DA5020.P2.Mir.Sultan

Mir Sultan

2023-07-16

Step 1

We have two dimension tables represented by business.csv and bed_type.csv. The dimensions in bed_type.csv are are the bed codes, bed descriptions, and bed IDs. The attributes in this table or csv file are for the beds in the fact table bed_fact.csv.

The dimensions in business_type.csv are business name, IMS org ID, and bed cluster ID.

Step 2

The facts in the fact table bed_fact.csv are license_beds, census_beds, and staffed_beds.

Step 3

```r
library(RSQLite)
library(DBI)
library(XML)
library(xml2)
library(RCurl)
library(dplyr)
library(stringr)
library(tidyverse)
library(ggplot2)
library(tidyr)
library(lubridate)
library(scales)
library(readr)

mydb <- dbConnect(RSQLite::SQLite())
```

```sql
CREATE TABLE IF NOT EXISTS bed_type (
  bed_id INTEGER PRIMARY KEY,
  bed_code TEXT,
  bed_desc TEXT
);
```

```
CREATE TABLE IF NOT EXISTS business (
  ims_org_id TEXT PRIMARY KEY,
  business_name TEXT,
  ttl_license_beds INTEGER,
  ttl_census_beds INTEGER,
  ttl_staffed_beds INTEGER,
  bed_cluster_id INTEGER,
  FOREIGN KEY(bed_cluster_id) REFERENCES bed_type(bed_id)
);
```

```
CREATE TABLE IF NOT EXISTS bed_fact (
  ims_org_id TEXT,
  bed_id INTEGER REFERENCES bed_type(bed_id),
  license_beds INTEGER,
  census_beds INTEGER,
  staffed_beds INTEGER,
  FOREIGN KEY(ims_org_id) REFERENCES business(ims_org_id),
  FOREIGN KEY(bed_id) REFERENCES bed_type(bed_id)
);
```

```
bed_type <- read.csv("bed_type.csv", stringsAsFactors = FALSE)
bed_fact <- read.csv("bed_fact.csv", stringsAsFactors = FALSE)
business <- read.csv("business.csv", stringsAsFactors = FALSE)

dbWriteTable(mydb, "bed_type", bed_type, append = TRUE)
dbWriteTable(mydb, "bed_fact", bed_fact, append = TRUE)
dbWriteTable(mydb, "business", business, append = TRUE)
```

For better SQL practice, everything in the CSV files were made into SQL tables where the appropriate primary and foreign keys were applied.

3a

```
SELECT b.business_name AS hospital_name, SUM(bf.license_beds) AS total_license_beds
FROM business b
JOIN bed_fact bf ON b.ims_org_id = bf.ims_org_id
WHERE bf.bed_id IN (4, 15)
GROUP BY b.business_name
ORDER BY total_license_beds DESC
LIMIT 10;
```

Table 1: Displaying records 1 - 10

hospital_name	total_license_beds
Phoenix Childrens Hospital	247
University of Maryland Medical Center	220
UC Health University Hospital	218
Wesley Medical Center, LLC	214
Vidant Medical Center	204

hospital_name	total_license_beds
Rady Childrens Hospital and Health Center	200
Dallas County Hospital Association	195
Saint Lukes Episcopal Hospital Texas Medical Center	178
The Methodist Hospital	170
Emory University Hospital	169

```sql
SELECT b.business_name AS hospital_name, SUM(bf.census_beds) AS total_census_beds
FROM business b
JOIN bed_fact bf ON b.ims_org_id = bf.ims_org_id
WHERE bf.bed_id IN (4, 15)
GROUP BY b.business_name
ORDER BY total_census_beds DESC
LIMIT 10;
```

