

LAB2. INDIAN WEATHER ANALYTICS USING HISTOCIAL DATA (PART 1)

Import excel data into your table(You can use any tools – Oracle, SQLite, etc)

Step 1:

We need to install sql developer for importing data to our database schema. Unlike installing Oracle database this sql developer is pretty easy to install and also easy to work with it.

Step 2:

First we need to create a new connect using the “+” icon on the left side. Then should fill the details where displayed below: Name of the connection which can be anything for eg: your name then give the schema that you want to access that may be HR or SCOTT as a username then give the password. Finally you need to change the SID by default it will be xe you need to change that to ORCL (case sensitive). Then test the connection when the status shows success then give connect.

Data Import Wizard - Step 1 of 5

Data Preview

Source: Local File

File: D:\weather dataset.xlsx

File Format

☒ Header

Format: excel 95-2003 (.xls)

Worksheet: Sheet1

Skip Rows: 0

☒ Preview Row Limit: 100

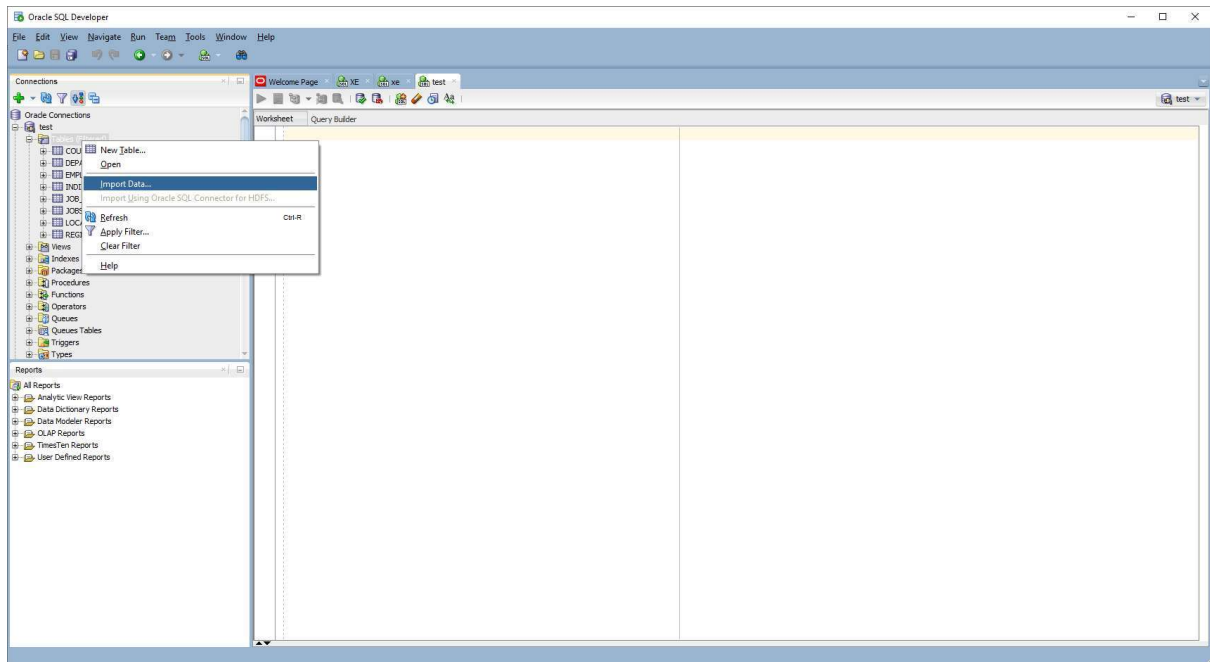
File Contents

C_TEMP	MONTH	DAY	YEAR	TEMPERA...	CITY
1	1	1	1995	72.4	chennai
2	1	2	1995	73.5	chennai
3	1	3	1995	72.6	chennai
4	1	4	1995	75.2	chennai
5	1	5	1995	74.8	chennai
6	1	6	1995	76.4	chennai
7	1	7	1995	78.4	chennai
8	1	8	1995	78.6	chennai
9	1	9	1995	78.1	chennai
10	1	10	1995	79.3	chennai
11	1	11	1995	77.9	chennai
12	1	12	1995	79.0	chennai
13	1	13	1995	73.4	chennai

Help < Back Next > Finish Cancel

Step 3:

Click on the connection name which you created under the sub category you can see the table names where already in the Schema. Then right click on the connection name then it shows option for import data just click on that.



