

## Project 1

Create and execute each of the queries below and show the results

1. Show all the area codes and area names for all areas in NY state.

```
mysql> select distinct Area_Code, Area_Name from AREAS natural join  
SERIES where State_Code in (select State_Code from STATES where  
State_Name like 'New York');
```

```
+-----+-----+  
| Area_Code | Area_Name |  
+-----+-----+  
|          0 | Statewide |  
|       10580 | Albany-Schenectady-Troy, NY |  
|       13780 | Binghamton, NY |  
|       15380 | Buffalo-Niagara Falls, NY |  
|       21300 | Elmira, NY |  
|       24020 | Glens Falls, NY |  
|       27060 | Ithaca, NY |  
|       28740 | Kingston, NY |  
|       35004 | Nassau-Suffolk, NY Metropolitan Division |  
|       35620 | New York-Northern New Jersey-Long Island, NY-NJ-PA |  
|       35644 | New York-White Plains-Wayne, NY-NJ Metropolitan Division |  
|       39100 | Poughkeepsie-Newburgh-Middletown, NY |  
|       40380 | Rochester, NY |  
|       45060 | Syracuse, NY |  
|       46540 | Utica-Rome, NY |  
|       93561 | New York City, NY |  
|       93562 | Putnam-Rockland-Westchester, NY |  
+-----+-----+
```

```
17 rows in set (3.56 sec)
```

2. Show a list of state names and the number of distinct area codes that appear in the SERIES table, ordered by state name.

```
mysql> select State_Name, count(Area_Code) from SERIES natural join STATES  
group by State_Name order by State_Name asc;
```

State_Name	count(Area_Code)
Alabama	468
Alaska	159
Arizona	360
Arkansas	212
California	1996
Colorado	406
Connecticut	351
Delaware	183
District of Columbia	177
Florida	923
Georgia	449
Hawaii	221
Idaho	306
Illinois	696
Indiana	615
Iowa	287
Kansas	259
Kentucky	284
Louisiana	418
Maine	197
Maryland	360
Massachusetts	675
Michigan	892
Minnesota	415
Mississippi	219
Missouri	453
Montana	165
Nebraska	264
Nevada	255
New Hampshire	224
New Jersey	564
New Mexico	157
New York	980
North Carolina	577
North Dakota	214
Ohio	681
Oklahoma	274
Oregon	440
Pennsylvania	748
Puerto Rico	298

Rhode Island		172	
South Carolina		295	
South Dakota		119	
Tennessee		413	
Texas		1202	
Utah		346	
Vermont		155	
Virgin Islands		50	
Virginia		347	
Washington		527	
West Virginia		240	
Wisconsin		504	
Wyoming		173	

+-----+

53 rows in set (1.08 sec)

3. Show a list of area names and associated state names that appear in the SERIES table.

(sorry about the formatting from here on out... I'm not going to edit every line of the table to fit...)

```
mysql> select distinct Area_Name, State_Name from AREAS natural join (select
  distinct Area_Code, State_Code from SERIES order by Area_Code asc) as A
natural join STATES;
```

Area_Name	State_Name
Statewide	Alabama
Statewide	Alaska
Statewide	Arizona
Statewide	Arkansas
Statewide	California
Statewide	Colorado
Statewide	Connecticut
Statewide	Delaware
Statewide	District of
Statewide	Florida
Statewide	Georgia
Statewide	Hawaii
Statewide	Idaho
Statewide	Illinois
Statewide	Indiana
Statewide	Iowa

