
P.publisher_id from CalendarDimension C, AlbumDimension A,  
ArtistDimension R, PublisherDimension P, AlbumReleaseFact AR where  
C.calendar_key = AR.calendar_key AND A.album_key = AR.album_key AND  
R.artist_key = AR.artist_key AND P.publisher_key = AR.publisher_key AND  
C.year BETWEEN 2001 AND 2015 GROUP BY C.day_of_month LIMIT 0,  
25 ;
```

SQL OUTPUT BEFORE: (Original Table)

day_of_month	quarter	Name	day_of_week	name	publisher_id
Aug	3	P!nk	Fr	Jive	3002
Feb	1	Britney Spears	Fr	Jive	3002
Jan	1	John Mayer	Tu	Aware Records	3001
Oct	4	Talor Swift	Mo	Big Machine Records	3003

SQL QUERY> AFTER:

Q.What are the number of artists who released their albums in the given years on a certain day of the week by certain publishers?

SQL QUERY> AFTER:

```
SELECT C.day_of_month, C.quarter, C.year, R.Name, C.day_of_week, P.name,
P.publisher_id from CalendarDimension C, AlbumDimension A,
ArtistDimension R, PublisherDimension P, AlbumReleaseFact AR where
C.calendar_key = AR.calendar_key AND A.album_key = AR.album_key AND
R.artist_key = AR.artist_key AND P.publisher_key = AR.publisher_key AND
C.year BETWEEN 2001 AND 2015 GROUP BY C.year LIMIT 0, 25 ;
```

SQL OUTPUT- AFTER:(DRILL UP OPERATION)

day_of_month	quarter	year	Name	day_of_week	name	publisher_id
Jan	1	2001	John Mayer	Tu	Aware Records	3001
Oct	4	2005	Talor Swift	Mo	Big Machine Records	3003
Aug	3	2006	P!nk	Fr	Jive	3002
Feb	1	2008	Britney Spears	Fr	Jive	3002

Explanation:

BEFORE -In this above DRILL UP OLAP operation we have initially shown the names of artists who released their albums in a particular quarter in a particular month initially.

AFTER – In this operation we have shown the aggregation of all the artists who released their albums in the given years.

iii) SLICE OPERATION:

Q.What are the number of artists who released their albums in the given years by various publishers having certain number of members?

SQL QUERY BEFORE:

SQL>

```
SELECT C.year, R.Name, title, P.name,R.number_of_members from
CalendarDimension C, AlbumDimension A, ArtistDimension R,
PublisherDimension P, AlbumReleaseFact AR where C.calendar_key =
AR.calendar_key AND A.album_key = AR.album_key AND R.artist_key =
AR.artist_key AND P.publisher_key = AR.publisher_key AND C.year
BETWEEN 2001 AND 2015 GROUP BY C.year LIMIT 0, 25 ;
```

SQL OUTPUT:-ORIGINAL TABLE

year	Name	title	name	number_of_members
2001	John Mayer	Room for Squares	Aware Records	1
2005	Talor Swift	Ketchup	Big Machine Records	1
2006	P!nk	The Truth About Love	Jive	1
2008	Britney Spears	Circus	Jive	1

-Now we will perform the slice operation on the above table:

Q. Who are the artists who released the song from the year 2007 to 2008 by the publishers having certain members?

SQL>AFTER:

```
SELECT C.year, R.Name, title, P.name,R.number_of_members from
CalendarDimension C, AlbumDimension A, ArtistDimension R,
PublisherDimension P, AlbumReleaseFact AR where C.calendar_key =
AR.calendar_key AND A.album_key = AR.album_key AND R.artist_key =
AR.artist_key AND P.publisher_key = AR.publisher_key AND C.year
BETWEEN 2007 AND 2008 GROUP BY C.year LIMIT 0, 25 ;
```

SQL OUTPUT: (AFTER) (SLICE OPERATION)

year	Name	title	name	number_of_members
2008	Britney Spears	Circus	Jive	1

Explanation-In the above SLICE OPERATION we have the original relation which displays all the artists who released their albums in the year 2001 to 2015. In the slice operation we have performed the slice operation on the “**year**” dimensional attribute which will show only those artists who released an album in a particular year.

iv) DICE OPERATION:

Q. What are the names of artists who released their albums from the year 2001 to 2015 by various publishers having certain number of members?

SQL QUERY BEFORE:

SQL>BEFORE:

```
SELECT C.year, R.Name, title, P.name, R.number_of_members from
CalendarDimension C, AlbumDimension A, ArtistDimension R,
PublisherDimension P, AlbumReleaseFact AR where C.calendar_key =
AR.calendar_key AND A.album_key = AR.album_key AND R.artist_key =
AR.artist_key AND P.publisher_key = AR.publisher_key AND C.year
BETWEEN 2001 AND 2015 GROUP BY C.year LIMIT 0, 25 ;
```


SQL OUTPUT:-ORIGINAL TABLE (BEFORE)

year	Name	title	name	number_of_members
2001	John Mayer	Room for Squares	Aware Records	1
2005	Talor Swift	Ketchup	Big Machine Records	1
2006	P!nk	The Truth About Love	Jive	1
2008	Britney Spears	Circus	Jive	1

-Now after performing the DICE operation we will get the following table mentioned below:

Q. What are the names of artists who released their albums from 2006 to 2009 with certain number of members?

SQL QUERY :AFTER

SQL QUERY>

```
SELECT C.year, R.Name, title, P.name,R.number_of_members from
CalendarDimension C, AlbumDimension A, ArtistDimension R,
PublisherDimension P, AlbumReleaseFact AR where C.calendar_key =
AR.calendar_key AND A.album_key = AR.album_key AND R.artist_key =
AR.artist_key AND P.publisher_key = AR.publisher_key AND C.year
BETWEEN 2006 AND 2009 GROUP BY C.year LIMIT 0, 25 ;
```

SQL OUTPUT: (AFTER) (DICE OPERATION)

year	Name	title	name	number_of_members
2006	P!nk	The Truth About Love	Jive	1
2008	Britney Spears	Circus	Jive	1

Explanation-In this example we have performed a DICE operation on the **YEAR** which displays the lists of artists who published the songs in the multiple years.

v) **PIVOT OPERATION:**

SQL QUERY: BEFORE

BEFORE

We started off with a query that shows the valid entries with the Artist name and number of members of the Artist.

SQL query: select R.Name, SUM(R.number_of_members) AS 'Member Count' from CalendarDimension C, AlbumDimension A, ArtistDimension R, PublisherDimension P, AlbumReleaseFact AR where C.calendar_key = AR.calendar_key AND A.album_key = AR.album_key AND R.artist_key = AR.artist_key AND P.publisher_key = AR.publisher_key GROUP BY R.name LIMIT 0, 20;

Name	Member Count
Britney Spears	1
John Mayer	1
P!nk	1
Talor Swift	1

AFTER

We then perform a pivot that arranges that table in the perspective of the Artist name and list the number of members within that Artist name.

SQL query:

```
select 'Total Members' AS Artist, SUM(CASE WHEN R.name = "Britney Spears" THEN number_of_members END) AS "Britney Spears", SUM(CASE WHEN R.name = "John Mayer" THEN number_of_members END) AS "John Mayer", SUM(CASE WHEN R.name = "P!nk" THEN number_of_members END) AS "P!nk", SUM(CASE WHEN R.name = "Talor Swift" THEN number_of_members END) AS "Talor Swift" from CalendarDimension C, AlbumDimension A, ArtistDimension R, PublisherDimension P, AlbumReleaseFact AR where C.calendar_key = AR.calendar_key AND A.album_key = AR.album_key AND R.artist_key = AR.artist_key AND P.publisher_key = AR.publisher_key LIMIT 0, 25 ;
```

SQL OUTPUT:-AFTER(PIVOT)

Artist	Britney Spears	John Mayer	P!nk	Talor Swift
Total Members	1	1	1	1