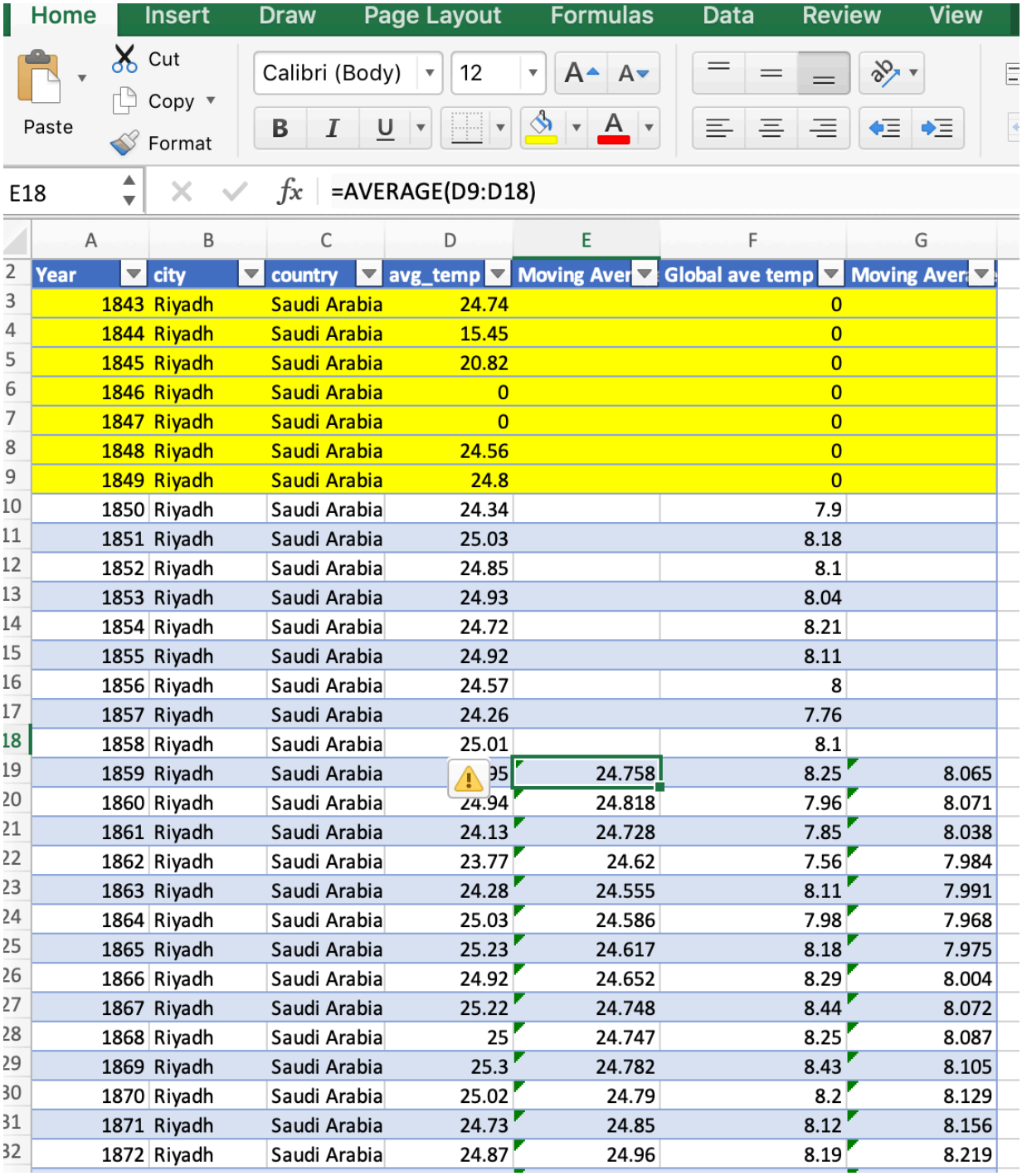
To prepare the data the following has been applied:

1. Extract the date from the provided database. SQL commands have been used.
    a. Select * from city_data where city = ‘Riyadh’;
    b. Select * from global_data;
2. MS Excel has been used to clean the data.
    a. Merged the 2 CSV files that has been downloaded from the data base VM. Excluded the missing values from calculations.
    b. Calculated the 10-years moving average temperature for Riyadh city and global. Used MS Excel function (Average) to calculate the 10 years average temperature. As appears in the following screenshot.