Step 4:

After clicking import data you can see the below screenshot. Then click for browse to select the file which you want to import. Then you can preview the data as in file contents then give.

Data Import Wizard - Step 2 of 4

Import Method

Specify the method for importing data. For External Table method, an external table will be created to read the data in the file. For Staging External Table method, an external table will be created as a staging table for importing the target table. For other methods, a new table is created and the data is imported.

Import Method:

☐ Send Create Script to SQL Worksheet

Table Name:

☐ Import Row Limit:

File Contents

C_TEMP	MONTH	DAY	YEAR	TEMPERA...	CITY
1	1	1	1995	72.4	chennai
2	1	2	1995	73.5	chennai
3	1	3	1995	72.6	chennai
4	1	4	1995	75.2	chennai
5	1	5	1995	74.8	chennai
6	1	6	1995	76.4	chennai
7	1	7	1995	78.4	chennai
8	1	8	1995	78.6	chennai
9	1	9	1995	78.1	chennai
10	1	10	1995	79.3	chennai
11	1	11	1995	77.9	chennai
12	1	12	1995	79.0	chennai
13	1	13	1995	73.4	chennai
14	1	14	1995	76.7	chennai

[Help](#) [< Back](#) [Next >](#) [Finish](#) [Cancel](#)

Step 5:

Here you need to create a table name and you can set the row limit to import data as like in below screenshot.

The screenshot shows the 'Data Import Wizard - Step 2 of 4' window. The 'Import Method' tab is selected in the left sidebar. The main area contains instructions on import methods and configuration options. The 'Import Method' is set to 'Insert'. There is an unchecked checkbox for 'Send Create Script to SQL Worksheet'. The 'Table Name' is 'weather_india'. The 'Import Row Limit' is set to 100. A 'File Contents' preview table is shown at the bottom.

Data Import Wizard - Step 2 of 4

Import Method

Specify the method for importing data. For External Table method, an external table will be created to read the data in the file. For Staging External Table method, an external table will be created as a staging table for importing the target table. For other methods, a new table is created and the data is imported.