Table 2: Displaying records 1 - 10

hospital_name	total_census_beds
Shands Hospital at the University of Florida	167
Dallas County Hospital Association	145
Mercy Medical Center Saint Louis	142
Los Angeles County University of Southern California Healthcare Network	139
The Methodist Hospital	138
University of Minnesota Medical Center Fairview	129
University of Maryland Medical Center	127
Brigham and Womens Hospital	124
Vidant Medical Center	123
Ronald Reagan University of California Los Angeles Medical Center	122

```sql
SELECT b.business_name AS hospital_name, SUM(bf.staffed_beds) AS total_staffed_beds
FROM business b
JOIN bed_fact bf ON b.ims_org_id = bf.ims_org_id
WHERE bf.bed_id IN (4, 15)
GROUP BY b.business_name
ORDER BY total_staffed_beds DESC
LIMIT 10;
```

Table 3: Displaying records 1 - 10

hospital_name	total_staffed_beds
Vidant Medical Center	203
Rady Childrens Hospital and Health Center	200
University of Maryland Medical Center	171
Emory University Hospital	169
Shands Hospital at the University of Florida	167
Mercy Medical Center Saint Louis	163
Wesley Medical Center, LLC	162
Phoenix Childrens Hospital	159
Grady Memorial Hospital	154

hospital_name	total_staffed_beds
UC Health University Hospital	151

3b Interpretation of Findings

Step 4

Query Process Steps 1. Getting Data (From, Join) 2. Row Filter (Where) 3. Grouping (Group by) 4. Group Filter (Having) 5. Return Expressions (Select) 6. Order & Paging (Order by & Limit / Offset) ## 4a

```sql
SELECT b.business_name AS hospital_name, SUM(bf.license_beds) AS total_license_beds
FROM business b
JOIN bed_fact bf ON b.ims_org_id = bf.ims_org_id
WHERE bf.bed_id IN (4, 15)
GROUP BY b.business_name
HAVING COUNT(DISTINCT bf.bed_id) = 2
ORDER BY total_license_beds DESC
LIMIT 10;
```

Table 4: Displaying records 1 - 10

hospital_name	total_license_beds
University of Maryland Medical Center	220
UC Health University Hospital	218
Shands Hospital at the University of Florida	167
MCGHealth, Inc	155
Grady Memorial Hospital	154
Jackson Memorial Hospital	151
University of Minnesota Medical Center Fairview	144
University Hospital in Bexar County	144
Carolinas Medical Center	137
Yale New Haven Hospital	136

```sql
SELECT b.business_name AS hospital_name, SUM(bf.census_beds) AS total_census_beds
FROM business b
JOIN bed_fact bf ON b.ims_org_id = bf.ims_org_id
WHERE bf.bed_id IN (4, 15)
GROUP BY b.business_name
HAVING COUNT(DISTINCT bf.bed_id) = 2
ORDER BY total_census_beds DESC
LIMIT 10;
```

Table 5: Displaying records 1 - 10

hospital_name	total_census_beds
Shands Hospital at the University of Florida	167
University of Minnesota Medical Center Fairview	129
University of Maryland Medical Center	127

hospital_name	total_census_beds
Jackson Memorial Hospital	117
UC Health University Hospital	110
Carolinas Medical Center	106
Cedars Sinai Health System	92
University Hospital in Bexar County	91
Duke University Health System	91
The Cleveland Clinic Foundation	88

```sql
SELECT b.business_name AS hospital_name, SUM(bf.staffed_beds) AS total_staffed_beds
FROM business b
JOIN bed_fact bf ON b.ims_org_id = bf.ims_org_id
WHERE bf.bed_id IN (4, 15)
GROUP BY b.business_name
HAVING COUNT(DISTINCT bf.bed_id) = 2
ORDER BY total_staffed_beds DESC
LIMIT 10;
```

Table 6: Displaying records 1 - 10

hospital_name	total_staffed_beds
University of Maryland Medical Center	171
Shands Hospital at the University of Florida	167
Grady Memorial Hospital	154
UC Health University Hospital	151
University of Minnesota Medical Center Fairview	144
Carolinas Medical Center	137
Saint Josephs Hospital and Medical Center	134
Chattanooga Hamilton County Hospital Authority	134
Jackson Memorial Hospital	128
Sunrise Hospital and Medical Center, LLC	125