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E18 =AVERAGE(D9:D18)

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 2 | Year | city | country | avg_temp | Moving Aver | Global ave temp | Moving Aver |
| 3 | 1843 | Riyadh | Saudi Arabia | 24.74 | | 0 | |
| 4 | 1844 | Riyadh | Saudi Arabia | 15.45 | | 0 | |
| 5 | 1845 | Riyadh | Saudi Arabia | 20.82 | | 0 | |
| 6 | 1846 | Riyadh | Saudi Arabia | 0 | | 0 | |
| 7 | 1847 | Riyadh | Saudi Arabia | 0 | | 0 | |
| 8 | 1848 | Riyadh | Saudi Arabia | 24.56 | | 0 | |
| 9 | 1849 | Riyadh | Saudi Arabia | 24.8 | | 0 | |
| 10 | 1850 | Riyadh | Saudi Arabia | 24.34 | | 7.9 | |
| 11 | 1851 | Riyadh | Saudi Arabia | 25.03 | | 8.18 | |
| 12 | 1852 | Riyadh | Saudi Arabia | 24.85 | | 8.1 | |
| 13 | 1853 | Riyadh | Saudi Arabia | 24.93 | | 8.04 | |
| 14 | 1854 | Riyadh | Saudi Arabia | 24.72 | | 8.21 | |
| 15 | 1855 | Riyadh | Saudi Arabia | 24.92 | | 8.11 | |
| 16 | 1856 | Riyadh | Saudi Arabia | 24.57 | | 8 | |
| 17 | 1857 | Riyadh | Saudi Arabia | 24.26 | | 7.76 | |
| 18 | 1858 | Riyadh | Saudi Arabia | 25.01 | | 8.1 | |
| 19 | 1859 | Riyadh | Saudi Arabia | 95 | 24.758 | 8.25 | 8.065 |
| 20 | 1860 | Riyadh | Saudi Arabia | 24.94 | 24.818 | 7.96 | 8.071 |
| 21 | 1861 | Riyadh | Saudi Arabia | 24.13 | 24.728 | 7.85 | 8.038 |
| 22 | 1862 | Riyadh | Saudi Arabia | 23.77 | 24.62 | 7.56 | 7.984 |
| 23 | 1863 | Riyadh | Saudi Arabia | 24.28 | 24.555 | 8.11 | 7.991 |
| 24 | 1864 | Riyadh | Saudi Arabia | 25.03 | 24.586 | 7.98 | 7.968 |
| 25 | 1865 | Riyadh | Saudi Arabia | 25.23 | 24.617 | 8.18 | 7.975 |
| 26 | 1866 | Riyadh | Saudi Arabia | 24.92 | 24.652 | 8.29 | 8.004 |
| 27 | 1867 | Riyadh | Saudi Arabia | 25.22 | 24.748 | 8.44 | 8.072 |
| 28 | 1868 | Riyadh | Saudi Arabia | 25 | 24.747 | 8.25 | 8.087 |
| 29 | 1869 | Riyadh | Saudi Arabia | 25.3 | 24.782 | 8.43 | 8.105 |
| 30 | 1870 | Riyadh | Saudi Arabia | 25.02 | 24.79 | 8.2 | 8.129 |
| 31 | 1871 | Riyadh | Saudi Arabia | 24.73 | 24.85 | 8.12 | 8.156 |
| 32 | 1872 | Riyadh | Saudi Arabia | 24.87 | 24.96 | 8.19 | 8.219 |

3. Visualization using MS Excel Line charts.
    a. Plotted the data in line chart. Added chart titles, axis's titles and legend.

Observations:

1. The average temperature of Riyadh city is more than 10 degrees higher the global temperature. In

addition, that difference has been consistent over time.

2. The average temperature has been rising recently more than it used to be 100 years ago.
3. The temperature is monotonically increasing with different slopes over years.
4. 2000-2010 Riyadh temperature increased by 1 degree, while the global temperature increased by 0.3 degrees.
5. Overall, the data clearly shows that temperature will keep rising over time.

Malak Alshedokhi.  Project 1

# Visualization of the data: