EXTRACTING CSV FILE USING SQL COMMAND

SQL COMMAND I USED :

1. select * from city_list where country='India' (to get the city nearby)

2. select * from city_data where city='Haora' and avg_temp is not null (to ensure that no null value is extracted)

3. select * from global_data where avg_temp is not null

In [1]:

```
#importing libraries

import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

In [10]:

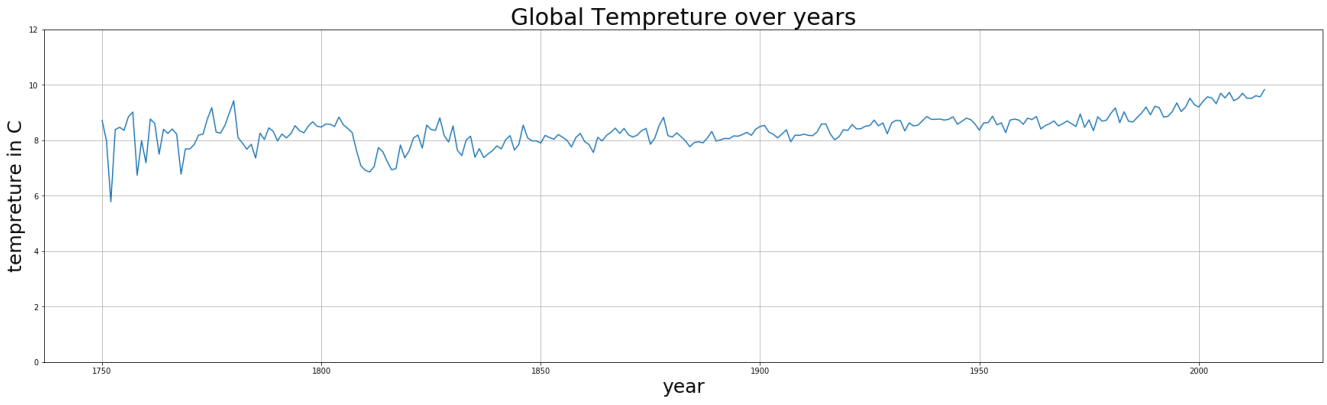
```
#installing csv file

haora_data=pd.read_csv(r"E:\Data_Science\Haora_Data.csv")
global_data=pd.read_csv(r"E:\Data_Science\Global_Temp.csv")
```

In [44]:

```
#variable for useful data

global_year=global_data['year']
global_temp=global_data['avg_temp']

haora_year=haora_data['year']
haora_temp=haora_data['avg_temp']
```

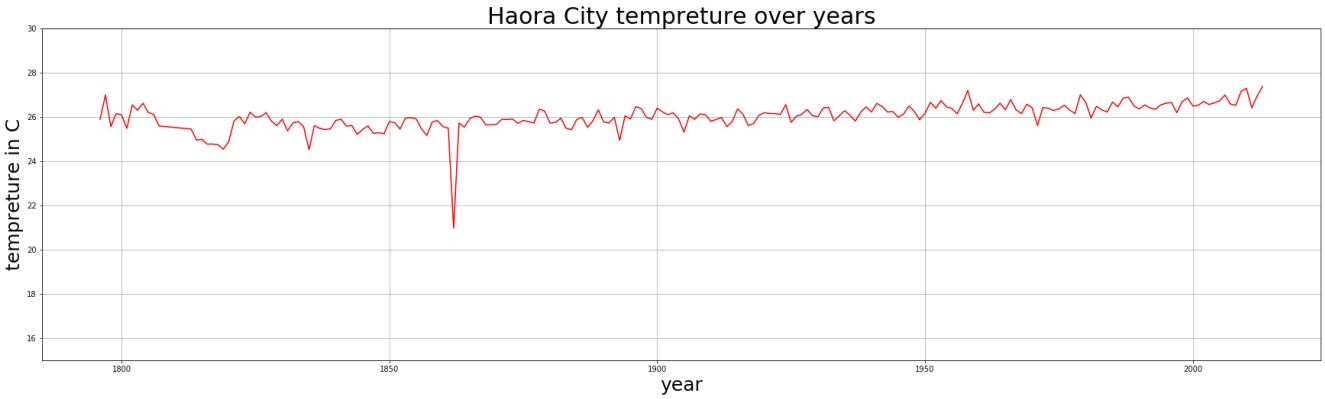
In [90]:

```
#ploting global tempreture over years in line plot

fig=plt.figure(figsize=(30,8))
plt.plot(global_year,global_temp)
plt.ylim(0,12)
plt.grid()
plt.xlabel('year',fontsize=25)
plt.ylabel('tempreture in C',fontsize=25)
plt.title('Global Tempreture over years',fontsize=30)
plt.show()
```



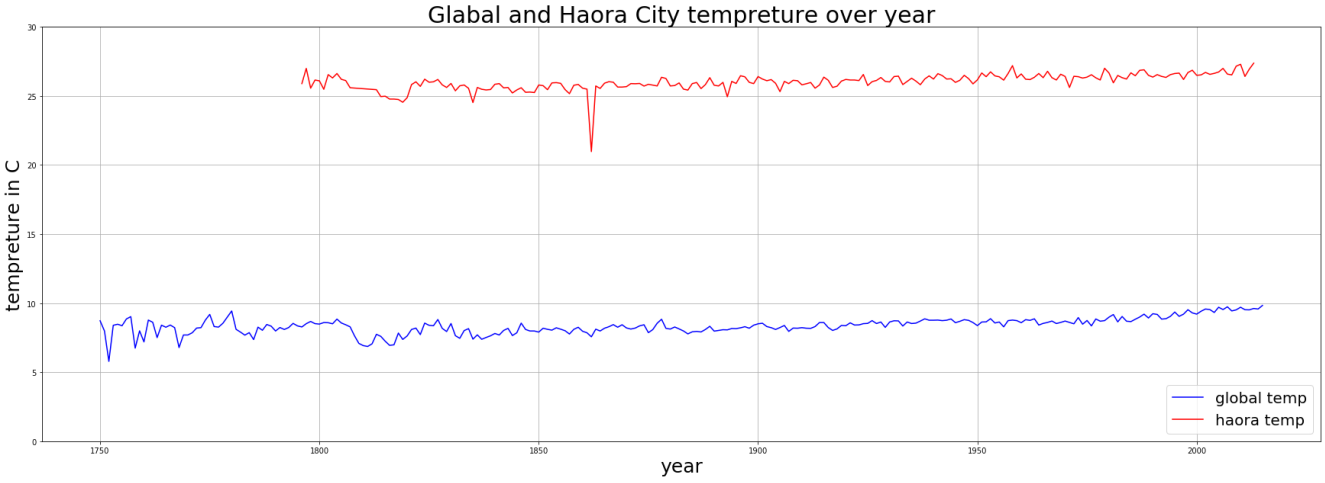
In [89]:

```
#ploting Haora city tempreture over years in line plot

fig=plt.figure(figsize=(30,8))
plt.plot(haora_year,haora_temp,color='red')
plt.grid()
plt.xlabel('year',fontsize=25)
plt.ylabel('tempreture in C',fontsize=25)
plt.title('Haora City tempreture over years',fontsize=30)
plt.ylim(15,30)
plt.show()
```



In [84]:

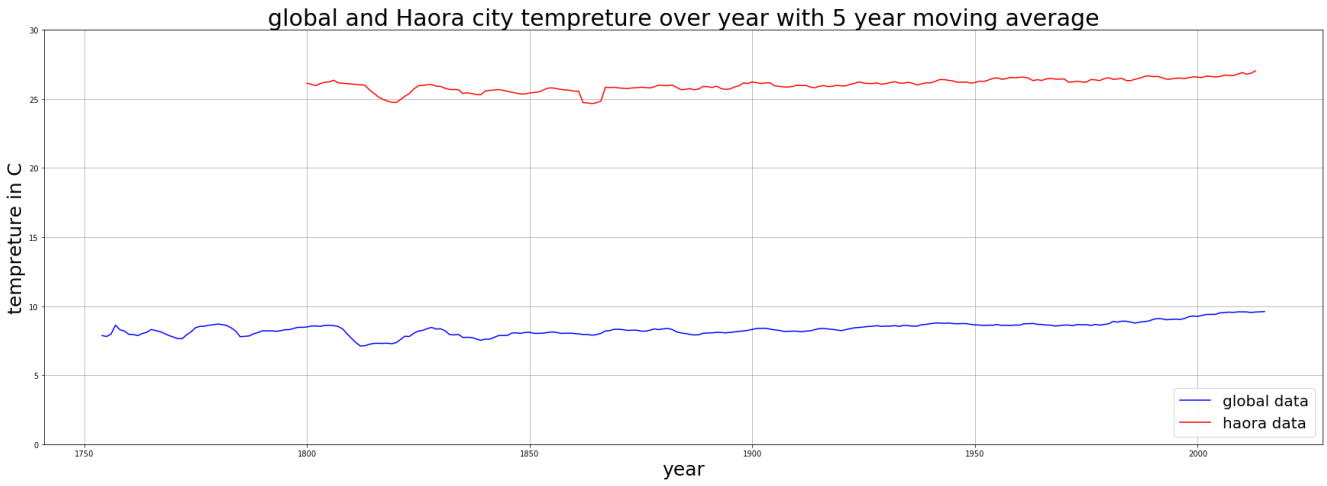
```
#ploting global and Haora city tempreture in same plot
fig=plt.figure(figsize=(30,10))
plt.plot(global_year,global_temp,label='global temp',color='blue')
plt.plot(haora_year,haora_temp,label='haora temp',color='red')
plt.legend(loc=4,fontsize=20)
plt.ylim(0,30)
plt.grid()
plt.xlabel('year',fontsize=25)
plt.ylabel('tempreture in C',fontsize=25)
plt.title('Glabal and Haora City tempreture over year',fontsize=30)
plt.show()
```



In [83]:

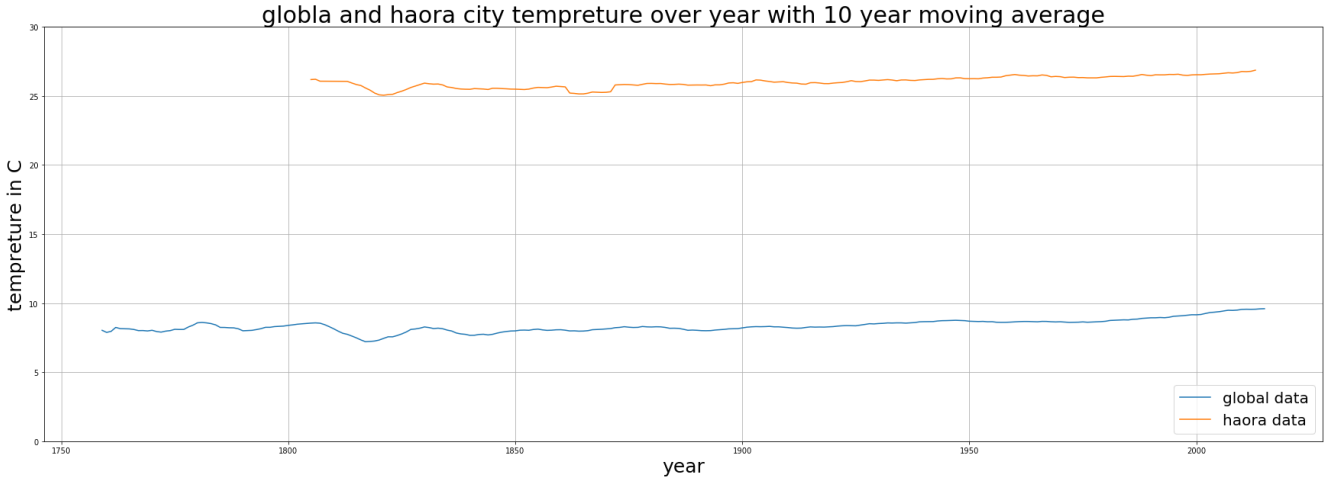
```
#ploting plot in 5 years of rolling window

