Creating Visualization from a MySQL Database

```
In [47]:   # Make a connection to the MySQL DB.
           import sqlalchemy
           import matplotlib.pyplot as plt

           sqlalchemy.create_engine('mysql://lsdesign_01:****@65.19.141.67/lsdesign_sample_MySQL_Employee_DB')
```

```
Out[47]:   Engine(mysql://lsdesign_01:***@65.19.141.67/lsdesign_sample_MySQL_Employee_DB)
```

```
In [48]:   # Recalling the connection of the MySQL DB.
           %reload_ext sql
```

```
In [49]:   # Establishing the connection.
           %sql mysql://lsdesign_01:****@65.19.141.67/lsdesign_sample_MySQL_Employee_DB
```

Displaying the Employees Column from MySQL Database

```
In [56]:   # Pulling the informaion of the Employees column of the MYSQL DB.
           %%sql

           SELECT * FROM employees
```

```
 * mysql://lsdesign_01:***@65.19.141.67/lsdesign_sample_MySQL_Employee_DB
40 rows affected.
```

Out[56]:

employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	manager_id	department_id
100	Steven	King	steven.king@sqltutorial.org	515.123.4567	1987-06-17	4	24000.00	None	9
101	Neena	Kochhar	neena.kochhar@sqltutorial.org	515.123.4568	1989-09-21	5	17000.00	100	9
102	Lex	De Haan	lex.de haan@sqltutorial.org	515.123.4569	1993-01-13	5	17000.00	100	9
103	Alexander	Hunold	alexander.hunold@sqltutorial.org	590.423.4567	1990-01-03	9	9000.00	102	6
104	Bruce	Ernst	bruce.ernst@sqltutorial.org	590.423.4568	1991-05-21	9	6000.00	103	6
105	David	Austin	david.austin@sqltutorial.org	590.423.4569	1997-06-25	9	4800.00	103	6
106	Valli	Pataballa	valli.pataballa@sqltutorial.org	590.423.4560	1998-02-05	9	4800.00	103	6
107	Diana	Lorentz	diana.lorentz@sqltutorial.org	590.423.5567	1999-02-07	9	4200.00	103	6
108	Nancy	Greenberg	nancy.greenberg@sqltutorial.org	515.124.4569	1994-08-17	7	12000.00	101	10
109	Daniel	Faviet	daniel.faviet@sqltutorial.org	515.124.4169	1994-08-16	6	9000.00	108	10
110	John	Chen	john.chen@sqltutorial.org	515.124.4269	1997-09-28	6	8200.00	108	10
111	Ismael	Sciarra	ismael.sciarra@sqltutorial.org	515.124.4369	1997-09-30	6	7700.00	108	10
112	Jose Manuel	Urman	jose manuel.urman@sqltutorial.org	515.124.4469	1998-03-07	6	7800.00	108	10
113	Luis	Popp	luis.popp@sqltutorial.org	515.124.4567	1999-12-07	6	6900.00	108	10
114	Den	Raphaely	den.raphaely@sqltutorial.org	515.127.4561	1994-12-07	14	11000.00	100	3
115	Alexander	Khoo	alexander.khoo@sqltutorial.org	515.127.4562	1995-05-18	13	3100.00	114	3
116	Shelli	Baida	shelli.baida@sqltutorial.org	515.127.4563	1997-12-24	13	2900.00	114	3
117	Sigal	Tobias	sigal.tobias@sqltutorial.org	515.127.4564	1997-07-24	13	2800.00	114	3
118	Guy	Himuro	guy.himuro@sqltutorial.org	515.127.4565	1998-11-15	13	2600.00	114	3
119	Karen	Colmenares	karen.colmenares@sqltutorial.org	515.127.4566	1999-08-10	13	2500.00	114	3
120	Matthew	Weiss	matthew.weiss@sqltutorial.org	650.123.1234	1996-07-18	19	8000.00	100	5
121	Adam	Fripp	adam.fripp@sqltutorial.org	650.123.2234	1997-04-10	19	8200.00	100	5
122	Payam	Kaufling	payam.kaufling@sqltutorial.org	650.123.3234	1995-05-01	19	7900.00	100	5
123	Shanta	Vollman	shanta.vollman@sqltutorial.org	650.123.4234	1997-10-10	19	6500.00	100	5
126	Irene	Mikkilineni	irene.mikkilineni@sqltutorial.org	650.124.1224	1998-09-28	18	2700.00	120	5
145	John	Russell	john.russell@sqltutorial.org	None	1996-10-01	15	14000.00	100	8
146	Karen	Partners	karen.partners@sqltutorial.org	None	1997-01-05	15	13500.00	100	8
176	Jonathon	Taylor	jonathon.taylor@sqltutorial.org	None	1998-03-24	16	8600.00	100	8
177	Jack	Livingston	jack.livingston@sqltutorial.org	None	1998-04-23	16	8400.00	100	8
178	Kimberely	Grant	kimberely.grant@sqltutorial.org	None	1999-05-24	16	7000.00	100	8
179	Charles	Johnson	charles.johnson@sqltutorial.org	None	2000-01-04	16	6200.00	100	8
192	Sarah	Bell	sarah.bell@sqltutorial.org	650.501.1876	1996-02-04	17	4000.00	123	5
193	Britney	Everett	britney.everett@sqltutorial.org	650.501.2876	1997-03-03	17	3900.00	123	5
200	Jennifer	Whalen	jennifer.whalen@sqltutorial.org	515.123.4444	1987-09-17	3	4400.00	101	1
201	Michael	Hartstein	michael.hartstein@sqltutorial.org	515.123.5555	1996-02-17	10	13000.00	100	2
202	Pat	Fay	pat.fay@sqltutorial.org	603.123.6666	1997-08-17	11	6000.00	201	2
203	Susan	Mavris	susan.mavris@sqltutorial.org	515.123.7777	1994-06-07	8	6500.00	101	4
204	Hermann	Baer	hermann.baer@sqltutorial.org	515.123.8888	1994-06-07	12	10000.00	101	7

205	Shelley	Higgins	shelley.higgins@sqltutorial.org	515.123.8080	1994-06-07	2	12000.00	101	11
206	William	Gietz	william.gietz@sqltutorial.org	515.123.8181	1994-06-07	1	8300.00	205	11

Creating a Pandas DataFrame from MySQL Database

```
In [66]:  # Creating a Pandas DataFrame from the MYSQL DB.
          result = %sql SELECT * FROM employees
          df = result.DataFrame()
```

```
 * mysql://lsdesign_01:***@65.19.141.67/lsdesign_sample_MySQL_Employee_DB
40 rows affected.
```

```
In [67]:  # Printing the new DataFrame.
          print(df)
```

```
    employee_id  first_name   last_name                                email  \
0           100      Steven        King           steven.king@sqltutorial.org
1           101       Neena     Kochhar         neena.kochhar@sqltutorial.org
2           102         Lex     De Haan          lex.de haan@sqltutorial.org
3           103   Alexander      Hunold     alexander.hunold@sqltutorial.org
4           104       Bruce       Ernst          bruce.ernst@sqltutorial.org
5           105       David      Austin         david.austin@sqltutorial.org
6           106       Valli   Pataballa      valli.pataballa@sqltutorial.org
7           107       Diana     Lorentz        diana.lorentz@sqltutorial.org
8           108       Nancy   Greenberg      nancy.greenberg@sqltutorial.org
9           109      Daniel      Faviet         daniel.faviet@sqltutorial.org
10          110        John        Chen           john.chen@sqltutorial.org
11          111      Ismael     Sciarra        ismael.sciarra@sqltutorial.org
12          112 Jose Manuel       Urman   jose manuel.urman@sqltutorial.org
13          113        Luis        Popp           luis.popp@sqltutorial.org
14          114         Den    Raphaely        den.raphaely@sqltutorial.org
15          115   Alexander        Khoo       alexander.khoo@sqltutorial.org
16          116      Shelli       Baida         shelli.baida@sqltutorial.org
17          117       Sigal      Tobias         sigal.tobias@sqltutorial.org
18          118         Guy      Himuro           guy.himuro@sqltutorial.org
19          119       Karen   Colmenares     karen.colmenares@sqltutorial.org
20          120     Matthew       Weiss         matthew.weiss@sqltutorial.org
21          121        Adam       Fripp           adam.fripp@sqltutorial.org
22          122       Payam     Kaufling       payam.kaufling@sqltutorial.org
23          123      Shanta     Vollman        shanta.vollman@sqltutorial.org
24          126       Irene Mikkilineni  irene.mikkilineni@sqltutorial.org
25          145        John     Russell         john.russell@sqltutorial.org
26          146       Karen    Partners        karen.partners@sqltutorial.org
27          176    Jonathon      Taylor       jonathon.taylor@sqltutorial.org
28          177        Jack  Livingston      jack.livingston@sqltutorial.org
29          178   Kimberely       Grant       kimberely.grant@sqltutorial.org
30          179     Charles     Johnson      charles.johnson@sqltutorial.org
31          192       Sarah        Bell           sarah.bell@sqltutorial.org
32          193     Britney     Everett       britney.everett@sqltutorial.org
33          200    Jennifer      Whalen       jennifer.whalen@sqltutorial.org
34          201     Michael   Hartstein  michael.hartstein@sqltutorial.org
35          202         Pat         Fay             pat.fay@sqltutorial.org
36          203       Susan      Mavris         susan.mavris@sqltutorial.org
37          204     Hermann        Baer         hermann.baer@sqltutorial.org
38          205     Shelley     Higgins     shelley.higgins@sqltutorial.org
39          206     William       Gietz         william.gietz@sqltutorial.org

    phone_number   hire_date  job_id    salary  manager_id  department_id
0   515.123.4567  1987-06-17       4  24000.00         NaN              9
1   515.123.4568  1989-09-21       5  17000.00       100.0              9
2   515.123.4569  1993-01-13       5  17000.00       100.0              9
3   590.423.4567  1990-01-03       9   9000.00       102.0              6
4   590.423.4568  1991-05-21       9   6000.00       103.0              6
5   590.423.4569  1997-06-25       9   4800.00       103.0              6
6   590.423.4560  1998-02-05       9   4800.00       103.0              6
7   590.423.5567  1999-02-07       9   4200.00       103.0              6
8   515.124.4569  1994-08-17       7  12000.00       101.0             10
9   515.124.4169  1994-08-16       6   9000.00       108.0             10
10  515.124.4269  1997-09-28       6   8200.00       108.0             10
11  515.124.4369  1997-09-30       6   7700.00       108.0             10
12  515.124.4469  1998-03-07       6   7800.00       108.0             10
13  515.124.4567  1999-12-07       6   6900.00       108.0             10
14  515.127.4561  1994-12-07      14  11000.00       100.0              3
15  515.127.4562  1995-05-18      13   3100.00       114.0              3
16  515.127.4563  1997-12-24      13   2900.00       114.0              3
17  515.127.4564  1997-07-24      13   2800.00       114.0              3
18  515.127.4565  1998-11-15      13   2600.00       114.0              3
19  515.127.4566  1999-08-10      13   2500.00       114.0              3
20  650.123.1234  1996-07-18      19   8000.00       100.0              5
21  650.123.2234  1997-04-10      19   8200.00       100.0              5
22  650.123.3234  1995-05-01      19   7900.00       100.0              5
23  650.123.4234  1997-10-10      19   6500.00       100.0              5
24  650.124.1224  1998-09-28      18   2700.00       120.0              5
25          None  1996-10-01      15  14000.00       100.0              8
26          None  1997-01-05      15  13500.00       100.0              8
27          None  1998-03-24      16   8600.00       100.0              8
28          None  1998-04-23      16   8400.00       100.0              8
29          None  1999-05-24      16   7000.00       100.0              8
30          None  2000-01-04      16   6200.00       100.0              8
31  650.501.1876  1996-02-04      17   4000.00       123.0              5
32  650.501.2876  1997-03-03      17   3900.00       123.0              5
33  515.123.4444  1987-09-17       3   4400.00       101.0              1
34  515.123.5555  1996-02-17      10  13000.00       100.0              2
35  603.123.6666  1997-08-17      11   6000.00       201.0              2
36  515.123.7777  1994-06-07       8   6500.00       101.0              4
37  515.123.8888  1994-06-07      12  10000.00       101.0              7
38  515.123.8080  1994-06-07       2  12000.00       101.0             11
```

```
In [68]:   # Checking the datatype of the DataFrame
           type(df)

Out[68]:   pandas.core.frame.DataFrame
```
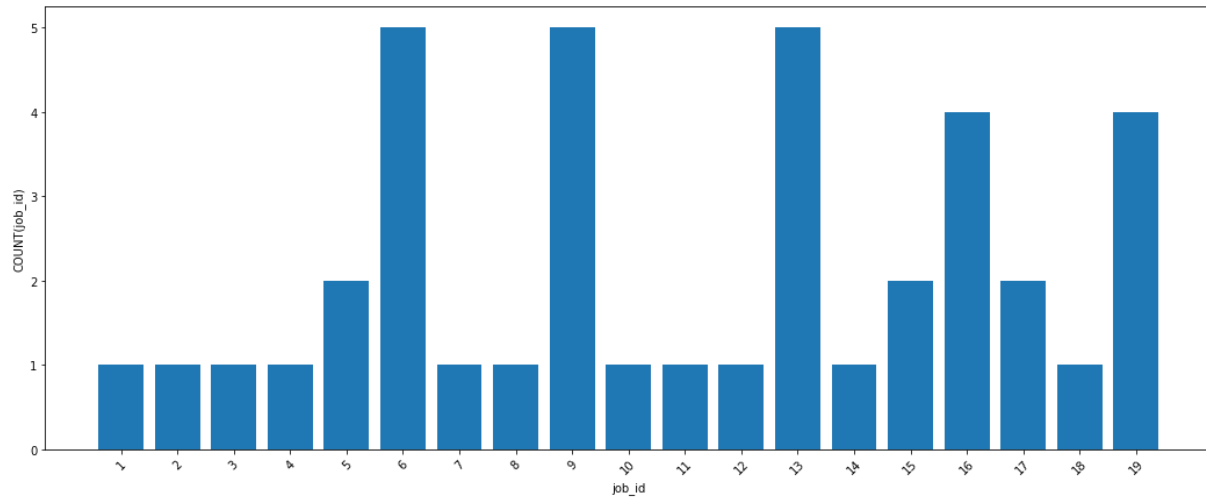
Data Visualizations of MySQL Database

```
In [74]:   # Creating a Bar Chart of the DataFrame.
           plt.figure(figsize = (18, 7))

           chart = %sql SELECT job_id, COUNT(job_id) FROM employees GROUP BY job_id
           chart.bar();
```
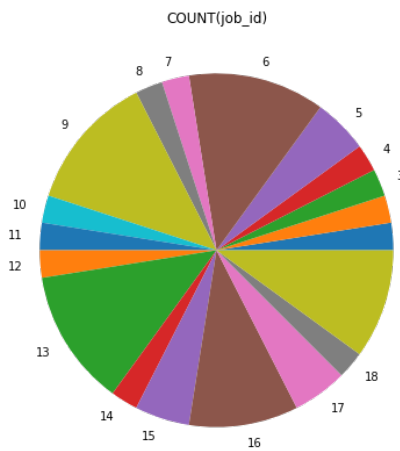
```
 * mysql://lsdesign_01:***@65.19.141.67/lsdesign_sample_MySQL_Employee_DB
19 rows affected.
```



```
In [75]:   # Creating a Pie Chart of the DataFrame.
           plt.figure(figsize = (18, 7))

           chart = %sql SELECT job_id, COUNT(job_id) FROM employees GROUP BY job_id
           chart.pie();
```

```
 * mysql://lsdesign_01:***@65.19.141.67/lsdesign_sample_MySQL_Employee_DB
19 rows affected.
```



```
In [ ]:
```