

year	city	country	avg_temp_mov_avg_city	mov_avg_global	mov_avg_losangeles
1743	Baltimore	United States	5.34		
1744	Baltimore	United States	13.88		
1745	Baltimore	United States	4		
1746	Baltimore	United States			
1747	Baltimore	United States			
1748	Baltimore	United States			
1749	Baltimore	United States			
1750	Baltimore	United States	12.51		
1751	Baltimore	United States	13.28		
1752	Baltimore	United States	5.45		
1753	Baltimore	United States	11.91		
1754	Baltimore	United States	12.22		
1755	Baltimore	United States	9.15		
1756	Baltimore	United States	12.26		
1757	Baltimore	United States	11.36		
1758	Baltimore	United States	10.48		
1759	Baltimore	United States	11.43		
1760	Baltimore	United States	10.1	10.92272727	7.953636364
1761	Baltimore	United States	12.55	10.92636364	7.958181818
1762	Baltimore	United States	11.92	10.80272727	8.015454545
1763	Baltimore	United States	9.7	11.18909091	8.171818182
1764	Baltimore	United States	11.92	11.19	8.172727273
1765	Baltimore	United States	11.39	11.11454545	8.152727273
1766	Baltimore	United States	12.45	11.41454545	8.157272727
1767	Baltimore	United States	10.97	11.29727273	8.1
1768	Baltimore	United States	10.9	11.25545455	7.896363636
1769	Baltimore	United States	11.52	11.35	7.982727273
1770	Baltimore	United States	11.39	11.34636364	7.955454545
1771	Baltimore	United States	12.66	11.57909091	8.015454545
1772	Baltimore	United States	12.07	11.53545455	7.962727273
1773	Baltimore	United States	12.41	11.58	7.927272727
1774	Baltimore	United States	11.89	11.77909091	8.042727273
1775	Baltimore	United States	12.66	11.84636364	8.113636364
1776	Baltimore	United States	11.58	11.86363636	8.118181818
1777	Baltimore	United States	11.23	11.75272727	8.104545455
1778	Baltimore	United States	9.16	11.58818182	8.133636364
1779	Baltimore	United States	3.15	10.88363636	8.333636364
1780	Baltimore	United States	11.83	10.91181818	8.491818182
1781	Baltimore	United States	12.14	10.98	8.529090909
1782	Baltimore	United States	11.55	10.87909091	8.533636364
1783	Baltimore	United States	11.24	10.80363636	8.487272727
1784	Baltimore	United States	10.93	10.66909091	8.454545455
1785	Baltimore	United States	10.94	10.58272727	8.326363636
1786	Baltimore	United States	11.45	10.47272727	8.242727273
1787	Baltimore	United States	11.45	10.46090909	8.218181818
1788	Baltimore	United States	12.16	10.54545455	8.235454545

1789	Baltimore	United States	11.84	10.78909091	8.216363636	
1790	Baltimore	United States	11.79	11.57454545	8.125454545	
1791	Baltimore	United States	11.83	11.57454545	8.016363636	
1792	Baltimore	United States	11.22	11.49090909	8.015454545	
1793	Baltimore	United States	12.21	11.55090909	8.045454545	
1794	Baltimore	United States	12.2	11.63818182	8.122727273	
1795	Baltimore	United States	11.69	11.70727273	8.167272727	
1796	Baltimore	United States	11.45	11.75363636	8.25	
1797	Baltimore	United States	11.35	11.74454545	8.272727273	
1798	Baltimore	United States	12.3	11.82181818	8.330909091	
1799	Baltimore	United States	11.81	11.79	8.336363636	
1800	Baltimore	United States	11.86	11.79181818	8.35	
1801	Baltimore	United States	12.27	11.83545455	8.405454545	
1802	Baltimore	United States	12.58	11.90363636	8.437272727	
1803	Baltimore	United States	12.47	12.01727273	8.474545455	
1804	Baltimore	United States	12.17	12.01363636	8.53	
1805	Baltimore	United States	12.73	12.06181818	8.532727273	
1806	Baltimore	United States	11.83	12.07454545	8.54	
1807	Baltimore	United States	11.62	12.09	8.540909091	
1808	Baltimore	United States	11.89	12.13909091	8.460909091	
1809	Baltimore	United States	11.16	12.03545455	8.316363636	
1810	Baltimore	United States	11.55	12.01181818	8.171818182	
1811	Baltimore	United States	11.65	11.99272727	8.024545455	
1812	Baltimore	United States	10.24	11.80818182	7.884545455	
1813	Baltimore	United States	11.35	11.69636364	7.808181818	
1814	Baltimore	United States	11.13	11.57454545	7.725454545	
1815	Baltimore	United States	10.7	11.44090909	7.58	
1816	Baltimore	United States	10.32	11.22181818	7.432727273	
1817	Baltimore	United States	10.25	11.07818182	7.300909091	
1818	Baltimore	United States	10.68	10.99272727	7.26	
1819	Baltimore	United States	11.38	10.94636364	7.236363636	
1820	Baltimore	United States	11.47	10.97454545	7.285454545	
1821	Baltimore	United States	10.77	10.90363636	7.391818182	
1822	Baltimore	United States	12.22	10.95545455	7.512727273	
1823	Baltimore	United States	11.44	11.06454545	7.573636364	
1824	Baltimore	United States	11.89	11.11363636	7.647272727	
1825	Baltimore	United States	12.56	11.24363636	7.72	
1826	Baltimore	United States	12.63	11.41909091	7.821818182	
1827	Baltimore	United States	12.32	11.60090909	7.991818182	
1828	Baltimore	United States	13.4	11.88727273	8.1	
1829	Baltimore	United States	11.49	11.96090909	8.11	
1830	Baltimore	United States	12.81	12.09090909	8.214545455	
1831	Baltimore	United States	10.99	12.04727273	8.216363636	
1832	Baltimore	United States	11.76	12.13727273	8.158181818	
1833	Baltimore	United States	11.9	12.10818182	8.141818182	
1834	Baltimore	United States	12.06	12.16454545	8.180909091	
1835	Baltimore	United States	11.32	12.11272727	8.075454545	

1836	Baltimore	United States	10.35	11.91181818	8.012727273	
1837	Baltimore	United States	11.19	11.78090909	7.923636364	
1838	Baltimore	United States	11.4	11.69727273	7.805454545	
1839	Baltimore	United States	11.7	11.54272727	7.756363636	
1840	Baltimore	United States	11.84	11.57454545	7.743636364	
1841	Baltimore	United States	11.4	11.44636364	7.668181818	
1842	Baltimore	United States	12	11.53818182	7.702727273	
1843	Baltimore	United States	11.01	11.47	7.768181818	
1844	Baltimore	United States	11.83	11.46363636	7.735454545	
1845	Baltimore	United States	12.03	11.46090909	7.708181818	
1846	Baltimore	United States	12.34	11.55363636	7.813636364	
1847	Baltimore	United States	11.65	11.67181818	7.849090909	
1848	Baltimore	United States	11.88	11.73454545	7.903636364	
1849	Baltimore	United States	11.38	11.73272727	7.946363636	
1850	Baltimore	United States	11.77	11.73909091	7.970909091	
1851	Baltimore	United States	12.01	11.75454545	8.005454545	
1852	Baltimore	United States	11.5	11.76363636	8.042727273	
1853	Baltimore	United States	12.31	11.79181818	8.044545455	
1854	Baltimore	United States	12.5	11.92727273	8.048181818	
1855	Baltimore	United States	11.79	11.92363636	8.09	
1856	Baltimore	United States	10.57	11.79090909	8.103636364	
1857	Baltimore	United States	10.82	11.65272727	8.031818182	
1858	Baltimore	United States	11.83	11.66909091	8.032727273	
1859	Baltimore	United States	11.82	11.66363636	8.057272727	
1860	Baltimore	United States	11.76	11.69818182	8.055454545	15.67727273
1861	Baltimore	United States	12	11.71909091	8.050909091	15.78909091
1862	Baltimore	United States	11.45	11.66818182	7.994545455	15.83636364
1863	Baltimore	United States	11.39	11.65818182	7.995454545	15.86090909
1864	Baltimore	United States	11.51	11.58545455	7.99	15.89272727
1865	Baltimore	United States	11.92	11.53272727	7.987272727	15.90636364
1866	Baltimore	United States	11.47	11.50363636	8.003636364	15.94181818
1867	Baltimore	United States	10.9	11.53363636	8.043636364	16.03181818
1868	Baltimore	United States	10.44	11.49909091	8.088181818	16.02272727
1869	Baltimore	United States	11.2	11.44181818	8.118181818	16.05727273
1870	Baltimore	United States	12.22	11.47818182	8.113636364	16.08909091
1871	Baltimore	United States	11.76	11.47818182	8.128181818	16.13272727
1872	Baltimore	United States	11.24	11.40909091	8.159090909	16.05545455
1873	Baltimore	United States	11.1	11.37727273	8.230909091	16.02363636
1874	Baltimore	United States	11.79	11.41363636	8.26	15.97363636
1875	Baltimore	United States	10.33	11.30636364	8.249090909	15.93454545
1876	Baltimore	United States	11.52	11.27	8.24	15.91727273
1877	Baltimore	United States	12.3	11.34545455	8.262727273	15.90909091
1878	Baltimore	United States	12.53	11.49363636	8.298181818	15.81181818
1879	Baltimore	United States	11.91	11.62727273	8.290909091	15.76272727
1880	Baltimore	United States	12.33	11.73	8.262727273	15.60909091
1881	Baltimore	United States	12.5	11.75545455	8.269090909	15.61
1882	Baltimore	United States	11.88	11.76636364	8.27	15.51545455

1883	Baltimore	United States	11.36	11.77727273	8.250909091	15.50272727
1884	Baltimore	United States	12.02	11.86090909	8.198181818	15.46454545
1885	Baltimore	United States	10.88	11.77818182	8.151818182	15.56545455
1886	Baltimore	United States	11.2	11.85727273	8.16	15.52454545
1887	Baltimore	United States	11.74	11.87727273	8.144545455	15.51727273
1888	Baltimore	United States	11.09	11.76727273	8.103636364	15.48727273
1889	Baltimore	United States	12.02	11.72090909	8.057272727	15.55818182
1890	Baltimore	United States	12.47	11.77181818	8.039090909	15.58090909
1891	Baltimore	United States	12.04	11.74545455	8.03	15.69636364
1892	Baltimore	United States	11.4	11.64545455	8.011818182	15.66727273
1893	Baltimore	United States	11.16	11.58	8.005454545	15.67636364
1894	Baltimore	United States	12.49	11.68272727	8.021818182	15.61363636
1895	Baltimore	United States	11.37	11.62363636	8.056363636	15.62090909
1896	Baltimore	United States	12.15	11.73909091	8.082727273	15.59
1897	Baltimore	United States	11.81	11.79454545	8.113636364	15.55181818
1898	Baltimore	United States	12.55	11.86818182	8.138181818	15.55454545
1899	Baltimore	United States	11.73	11.92636364	8.166363636	15.52545455
1900	Baltimore	United States	12.71	11.98909091	8.182727273	15.51272727
1901	Baltimore	United States	11.32	11.88454545	8.234545455	15.50545455
1902	Baltimore	United States	11.76	11.85909091	8.26	15.45545455
1903	Baltimore	United States	11.57	11.87454545	8.273636364	15.47
1904	Baltimore	United States	10.37	11.80272727	8.276363636	15.58727273
1905	Baltimore	United States	11.49	11.71181818	8.282727273	15.65
1906	Baltimore	United States	12.34	11.8	8.303636364	15.68454545
1907	Baltimore	United States	10.87	11.68363636	8.28	15.62636364
1908	Baltimore	United States	12.06	11.70636364	8.270909091	15.61272727
1909	Baltimore	United States	11.93	11.65	8.270909091	15.55454545
1910	Baltimore	United States	11.89	11.66454545	8.254545455	15.58636364
1911	Baltimore	United States	12.53	11.64818182	8.225454545	15.47181818
1912	Baltimore	United States	11.49	11.66363636	8.191818182	15.39181818
1913	Baltimore	United States	12.98	11.77454545	8.191818182	15.40272727
1914	Baltimore	United States	11.61	11.77818182	8.225454545	15.41727273
1915	Baltimore	United States	11.92	11.91909091	8.270909091	15.34363636
1916	Baltimore	United States	11.6	11.92909091	8.270909091	15.26
1917	Baltimore	United States	10.55	11.76636364	8.238181818	15.24636364
1918	Baltimore	United States	11.86	11.85636364	8.254545455	15.26363636
1919	Baltimore	United States	12.37	11.88454545	8.271818182	15.27909091
1920	Baltimore	United States	11.4	11.83636364	8.288181818	15.28363636
1921	Baltimore	United States	13.37	11.97090909	8.32	15.26727273
1922	Baltimore	United States	12.46	11.96454545	8.340909091	15.31181818
1923	Baltimore	United States	12.17	12.02636364	8.363636364	15.36181818
1924	Baltimore	United States	11.13	11.85818182	8.382727273	15.40636364
1925	Baltimore	United States	12.13	11.90545455	8.377272727	15.41272727
1926	Baltimore	United States	11.25	11.84454545	8.39	15.51909091
1927	Baltimore	United States	12.15	11.89454545	8.416363636	15.59272727
1928	Baltimore	United States	11.94	12.02090909	8.471818182	15.62818182
1929	Baltimore	United States	12.13	12.04545455	8.481818182	15.66909091

1930	Baltimore	United States	12.64	12.07	8.504545455	15.72818182
1931	Baltimore	United States	13.26	12.23909091	8.537272727	15.86818182
1932	Baltimore	United States	12.75	12.18272727	8.55	15.83545455
1933	Baltimore	United States	12.6	12.19545455	8.543636364	15.84363636
1934	Baltimore	United States	11.98	12.17818182	8.562727273	15.99272727
1935	Baltimore	United States	11.81	12.24	8.563636364	15.97545455
1936	Baltimore	United States	12	12.22818182	8.565454545	16.05545455
1937	Baltimore	United States	12.23	12.31727273	8.562727273	15.97181818
1938	Baltimore	United States	12.79	12.37545455	8.593636364	16.01545455
1939	Baltimore	United States	12.75	12.44909091	8.605454545	16.04454545
1940	Baltimore	United States	11.02	12.34818182	8.652727273	16.08363636
1941	Baltimore	United States	12.58	12.34272727	8.665454545	16.05
1942	Baltimore	United States	12.4	12.26454545	8.666363636	15.97454545
1943	Baltimore	United States	12.24	12.21818182	8.670909091	16.04
1944	Baltimore	United States	12.27	12.18818182	8.717272727	16.00636364
1945	Baltimore	United States	12.31	12.21818182	8.712727273	15.88545455
1946	Baltimore	United States	12.88	12.31545455	8.727272727	15.89909091
1947	Baltimore	United States	12.06	12.32090909	8.75	15.84272727
1948	Baltimore	United States	12.2	12.31818182	8.754545455	15.78909091
1949	Baltimore	United States	13.37	12.37090909	8.73	15.74090909
1950	Baltimore	United States	12.04	12.30636364	8.694545455	15.73181818
1951	Baltimore	United States	12.37	12.42909091	8.682727273	15.66181818
1952	Baltimore	United States	12.63	12.43363636	8.670909091	15.63545455
1953	Baltimore	United States	13.29	12.51454545	8.683636364	15.62727273
1954	Baltimore	United States	12.69	12.55545455	8.665454545	15.62090909
1955	Baltimore	United States	12.48	12.57454545	8.645454545	15.64909091
1956	Baltimore	United States	12.3	12.57363636	8.618181818	15.64909091
1957	Baltimore	United States	12.74	12.56090909	8.622727273	15.66272727
1958	Baltimore	United States	11.34	12.49545455	8.62	15.72818182
1959	Baltimore	United States	13.06	12.57363636	8.618181818	15.90636364
1960	Baltimore	United States	11.78	12.42909091	8.617272727	15.99272727
1961	Baltimore	United States	12.11	12.43545455	8.656363636	15.99363636
1962	Baltimore	United States	11.61	12.36636364	8.667272727	15.98090909
1963	Baltimore	United States	11.58	12.27090909	8.687272727	16.01727273
1964	Baltimore	United States	12.33	12.18363636	8.645454545	15.98090909
1965	Baltimore	United States	12.18	12.13727273	8.642727273	15.91636364
1966	Baltimore	United States	11.89	12.08363636	8.64	15.97545455
1967	Baltimore	United States	11.6	12.02	8.678181818	15.99545455
1968	Baltimore	United States	12.15	11.96636364	8.659090909	16.00363636
1969	Baltimore	United States	11.98	12.02454545	8.643636364	15.92090909
1970	Baltimore	United States	12.29	11.95454545	8.640909091	15.82545455
1971	Baltimore	United States	12.43	12.01363636	8.642727273	15.73
1972	Baltimore	United States	11.89	11.99363636	8.615454545	15.70727273
1973	Baltimore	United States	13.04	12.12363636	8.633636364	15.69727273
1974	Baltimore	United States	12.51	12.20818182	8.598181818	15.70818182
1975	Baltimore	United States	12.67	12.23909091	8.628181818	15.69363636
1976	Baltimore	United States	11.85	12.20909091	8.611818182	15.77

1977	Baltimore	United States	12.34	12.25	8.634545455	15.79454545
1978	Baltimore	United States	11.56	12.24636364	8.633636364	15.80272727
1979	Baltimore	United States	11.88	12.22181818	8.652727273	15.80181818
1980	Baltimore	United States	12.22	12.24363636	8.687272727	15.84181818
1981	Baltimore	United States	12	12.21727273	8.73	15.92272727
1982	Baltimore	United States	12.16	12.19272727	8.733636364	15.93909091
1983	Baltimore	United States	12.48	12.24636364	8.781818182	15.96090909
1984	Baltimore	United States	12.42	12.19	8.758181818	16.07454545
1985	Baltimore	United States	12.79	12.21545455	8.775454545	16.08454545
1986	Baltimore	United States	12.65	12.21363636	8.783636364	16.21
1987	Baltimore	United States	12.78	12.29818182	8.841818182	16.20181818
1988	Baltimore	United States	12.14	12.28	8.873636364	16.21818182
1989	Baltimore	United States	11.92	12.31272727	8.894545455	16.25
1990	Baltimore	United States	13.75	12.48272727	8.94	16.29454545
1991	Baltimore	United States	13.76	12.62272727	8.958181818	16.27363636
1992	Baltimore	United States	11.96	12.61909091	8.928181818	16.26454545
1993	Baltimore	United States	12.39	12.64	8.949090909	16.34818182
1994	Baltimore	United States	12.46	12.63818182	8.95	16.35636364
1995	Baltimore	United States	12.55	12.65	9.01	16.34545455
1996	Baltimore	United States	11.85	12.56454545	9.044545455	16.44727273
1997	Baltimore	United States	12.36	12.53818182	9.078181818	16.48636364
1998	Baltimore	United States	14.07	12.65545455	9.126363636	16.42090909
1999	Baltimore	United States	13.19	12.75090909	9.134545455	16.39181818
2000	Baltimore	United States	12.28	12.78363636	9.16	16.41727273
2001	Baltimore	United States	12.99	12.71454545	9.176363636	16.42636364
2002	Baltimore	United States	13.46	12.68727273	9.211818182	16.46545455
2003	Baltimore	United States	12.07	12.69727273	9.274545455	16.47909091
2004	Baltimore	United States	12.79	12.73363636	9.315454545	16.49636364
2005	Baltimore	United States	12.82	12.76636364	9.375454545	16.50909091
2006	Baltimore	United States	13.59	12.86090909	9.391818182	16.50727273
2007	Baltimore	United States	13.13	12.97727273	9.454545455	16.47272727
2008	Baltimore	United States	12.76	13.01363636	9.475454545	16.48
2009	Baltimore	United States	12.44	12.86545455	9.474545455	16.59909091
2010	Baltimore	United States	13.28	12.87363636	9.511818182	16.57818182
2011	Baltimore	United States	13.56	12.99	9.540909091	16.50818182
2012	Baltimore	United States	14	13.08181818	9.55	16.56454545
2013	Baltimore	United States	14.19	13.14818182	9.553636364	16.71818182
271			11.88303	Moving Average	Moving Average	Moving Average
				for Baltimore	for Global	for Los Angeles

global_results have data from 1750 - 2015

city_baltimore have data from 1743 - 2013

So I will use data from **1750 - 2013** to compare temp as they align with both datasets

Missing data on 1780 of city Baltimore was filled with avg_temp which is 11.83

Moving average was calculated using 10-year period starting from 1750-1760

After Calculating Moving Average for global, I imported them here as *mov_avg_global*

SQL Query

For Extracting my city data

```
SELECT *  
FROM city_data  
WHERE country = 'United States' AND city = 'Baltimore';
```

For Extracting global temperature data

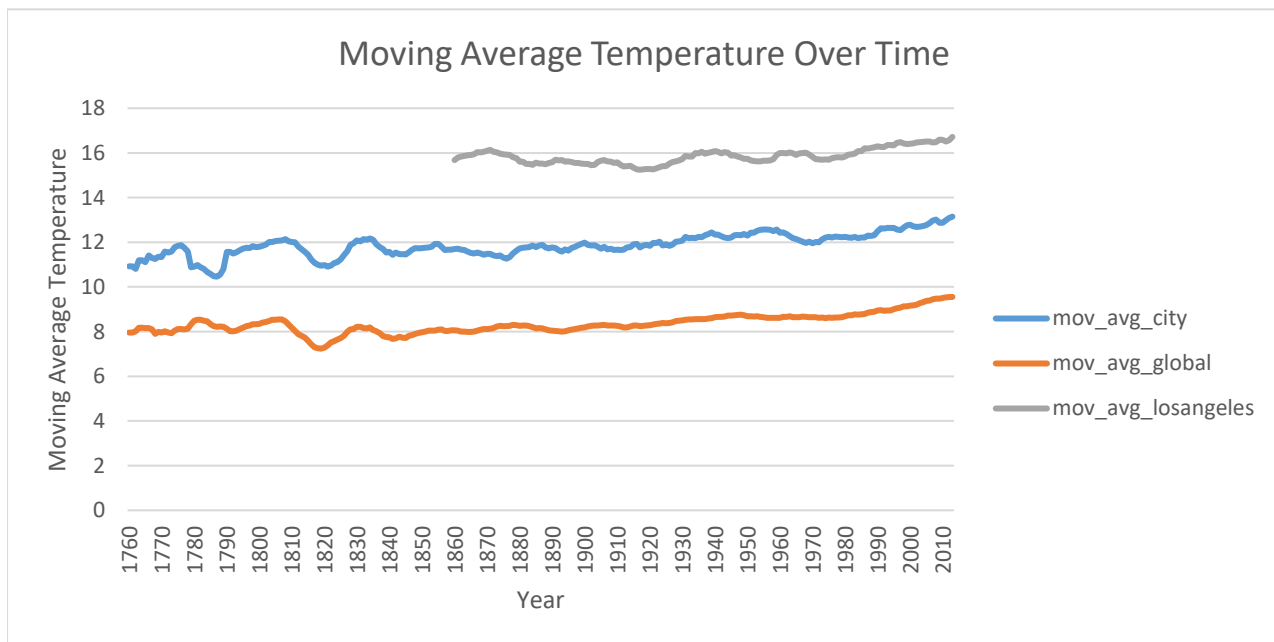
```
SELECT *  
FROM global_data;
```

For Extracting los angeles data

```
SELECT *  
FROM city_data  
WHERE country = 'United States' AND city = 'Los Angeles';
```

Submission Outline

1. Tool used is Microsoft Excel
2. Moving average was calculated using Average() function in Excel with 10-year period gap
3. My main key consideration was to use conditional formatting of the average temperature to get a sense of trends, used that on moving average too, which helped me get the picture immediately. Also, using moving averages from both data to create line chart helped smooth out the details.



Observation

1. I noticed that both mov_avg_city and mov_avg_global have similar kind of trends. During early years, both trends seems to have ups and downs then approx. around 1877 the moving average temperature starts to increase at a steady rate.

2. The difference I noticed is that the total moving average for global is low compared to the moving average for Baltimore city. So that means the city is considerably hotter than the rest of the world in terms of moving average temperature.
3. Also, looking at the Line Graph carefully, I noticed that from 1990 approx. the temperature is increasing at a faster rate on both trends compared to the early 1900's.
4. For the 4th observation I imported moving average data of my favorite city Los Angeles . Since the data did not have any avg_temp before 1850, the line graph starts at 1860 as a 10-year period moving average. Looking at the graph with previous data, it seems that Los Angeles is more hotter than Baltimore but trend-wise is pretty similar as it have steady increase then a more faster approach in recent years.
5. With conditional formatting integrated in the table the color gets darker as per increase in year meaning that moving average temperature increases.

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9.13.17

Udacity Nanodegree Data Analyst

Project 1 Weather Trend