Statewide	Kansas
Statewide	Kentucky
Statewide	Louisiana
Statewide	Maine
Statewide	Maryland
Statewide	Massachusetts
Statewide	Michigan
Statewide	Minnesota
Statewide	Mississippi
Statewide	Missouri
Statewide	Montana
Statewide	Nebraska
Statewide	Nevada
Statewide	New Hampshire
Statewide	New Jersey
Statewide	New Mexico
Statewide	New York
Statewide	North Carolina
Statewide	North Dakota
Statewide	Ohio
Statewide	Oklahoma
Statewide	Oregon
Statewide	Pennsylvania
Statewide	Rhode Island
Statewide	South Carolina
Statewide	South Dakota
Statewide	Tennessee
Statewide	Texas
Statewide	Utah
Statewide	Vermont
Statewide	Virginia
Statewide	Washington
Statewide	West Virginia
Statewide	Wisconsin
Statewide	Wyoming
Statewide	Puerto Rico
Statewide	Virgin Islands
Abilene, TX	Texas
Aguadilla-Isabela-San Sebastian, PR	Puerto Rico
Akron, OH	Ohio
Albany, GA	Georgia
Albany-Schenectady-Troy, NY	New York
Albuquerque, NM	New Mexico

Alexandria, LA	Louisiana
Allentown-Bethlehem-Easton, PA-NJ	Pennsylvania
Altoona, PA	Pennsylvania
Amarillo, TX	Texas
Ames, IA	Iowa
Anchorage, AK	Alaska
Anderson, IN	Indiana
Anderson, SC	South Carolina
Ann Arbor, MI	Michigan
Anniston-Oxford, AL	Alabama
Appleton, WI	Wisconsin
Asheville, NC	North Carolina
Athens-Clarke County, GA	Georgia
Atlanta-Sandy Springs-Marietta, GA	Georgia
Atlantic City-Hammonton, NJ	New Jersey
Auburn-Opelika, AL	Alabama
Augusta-Richmond County, GA-SC	Georgia
Austin-Round Rock-San Marcos, TX	Texas
Bakersfield-Delano, CA	California
Baltimore-Towson, MD	Maryland
Baton Rouge, LA	Louisiana
Battle Creek, MI	Michigan
Bay City, MI	Michigan
Beaumont-Port Arthur, TX	Texas
Bellingham, WA	Washington
Bend, OR	Oregon
Bethesda-Rockville-Frederick, MD Metropolitan Division	Maryland
Billings, MT	Montana
Binghamton, NY	New York
Birmingham-Hoover, AL	Alabama
Bismarck, ND	North Dakota
Blacksburg-Christiansburg-Radford, VA	Virginia
Bloomington, IN	Indiana
Bloomington-Normal, IL	Illinois
Boise City-Nampa, ID	Idaho
Boulder, CO	Colorado
Bowling Green, KY	Kentucky
Bremerton-Silverdale, WA	Washington
Brownsville-Harlingen, TX	Texas
Brunswick, GA	Georgia
Buffalo-Niagara Falls, NY	New York
Burlington, NC	North Carolina
Camden, NJ Metropolitan Division	New Jersey

Canton-Massillon, OH	Ohio
Cape Coral-Fort Myers, FL	Florida
Cape Girardeau-Jackson, MO-IL	Missouri
Carson City, NV	Nevada
Casper, WY	Wyoming
Cedar Rapids, IA	Iowa
Champaign-Urbana, IL	Illinois
Charleston, WV	West Virginia
Charleston-North Charleston-Summerville, SC	South Carolina
Charlotte-Gastonia-Rock Hill, NC-SC	North Carolina
Charlottesville, VA	Virginia
Chattanooga, TN-GA	Tennessee
Cheyenne, WY	Wyoming
Chicago-Joliet-Naperville, IL Metropolitan Division	Illinois
Chicago-Joliet-Naperville, IL-IN-WI	Illinois
Chico, CA	California
Cincinnati-Middletown, OH-KY-IN	Ohio
Clarksville, TN-KY	Tennessee
Cleveland, TN	Tennessee
Cleveland-Elyria-Mentor, OH	Ohio
Coeur d'Alene, ID	Idaho
College Station-Bryan, TX	Texas
Colorado Springs, CO	Colorado
Columbia, MO	Missouri
Columbia, SC	South Carolina
Columbus, GA-AL	Georgia
Columbus, IN	Indiana
Columbus, OH	Ohio
Corpus Christi, TX	Texas
Corvallis, OR	Oregon
Crestview-Fort Walton Beach-Destin, FL	Florida
Cumberland, MD-WV	Maryland
Dallas-Fort Worth-Arlington, TX	Texas
Dallas-Plano-Irving, TX Metropolitan Division	Texas
Dalton, GA	Georgia
Danville, IL	Illinois
Danville, VA	Virginia
Davenport-Moline-Rock Island, IA-IL	Illinois
Dayton, OH	Ohio
Decatur, AL	Alabama
Decatur, IL	Illinois
Deltona-Daytona Beach-Ormond Beach, FL	Florida
Denver-Aurora-Broomfield, CO	Colorado