Import Method: **Insert**

☐ Send Create Script to SQL Worksheet

Table Name: **weather_india**

☐ Import Row Limit: **100**

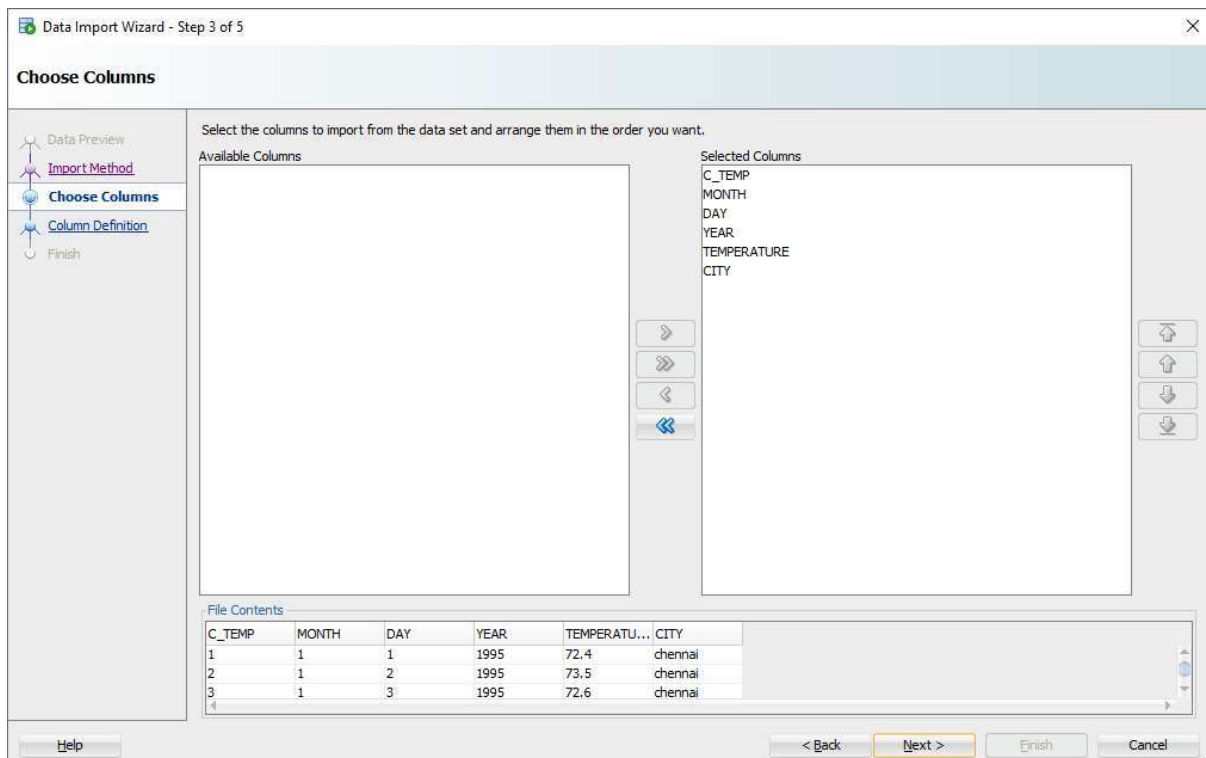
File Contents

C_TEMP	MONTH	DAY	YEAR	TEMPERA...	CITY
1	1	1	1995	72.4	chennai
2	1	2	1995	73.5	chennai
3	1	3	1995	72.6	chennai
4	1	4	1995	75.2	chennai
5	1	5	1995	74.8	chennai
6	1	6	1995	76.4	chennai
7	1	7	1995	78.4	chennai
8	1	8	1995	78.6	chennai
9	1	9	1995	78.1	chennai
10	1	10	1995	79.3	chennai
11	1	11	1995	77.9	chennai
12	1	12	1995	79.0	chennai
13	1	13	1995	73.4	chennai
14	1	14	1995	76.7	chennai

Buttons: **Help**, **< Back**, **Next >**, **Finish**, **Cancel**

Step 6:

Here you can choose the columns that you want to add it to the table or you can order the column name as your wish. If you want to remove a particular column you can specify the column name by selecting that and Click the "<" to remove single column.



Step 7:

Here you can look up the column details for each column for eg: Name of the Column, Data type, Nullable? Size etc. check the column name one by one then click next.

Data Import Wizard - Step 4 of 5

Column Definition

For each column on left, define the column details of the database table that will be created to import this data into.

Source Data Columns

- C_TEMP
- MONTH
- DAY
- YEAR
- TEMPERATURE
- CITY

Target Table Columns

Name: C_TEMP

Data Type: NUMBER

Size/Precision: 38

Scale: 0

☒ Nullable? Default:

Comment:

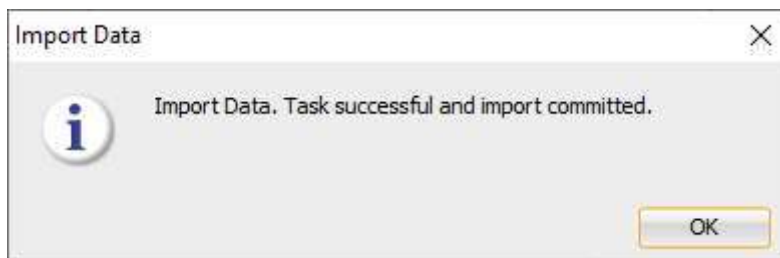
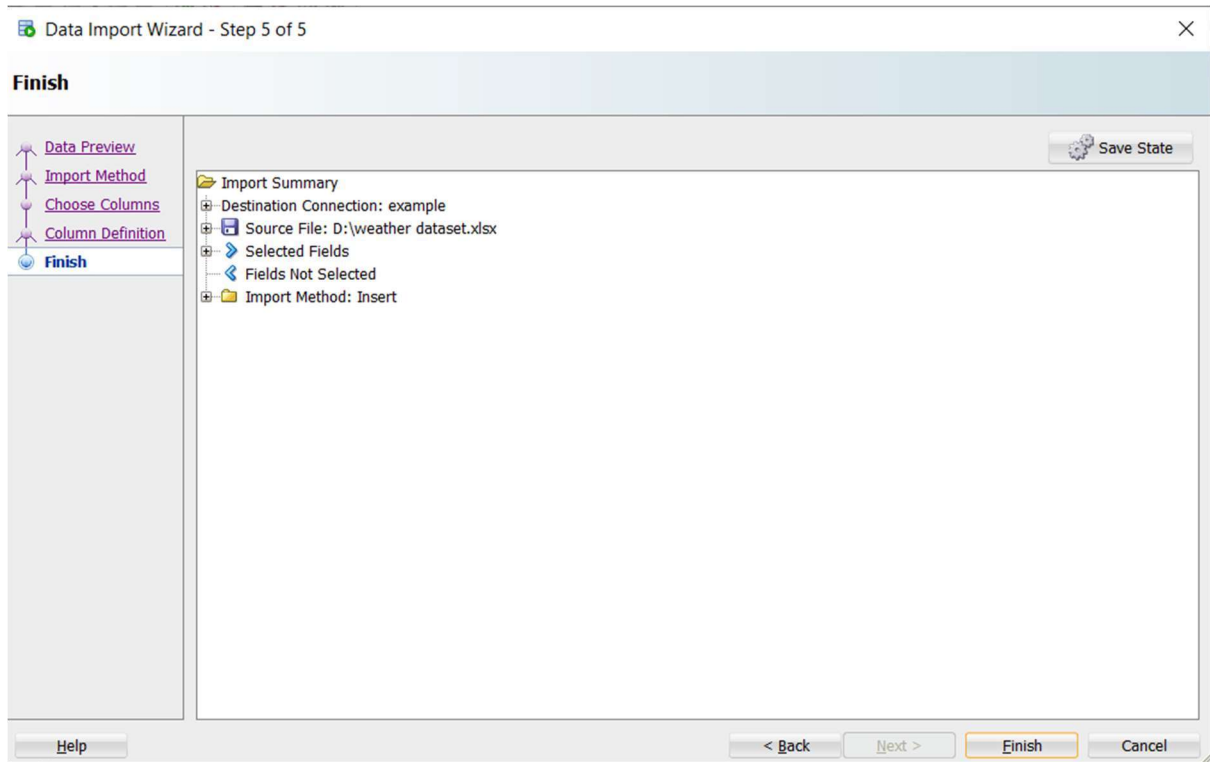
Data

1
2
3
4
5
6
7
8
9
10
11

Help < Back Next > Finish Cancel

Step 8:

Then finally click finish. You will get a prompt like “Import Data. Task successful and import committed.” Then click ok.



CHECK WHETHER THE DATASET HAS PRIMARY KEY?

```
SQL> desc weather_india;
```

Name	Null?	Type
C_TEMP		NUMBER(38)
MONTH		NUMBER(38)
DAY		NUMBER(38)
YEAR		NUMBER(38)
TEMPERATURE		NUMBER(38,1)
CITY		VARCHAR2(26)

QUERY TO ADD CONSTRAINT PRIMARY KEY:

```
SQL> alter table weather_india add constraint temp_pk primary key(c_temp);
```

Table altered.

```
SQL> desc weather_india;
```

Name	Null?	Type
C_TEMP	NOT NULL	NUMBER(38)
MONTH		NUMBER(38)
DAY		NUMBER(38)
YEAR		NUMBER(38)
TEMPERATURE		NUMBER(38,1)
CITY		VARCHAR2(26)

After the primary key is added to check we use describe followed by table name: describe weather_india; It shows the column that you gave as primary key as NOT NULL and these primary keys are unique, they don't have any repeated values.

Write any 5 queries using SELECT and WHERE clause:

SQL> select * from weather_india where temp_>100;

C_TEMP	MONTH	DAY	YEAR	TEMP_ CITY
18523	6	2	1995	101.7 delhi
18525	6	4	1995	101.1 delhi
18528	6	7	1995	100.1 delhi
18530	6	9	1995	101.9 delhi
18531	6	10	1995	100.7 delhi
18532	6	11	1995	100.3 delhi
18533	6	12	1995	100.9 delhi
18534	6	13	1995	100.7 delhi
18535	6	14	1995	102.8 delhi
18536	6	15	1995	102.9 delhi
18537	6	16	1995	102.3 delhi

C_TEMP	MONTH	DAY	YEAR	TEMP_ CITY
18538	6	17	1995	101.9 delhi
19610	5	24	1998	100.5 delhi
19612	5	26	1998	101.9 delhi
19613	5	27	1998	100.4 delhi
19614	5	28	1998	103.7 delhi
19615	5	29	1998	102.9 delhi
20345	5	28	2000	100.3 delhi
20692	5	10	2001	100.6 delhi
21066	5	19	2002	100.4 delhi

21446	6	3	2003	100.6	delhi
21447	6	4	2003	101.4	delhi

C_TEMP	MONTH	DAY	YEAR	TEMP_	CITY
--------	-------	-----	------	-------	------

21798	5	20	2004	101.3	delhi
22194	6	20	2005	100.2	delhi
23658	6	23	2009	100.5	delhi
23661	6	26	2009	100.8	delhi
23662	6	27	2009	101.4	delhi
23986	5	17	2010	101.2	delhi
23987	5	18	2010	100.9	delhi
24002	6	2	2010	101.5	delhi
24020	6	20	2010	100.9	delhi
24022	6	22	2010	101.6	delhi
24023	6	23	2010	101.8	delhi

C_TEMP	MONTH	DAY	YEAR	TEMP_	CITY
--------	-------	-----	------	-------	------

22907	6	3	2007	100.7	delhi
22911	6	7	2007	100.2	delhi
22912	6	8	2007	101	delhi
22913	6	9	2007	100.9	delhi
22914	6	10	2007	102.1	delhi
24731	5	31	2012	102.5	delhi
24732	6	1	2012	101.1	delhi
24746	6	15	2012	100.8	delhi
24747	6	16	2012	100.3	delhi
24748	6	17	2012	101.1	delhi

24752	6	21	2012	101.3	delhi
-------	---	----	------	-------	-------

C_TEMP	MONTH	DAY	YEAR	TEMP_CITY
--------	-------	-----	------	-----------

24762	7	1	2012	100.1	delhi
-------	---	---	------	-------	-------

25088	5	23	2013	100.3	delhi
-------	---	----	------	-------	-------

25468	6	7	2014	101.3	delhi
-------	---	---	------	-------	-------

25470	6	9	2014	100.2	delhi
-------	---	---	------	-------	-------

25481	6	20	2014	100.2	delhi
-------	---	----	------	-------	-------

25820	5	25	2015	100.1	delhi
-------	---	----	------	-------	-------

27287	5	30	2019	100.8	delhi
-------	---	----	------	-------	-------

27288	5	31	2019	101.7	delhi
-------	---	----	------	-------	-------

27296	6	8	2019	100.3	delhi
-------	---	---	------	-------	-------

27298	6	10	2019	102.6	delhi
-------	---	----	------	-------	-------

27299	6	11	2019	101.5	delhi
-------	---	----	------	-------	-------

C_TEMP	MONTH	DAY	YEAR	TEMP_CITY
--------	-------	-----	------	-----------

27303	6	15	2019	100.3	delhi
-------	---	----	------	-------	-------

27317	6	29	2019	100.6	delhi
-------	---	----	------	-------	-------

27318	6	30	2019	100.3	delhi
-------	---	----	------	-------	-------

26164	5	2	2016	100.4	delhi
-------	---	---	------	-------	-------

26197	6	4	2016	100.8	delhi
-------	---	---	------	-------	-------

26542	5	15	2017	100.3	delhi
-------	---	----	------	-------	-------

26562	6	4	2017	103.6	delhi
-------	---	---	------	-------	-------

26563	6	5	2017	103.3	delhi
-------	---	---	------	-------	-------

26564	6	6	2017	100.3	delhi
-------	---	---	------	-------	-------

64 rows selected.

```
SQL> select temp_,city from weather_india where month=9 and year=2013 and  
city='kolkata';
```

TEMP_ CITY

87.3 kolkata

80.5 kolkata

84.1 kolkata

87.8 kolkata

88.5 kolkata

83.5 kolkata

84.9 kolkata

81.3 kolkata

81.5 kolkata

82.1 kolkata

84.2 kolkata

TEMP_ CITY

86.5 kolkata

88.7 kolkata

82.1 kolkata

85.9 kolkata

86 kolkata

82.7 kolkata

83 kolkata

82.4 kolkata

82.7 kolkata

84.4 kolkata

86.1 kolkata

TEMP_ CITY

87.6 kolkata

88.5 kolkata

86.8 kolkata

84.8 kolkata

83.6 kolkata

80.5 kolkata

80.4 kolkata

78.8 kolkata

30 rows selected.

SQL> select city,month from weather_india where temp_<65 and year<1996;

CITY

MONTH

chennai 3

chennai 6

mumbai 3

delhi 11

delhi 11

delhi 11

delhi 11

delhi 11

delhi 11

delhi 11

delhi 11

CITY	MONTH
------	-------

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

CITY	MONTH
------	-------

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

CITY	MONTH
------	-------

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	12
-------	----

delhi	1
-------	---

delhi	1
-------	---

CITY	MONTH
------	-------

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

CITY	MONTH
------	-------

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

CITY	MONTH
------	-------

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	1
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

CITY	MONTH
------	-------

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

CITY	MONTH
------	-------

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	2
-------	---

delhi	3
-------	---

delhi	3
-------	---

delhi	3
-------	---

delhi	3
-------	---

delhi	3
-------	---

delhi	3
-------	---

delhi	3
-------	---

CITY	MONTH
------	-------

delhi	3
-------	---

delhi	3
-------	---

delhi	3
-------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

CITY	MONTH
------	-------

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	1
---------	---

kolkata	2
---------	---

kolkata	3
---------	---

CITY	MONTH
------	-------

kolkata	6
---------	---

kolkata	6
---------	---

kolkata	12
---------	----

kolkata	12
---------	----

125 rows selected.

SQL> select temp_,city from weather_india where month=5 and day=15 and year=2000;

TEMP_ CITY

93.7 chennai

86.6 mumbai

95.5 delhi

89.2 kolkata

5 rows selected.

SQL> select year , city from weather_india where temp_>103;

YEAR CITY

1998 delhi

2017 delhi

2017 delhi

3 rows selected.

Write 5 queries using Aggregate function (min, max , avg and count)

SQL> select count(day) from weather_india where temp_<60 and year=2005;

COUNT(DAY)

70

SQL> select max(temp_) from weather_india where year between 1995 and 2000;

MAX(TEMP_)

103.7

SQL> select count(distinct year) from weather_india where temp_>99;

COUNT(DISTINCTYEAR)

20

SQL> select min(temp_) from weather_india;

MIN(TEMP_)

-99

SQL> select avg(temp_) from weather_india where year=2020;

AVG(TEMP_)

70.7324074

Sample queries for India weather analytics using historical data part-1.

1.What is the lowest, highest and average temperature of your dataset (from year 1995 to February 2020)?

SQL> select min(temperature), max(temperature), avg(temperature) from weather_india where year>1994 and year<2021 and month=2;

MIN(TEMPERATURE) MAX(TEMPERATURE) AVG(TEMPERATURE)

-----	-----	-----
-99	88.9	73.2252401

2.What is the average temperature in May 2019 in Chennai?

SQL> select avg(temperature) from weather_india where month=5 and year=2019 and city='chennai';

AVG(TEMPERATURE)

73.6064516

3.Which is the hottest day in 2019 in Delhi?

SQL> select max(temperature) from weather_india where year=2019 and city='delhi';

MAX(TEMPERATURE)

102.6

4.Which is the coldest day in 2018 in Chennai?

SQL> select min(temperature) from weather_india where year=2018 and city='chennai';

MIN(TEMPERATURE)

-99

5.Which is the coldest year in December? Print city and temperature.

SQL> select city, temperature, year from weather_india where month=12 and temperature<30;

CITY	TEMPERATURE	YEAR
-----	-----	-----
chennai	-99	1998
chennai	-99	1998
chennai	-99	1998
chennai	-99	1998
chennai	-99	2015
chennai	-99	2015
mumbai	-99	1998
mumbai	-99	1998
mumbai	-99	1998
mumbai	-99	1998
mumbai	-99	2007

CITY	TEMPERATURE	YEAR
-----	-----	-----
mumbai	-99	2015
mumbai	-99	2015
delhi	-99	1998
delhi	-99	1998
delhi	-99	1998
delhi	-99	1998
delhi	-99	2007
delhi	-99	2015
delhi	-99	2015
kolkata	-99	2015
kolkata	-99	2015

CITY	TEMPERATURE	YEAR
-----	-----	-----
kolkata	-99	1998
kolkata	-99	1998
kolkata	-99	1998
kolkata	-99	1998

26 rows selected.

6.Which is the hottest city in India in 2017?

SQL> select city, temperature, year from weather_india where year=2017 and temperature>100;

CITY	TEMPERATURE	YEAR
-----	-----	-----
delhi	100.3	2017
delhi	103.6	2017
delhi	103.3	2017
delhi	100.3	2017

7.Is winter in Delhi in January 2017 colder than Mumbai? Print average temperature of Delhi and Mumbai too.

SQL> select avg(temperature) from weather_india where city between 'delhi' and 'mumbai' and month=1 and year=2017;

AVG(TEMPERATURE)

68.2494624

8.Display the day, month, year and city of the coldest day.

SQL> select day, month, year, city from weather_india where temperature<20;

DAY	MONTH	YEAR CITY
29	3	1995 chennai
22	6	1995 chennai
26	10	1996 chennai
18	6	2002 chennai
19	6	2002 chennai
20	6	2002 chennai
21	6	2002 chennai
26	10	2002 chennai
13	1	2003 chennai
16	8	1998 chennai
24	12	1998 chennai

DAY	MONTH	YEAR CITY
25	12	1998 chennai
30	12	1998 chennai
31	12	1998 chennai
10	1	1999 chennai
28	8	2007 chennai
9	4	2009 chennai
24	9	2008 chennai
6	2	2014 chennai
30	12	2015 chennai
31	12	2015 chennai

10	3	2016 chennai
----	---	--------------

DAY	MONTH	YEAR CITY
-----	-------	-----------

11	11	2016 chennai
----	----	--------------

14	11	2018 chennai
----	----	--------------

17	11	2018 chennai
----	----	--------------

24	4	2019 chennai
----	---	--------------

16	5	2019 chennai
----	---	--------------

17	5	2019 chennai
----	---	--------------

18	5	2019 chennai
----	---	--------------

29	3	1995 mumbai
----	---	-------------

24	12	1998 mumbai
----	----	-------------

25	12	1998 mumbai
----	----	-------------

30	12	1998 mumbai
----	----	-------------

DAY	MONTH	YEAR CITY
-----	-------	-----------

31	12	1998 mumbai
----	----	-------------

10	1	1999 mumbai
----	---	-------------

18	6	2002 mumbai
----	---	-------------

19	6	2002 mumbai
----	---	-------------

20	6	2002 mumbai
----	---	-------------

21	6	2002 mumbai
----	---	-------------

28	8	2007 mumbai
----	---	-------------

7	12	2007 mumbai
---	----	-------------

22	1	2008 mumbai
----	---	-------------

18	8	2008 mumbai
----	---	-------------

24	9	2008 mumbai
----	---	-------------

DAY	MONTH	YEAR CITY
9	4	2009 mumbai
6	2	2014 mumbai
30	12	2015 mumbai
31	12	2015 mumbai
10	3	2016 mumbai
11	11	2016 mumbai
14	11	2018 mumbai
15	11	2018 mumbai
17	11	2018 mumbai
23	1	2019 mumbai
24	4	2019 mumbai