fg=plt.figure(figsize=(30,10))
global_ma=pd.DataFrame(global_temp.rolling(window=5).mean())
haora_ma=pd.DataFrame(haora_temp.rolling(window=5).mean())
plt.plot(global_year,global_ma,color='blue',label='global data')
plt.plot(haora_year,haora_ma,color='red',label='haora data')
plt.legend(loc=4,fontsize=20)
plt.ylim(0,30)
plt.xlabel('year',fontsize=25)
plt.ylabel('tempreture in C',fontsize=25)
```

```
plt.grid()
plt.title('global and Haora city tempreture over year with 5 year moving average',fontsize=30)
plt.show()
```



In [91]:

```
#ploting global and haora city tempreture over year with 10 year moving average

fg=plt.figure(figsize=(30,10))
global_ma=pd.DataFrame(global_temp.rolling(window=10).mean())
haora_ma=pd.DataFrame(haora_temp.rolling(window=10).mean())
plt.plot(global_year,global_ma,label='global data')
plt.plot(haora_year,haora_ma,label='haora data')
plt.legend(loc=4,fontsize=20)
plt.ylim(0,30)
plt.grid()
plt.xlabel('year',fontsize=25)
plt.ylabel('tempreture in C',fontsize=25)
plt.title('globla and haora city tempreture over year with 10 year moving average',fontsize=30)
plt.show()
```



TOOLS USED:

I used python as programming language. For this project, NumPy, Pandas and Matplotlib libraries has been used. SQL is used for extracting data from the global_data, city_data, city_list table.

PROCESS:

1. Firstly all the useful data i.e. year and avg_temp for both Haora City and Global were given a variable name.
2. Plotted the graph individually for both GLobal and Haora City.
3. To calculate the moving average for avg_temp in global_data and Haora_data, pandas rolling method is used with 5 years and 10 years window value.

4. Plotted the line graph in same plot to take observations.

OBSERVATIONS:

1. Line graph with 1 Year window was a bit rough to take obseravtion. 5 Year moving average line graph was a bit smooth to take observation but 10 Year moving average line graph was more smoother.
2. Global tempreture is increasing continously from last few hundred years.
3. Haora City tempreture was significantly low in mid of 19th century and started increasing.
4. Before 1870 tempreture was balanced but after that Global as well as Haora city tempreture started increasing consistently.