Des Moines-West Des Moines, IA	Iowa
Detroit-Livonia-Dearborn, MI Metropolitan Division	Michigan
Detroit-Warren-Livonia, MI	Michigan
Dothan, AL	Alabama
Dover, DE	Delaware
Dubuque, IA	Iowa
Duluth, MN-WI	Minnesota
Durham-Chapel Hill, NC	North Carol
Eau Claire, WI	Wisconsin
Edison-New Brunswick, NJ Metropolitan Division	New Jersey
El Centro, CA	California
Elizabethtown, KY	Kentucky
Elkhart-Goshen, IN	Indiana
Elmira, NY	New York
El Paso, TX	Texas
Erie, PA	Pennsylvania
Eugene-Springfield, OR	Oregon
Evansville, IN-KY	Indiana
Fairbanks, AK	Alaska
Fajardo, PR	Puerto Rico
Fargo, ND-MN	North Dakot
Farmington, NM	New Mexico
Fayetteville, NC	North Carol
Fayetteville-Springdale-Rogers, AR-MO	Arkansas
Flagstaff, AZ	Arizona
Flint, MI	Michigan
Florence, SC	South Carol
Florence-Muscle Shoals, AL	Alabama
Fond du Lac, WI	Wisconsin
Fort Collins-Loveland, CO	Colorado
Fort Lauderdale-Pompano Beach-Deerfield Beach, FL Metropolitan Division	Florida
Fort Smith, AR-OK	Arkansas
Fort Wayne, IN	Indiana
Fort Worth-Arlington, TX Metropolitan Division	Texas
Fresno, CA	California
Gadsden, AL	Alabama
Gainesville, FL	Florida
Gainesville, GA	Georgia
Gary, IN Metropolitan Division	Indiana
Glens Falls, NY	New York
Goldsboro, NC	North Carol
Grand Forks, ND-MN	North Dakot
Grand Junction, CO	Colorado

Grand Rapids-Wyoming, MI	Michigan
Great Falls, MT	Montana
Greeley, CO	Colorado
Green Bay, WI	Wisconsin
Greensboro-High Point, NC	North Carolina
Greenville, NC	North Carolina
Greenville-Mauldin-Easley, SC	South Carolina
Guayama, PR	Puerto Rico
Gulfport-Biloxi, MS	Mississippi
Hagerstown-Martinsburg, MD-WV	Maryland
Hanford-Corcoran, CA	California
Harrisburg-Carlisle, PA	Pennsylvania
Harrisonburg, VA	Virginia
Hattiesburg, MS	Mississippi
Hickory-Lenoir-Morganton, NC	North Carolina
Hinesville-Fort Stewart, GA	Georgia
Holland-Grand Haven, MI	Michigan
Honolulu, HI	Hawaii
Hot Springs, AR	Arkansas
Houma-Bayou Cane-Thibodaux, LA	Louisiana
Houston-Sugar Land-Baytown, TX	Texas
Huntington-Ashland, WV-KY-OH	West Virginia
Huntsville, AL	Alabama
Idaho Falls, ID	Idaho
Indianapolis-Carmel, IN	Indiana
Iowa City, IA	Iowa
Ithaca, NY	New York
Jackson, MI	Michigan
Jackson, MS	Mississippi
Jackson, TN	Tennessee
Jacksonville, FL	Florida
Jacksonville, NC	North Carolina
Janesville, WI	Wisconsin
Jefferson City, MO	Missouri
Johnson City, TN	Tennessee
Johnstown, PA	Pennsylvania
Jonesboro, AR	Arkansas
Joplin, MO	Missouri
Kalamazoo-Portage, MI	Michigan
Kankakee-Bradley, IL	Illinois
Kansas City, MO-KS Metropolitan Statistical Area	Missouri
Kennewick-Pasco-Richland, WA	Washington
Killeen-Temple-Fort Hood, TX	Texas



Kingsport-Bristol-Bristol, TN-VA	Tennessee
Kingston, NY	New York
Knoxville, TN	Tennessee
Kokomo, IN	Indiana
La Crosse, WI-MN	Wisconsin
Lafayette, IN	Indiana
Lafayette, LA	Louisiana
Lake Charles, LA	Louisiana
Lake County-Kenosha County, IL-WI Metropolitan Division	Illinois
Lake Havasu City-Kingman, AZ	Arizona
Lakeland-Winter Haven, FL	Florida
Lancaster, PA	Pennsylvania
Lansing-East Lansing, MI	Michigan
Laredo, TX	Texas
Las Cruces, NM	New Mexico
Las Vegas-Paradise, NV	Nevada
Lawrence, KS	Kansas
Lawton, OK	Oklahoma
Lebanon, PA	Pennsylvania
Lewiston, ID-WA	Idaho
Lexington-Fayette, KY	Kentucky
Lima, OH	Ohio
Lincoln, NE	Nebraska
Little Rock-North Little Rock-Conway, AR	Arkansas
Logan, UT-ID	Utah
Longview, TX	Texas
Longview, WA	Washington
Los Angeles-Long Beach-Glendale, CA Metropolitan Division	California
Los Angeles-Long Beach-Santa Ana, CA	California
Louisville-Jefferson County, KY-IN	Kentucky
Lubbock, TX	Texas
Lynchburg, VA	Virginia
Macon, GA	Georgia
Madera-Chowchilla, CA	California
Madison, WI	Wisconsin
Manhattan, KS	Kansas
Mankato-North Mankato, MN	Minnesota
Mansfield, OH	Ohio
Mayaguez, PR	Puerto Rico
McAllen-Edinburg-Mission, TX	Texas
Medford, OR	Oregon
Memphis, TN-MS-AR	Tennessee
Merced, CA	California

Miami-Fort Lauderdale-Pompano Beach, FL	Florida
Miami-Miami Beach-Kendall, FL Metropolitan Division	Florida
Michigan City-La Porte, IN	Indiana
Midland, TX	Texas
Milwaukee-Waukesha-West Allis, WI	Wisconsin
Minneapolis-St. Paul-Bloomington, MN-WI	Minnesota
Missoula, MT	Montana
Mobile, AL	Alabama
Modesto, CA	California
Monroe, LA	Louisiana
Monroe, MI	Michigan
Montgomery, AL	Alabama
Morgantown, WV	West Virginia
Morristown, TN	Tennessee
Mount Vernon-Anacortes, WA	Washington
Muncie, IN	Indiana
Muskegon-Norton Shores, MI	Michigan
Myrtle Beach-North Myrtle Beach-Conway, SC	South Carolina
Napa, CA	California
Naples-Marco Island, FL	Florida
Nashville-Davidson--Murfreeseboro--Franklin, TN	Tennessee
Nassau-Suffolk, NY Metropolitan Division	New York
Newark-Union, NJ-PA Metropolitan Division	New Jersey
New Orleans-Metairie-Kenner, LA	Louisiana
New York-Northern New Jersey-Long Island, NY-NJ-PA	New York
New York-White Plains-Wayne, NY-NJ Metropolitan Division	New York
Niles-Benton Harbor, MI	Michigan
North Port-Bradenton-Sarasota, FL	Florida
Oakland-Fremont-Hayward, CA Metropolitan Division	California
Ocala, FL	Florida
Ocean City, NJ	New Jersey
Odessa, TX	Texas
Ogden-Clearfield, UT	Utah
Oklahoma City, OK	Oklahoma
Olympia, WA	Washington
Omaha-Council Bluffs, NE-IA	Nebraska
Orlando-Kissimmee-Sanford, FL	Florida
Oshkosh-Neenah, WI	Wisconsin
Owensboro, KY	Kentucky
Oxnard-Thousand Oaks-Ventura, CA	California
Palm Bay-Melbourne-Titusville, FL	Florida
Palm Coast, FL	Florida
Panama City-Lynn Haven-Panama City Beach, FL	Florida

Parkersburg-Marietta-Vienna, WV-OH	West Virgin
Pascagoula, MS	Mississippi
Pensacola-Ferry Pass-Brent, FL	Florida
Peoria, IL	Illinois
Philadelphia, PA Metropolitan Division	Pennsylvania
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	Pennsylvania
Phoenix-Mesa-Glendale, AZ	Arizona
Pine Bluff, AR	Arkansas
Pittsburgh, PA	Pennsylvania
Pocatello, ID	Idaho
Ponce, PR	Puerto Rico
Portland-Vancouver-Hillsboro, OR-WA	Oregon
Port St. Lucie, FL	Florida
Poughkeepsie-Newburgh-Middletown, NY	New York
Prescott, AZ	Arizona
Provo-Orem, UT	Utah
Pueblo, CO	Colorado
Punta Gorda, FL	Florida
Racine, WI	Wisconsin
Raleigh-Cary, NC	North Carol
Rapid City, SD	South Dakot
Reading, PA	Pennsylvania
Redding, CA	California
Reno-Sparks, NV	Nevada
Richmond, VA	Virginia
Riverside-San Bernardino-Ontario, CA	California
Roanoke, VA	Virginia
Rochester, MN	Minnesota
Rochester, NY	New York
Rockford, IL	Illinois
Rocky Mount, NC	North Carol
Rome, GA	Georgia
Sacramento--Arden-Arcade--Roseville, CA	California
Saginaw-Saginaw Township North, MI	Michigan
St. Cloud, MN	Minnesota
St. George, UT	Utah
St. Joseph, MO-KS	Missouri
St. Louis, MO-IL	Missouri
Salem, OR	Oregon
Salinas, CA	California
Salisbury, MD	Maryland
Salt Lake City, UT	Utah
San Angelo, TX	Texas

San Antonio-New Braunfels, TX	Texas
San Diego-Carlsbad-San Marcos, CA	California
Sandusky, OH	Ohio
San Francisco-Oakland-Fremont, CA	California
San Francisco-San Mateo-Redwood City, CA Metropolitan Division	California
San German-Cabo Rijo, PR	Puerto Rico
San Jose-Sunnyvale-Santa Clara, CA	California
San Juan-Caguas-Guaynabo, PR	Puerto Rico
San Luis Obispo-Paso Robles, CA	California
Santa Ana-Anaheim-Irvine, CA Metropolitan Division	California
Santa Barbara-Santa Maria-Goleta, CA	California
Santa Cruz-Watsonville, CA	California
Santa Fe, NM	New Mexico
Santa Rosa-Petaluma, CA	California
Savannah, GA	Georgia
Scranton--Wilkes-Barre, PA	Pennsylvania
Seattle-Bellevue-Everett, WA Metropolitan Division	Washington
Seattle-Tacoma-Bellevue, WA	Washington
Sebastian-Vero Beach, FL	Florida
Sheboygan, WI	Wisconsin
Sherman-Denison, TX	Texas
Shreveport-Bossier City, LA	Louisiana
Sioux City, IA-NE-SD	Iowa
Sioux Falls, SD	South Dakota
South Bend-Mishawaka, IN-MI	Indiana
Spartanburg, SC	South Carolina
Spokane, WA	Washington
Springfield, IL	Illinois
Springfield, MO	Missouri
Springfield, OH	Ohio
State College, PA	Pennsylvania
Steubenville-Weirton, OH-WV	Ohio
Stockton, CA	California
Sumter, SC	South Carolina
Syracuse, NY	New York
Tacoma, WA Metropolitan Division	Washington
Tallahassee, FL	Florida
Tampa-St. Petersburg-Clearwater, FL	Florida
Terre Haute, IN	Indiana
Texarkana, TX-Texarkana, AR	Texas
Toledo, OH	Ohio
Topeka, KS	Kansas
Trenton-Ewing, NJ	New Jersey

Tucson, AZ	Arizona
Tulsa, OK	Oklahoma
Tuscaloosa, AL	Alabama
Tyler, TX	Texas
Utica-Rome, NY	New York
Valdosta, GA	Georgia
Vallejo-Fairfield, CA	California
Victoria, TX	Texas
Vineland-Millville-Bridgeton, NJ	New Jersey
Virginia Beach-Norfolk-Newport News, VA-NC	Virginia
Visalia-Porterville, CA	California
Waco, TX	Texas
Warner Robins, GA	Georgia
Warren-Troy-Farmington Hills, MI Metropolitan Division	Michigan
Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Division	District of Columbia
Washington-Arlington-Alexandria, DC-VA-MD-WV	District of Columbia
Waterloo-Cedar Falls, IA	Iowa
Wausau, WI	Wisconsin
Wenatchee-East Wenatchee, WA	Washington
West Palm Beach-Boca Raton-Boynton Beach, FL Metropolitan Division	Florida
Wheeling, WV-OH	West Virginia
Wichita, KS	Kansas
Wichita Falls, TX	Texas
Williamsport, PA	Pennsylvania
Wilmington, DE-MD-NJ Metropolitan Division	Delaware
Wilmington, NC	North Carolina
Winchester, VA-WV	Virginia
Winston-Salem, NC	North Carolina
Yakima, WA	Washington
Yauco, PR	Puerto Rico
York-Hanover, PA	Pennsylvania
Youngstown-Warren-Boardman, OH-PA	Ohio
Yuba City, CA	California
Yuma, AZ	Arizona
Bangor, ME NECTA	Maine
Barnstable Town, MA NECTA	Massachusetts
Boston-Cambridge-Quincy, MA-NH NECTA	Massachusetts
Boston-Cambridge-Quincy, MA NECTA Division	Massachusetts
Bridgeport-Stamford-Norwalk, CT NECTA	Connecticut
Brockton-Bridgewater-Easton, MA NECTA Division	Massachusetts
Burlington-South Burlington, VT NECTA	Vermont
Danbury, CT NECTA	Connecticut
Framingham, MA NECTA Division	Massachusetts

Hartford-West Hartford-East Hartford, CT NECTA	Connecticut
Haverhill-North Andover-Amesbury, MA-NH NECTA Division	Massachuset
Leominster-Fitchburg-Gardner, MA NECTA	Massachuset
Lewiston-Auburn, ME NECTA	Maine
Lowell-Billerica-Chelmsford, MA-NH NECTA Division	Massachuset
Manchester, NH NECTA	New Hampshi
Nashua, NH-MA NECTA Division	New Hampshi
New Bedford, MA NECTA	Massachuset
New Haven, CT NECTA	Connecticut
Norwich-New London, CT-RI NECTA	Connecticut
Peabody, MA NECTA Division	Massachuset
Pittsfield, MA NECTA	Massachuset
Portland-South Portland-Biddeford, ME NECTA	Maine
Portsmouth, NH-ME NECTA	New Hampshi
Providence-Fall River-Warwick, RI-MA NECTA	Rhode Islan
Rochester-Dover, NH-ME NECTA	New Hampshi
Springfield, MA-CT NECTA	Massachuset
Waterbury, CT NECTA	Connecticut
Worcester, MA-CT NECTA	Massachuset
Baltimore City, MD	Maryland
Kansas City, MO	Missouri
Kansas City, KS	Kansas
New York City, NY	New York
Putnam-Rockland-Westchester, NY	New York
Bergen-Hudson-Passaic, NJ	New Jersey
Calvert-Charles-Prince George's, MD	Maryland
Northern Virginia, VA	Virginia
Philadelphia City, PA	Pennsylvani

+-----+  
474 rows in set (21.69 sec)

4. Show the industry name, series id, and area name for all series related to mining in NY state.

```
mysql> select distinct Industry_Name, Series_Id, Area_Name from SERIES natural
join (select distinct * from AREAS natural join (select distinct * from
INDUSTRY, STATES where Industry_Name like '\%mining\%' and State_Name like
'New York') as A) as B;
```

Industry_Name	Series_Id	Area_Name	
Mining and logging	SMS36000001000000001	Statewide	
Mining and logging	SMU36000001000000001	Statewide	

```
| Mining and logging | SMU36403801000000001 | Rochester, NY |
+-----+-----+-----+
3 rows in set (4 min 19.85 sec)
```

5. Show the area name and average number of jobs in each area, but not statewide.

```
mysql> select Area_Name, avg(Num_Jobs) from JOBS natural join (select *
from AREAS natural join (select * from SERIES where Area_Code not in
(select Area_Code from AREAS where Area_Name like 'statewide')) as A)
as B group by (Area_Name);
```

```
+-----+-----+
| Area_Name | avg(Num_Jobs) |
+-----+-----+
| Albany-Schenectady-Troy, NY | 426.68977 |
| Binghamton, NY | 113.96250 |
| Buffalo-Niagara Falls, NY | 543.27803 |
| Elmira, NY | 41.28788 |
| Glens Falls, NY | 52.34735 |
| Ithaca, NY | 57.76061 |
| Kingston, NY | 61.40833 |
| Nassau-Suffolk, NY Metropolitan Division | 1177.03864 |
| New York City, NY | 3551.97500 |
| New York-Northern New Jersey-Long Island, NY-NJ-PA | 8067.44470 |
| New York-White Plains-Wayne, NY-NJ Metropolitan Division | 4972.55000 |
| Poughkeepsie-Newburgh-Middletown, NY | 235.57197 |
| Putnam-Rockland-Westchester, NY | 537.76250 |
| Rochester, NY | 508.24015 |
| Syracuse, NY | 315.97386 |
| Utica-Rome, NY | 130.59962 |
+-----+-----+
16 rows in set (5 min 15.77 sec)
```

6. Show the area name and industry name that had between 40 and 50 (thousand) jobs in March of 2009.

```
mysql> select distinct Area_Name, Industry_Name from INDUSTRY natural
join (select * from SERIES natural join (select * from JOBS, PERIODS
where Year = 2009 and Period = Period_Code and Period_Name like
'January' and Num_Jobs between 40 and 50) as A) as B natural join AREAS;
+-----+-----+
| Area_Name | Industry_Name |
+-----+-----+
```

```
| Elmira, NY | Total nonfarm |
+-----+-----+
1 row in set (0.07 sec)
```

7. This query below shows the distinct state codes found in SERIES related to specific series in the JOBS table. As you can see, the query took more than 7 minutes to complete!

```
mysql> select distinct State_Code from SERIES, JOBS where SERIES.Series_Id
= JOBS.Series_Id;
+-----+
| State_Code |
+-----+
|          36|
+-----+
1 row in set (7 min 28.67 sec)
```

(a) Why do you think it takes so much time?

**A** This query takes so much time because it is a Cartesian product of two tables which each contain a very large amount of entries... SERIES has around 22k, and JOBS is also somewhere in there. That's roughly  $22k^2$  entries... which is simply enormous.

(b) Try to find a query that produces the same correct result, but does so in less time. Feel free to suggest more than one alternate.

**A** Here is one possible alternative:

```
mysql> select distinct State_Code from (select distinct Series_Id,
State_Code from SERIES) as A natural join (select distinct
Series_Id from JOBS) as B;
+-----+
| State_Code |
+-----+
|          36 |
+-----+
1 row in set (1.98 sec)
```