DAY	MONTH	YEAR CITY
16	5	2019 mumbai
17	5	2019 mumbai
18	5	2019 mumbai
19	5	2019 mumbai
29	3	1995 delhi
16	8	1998 delhi
1	10	1998 delhi
24	12	1998 delhi
25	12	1998 delhi
30	12	1998 delhi
31	12	1998 delhi

DAY	MONTH	YEAR CITY
10	1	1999 delhi
29	4	1999 delhi
30	4	1999 delhi
28	4	2001 delhi
18	6	2002 delhi
19	6	2002 delhi
20	6	2002 delhi
21	6	2002 delhi
26	10	2002 delhi
28	8	2007 delhi
22	10	2007 delhi

DAY	MONTH	YEAR CITY
7	12	2007 delhi
24	9	2008 delhi
2	3	2009 delhi
9	4	2009 delhi
17	4	2010 delhi
18	4	2010 delhi
19	4	2010 delhi
21	4	2010 delhi
9	6	2011 delhi
10	6	2011 delhi
11	6	2011 delhi

DAY	MONTH	YEAR CITY
-----	-------	-----------

12	6	2011 delhi
13	6	2011 delhi
6	3	2007 delhi
7	3	2007 delhi
20	5	2007 delhi
30	12	2015 delhi
31	12	2015 delhi
10	3	2016 delhi
15	5	2013 delhi
6	2	2014 delhi
4	1	2018 delhi

DAY	MONTH	YEAR CITY
-----	-------	-----------

17	9	2018 delhi
24	9	2018 delhi
14	11	2018 delhi
15	11	2018 delhi
17	11	2018 delhi
23	1	2019 delhi
24	4	2019 delhi
25	4	2019 delhi
27	4	2019 delhi
30	4	2019 delhi
16	5	2019 delhi

DAY	MONTH	YEAR	CITY
17	5	2019	delhi
18	5	2019	delhi
19	5	2019	delhi
29	3	1995	kolkata
22	6	1995	kolkata
23	6	1995	kolkata
8	3	1996	kolkata
14	3	1996	kolkata
15	3	1996	kolkata
20	3	1996	kolkata
22	3	1996	kolkata

DAY	MONTH	YEAR	CITY
16	4	2016	delhi
5	5	2016	delhi
21	9	2016	delhi
11	11	2016	delhi
19	4	2017	delhi
20	4	2017	delhi
6	2	2014	kolkata
30	12	2015	kolkata
31	12	2015	kolkata
10	3	2016	kolkata
11	11	2016	kolkata

DAY	MONTH	YEAR	CITY
6	3	2007	kolkata
7	3	2007	kolkata
20	5	2007	kolkata
28	8	2007	kolkata
24	12	1998	kolkata
25	12	1998	kolkata
30	12	1998	kolkata
31	12	1998	kolkata
10	1	1999	kolkata
24	9	2008	kolkata
9	4	2009	kolkata

DAY	MONTH	YEAR	CITY
14	11	2018	kolkata
15	11	2018	kolkata
17	11	2018	kolkata
23	1	2019	kolkata
24	4	2019	kolkata
22	3	2000	kolkata
23	3	2000	kolkata
24	3	2000	kolkata
16	5	2019	kolkata
17	5	2019	kolkata
18	5	2019	kolkata

DAY	MONTH	YEAR	CITY
19	5	2019	kolkata
18	6	2002	kolkata
19	6	2002	kolkata
20	6	2002	kolkata
21	6	2002	kolkata
26	10	2002	kolkata

160 rows selected.