1. Gender Wage Gap Bar Graph (2015)

a) Three countries with the lowest gender wage gap are:

- Costa Rica
- Belgium
- Denmark

b) Three countries with the highest gender wage gap are:

- Japan
- Korea
- Chile

c) Research on Costa Rica's low gender wage gap (2015): In 2015, Costa Rica's progressive policies promoted gender equality by implementing equal pay laws, expanding women's education, and encouraging female workforce participation. The social welfare system, including subsidized childcare and parental leave, also reduced barriers for women. Cultural shifts towards gender inclusivity in leadership and STEM fields helped narrow the wage gap further.

2. Isopropanol Sales Line Graph (May 2019–March 2020)

a) Observation in March 2020: In March 2020, all three isopropanol sales lines (domestic, export, and tank track) experienced a significant increase, reaching new peak levels. Prices/sales increased rapidly compared to previous months.

b) Possible reason for the spike: In March 2020, the global spread of the COVID-19 pandemic led to an increased demand for hand sanitizers. Isopropanol, a primary ingredient in sanitizers, saw a significant rise in sales as governments, businesses, and individuals purchased large quantities of hygiene products. This increase in demand resulted in higher prices across all market segments.

3. CO_2 Emissions vs. GDP per Capita Bubble Plot

Relationship between CO_2 emissions and GDP per capita by continent:

Europe: Countries in this region generally have moderate-to-high GDP per capita along with relatively lower CO_2 emissions, which can be attributed to environmental regulations and renewable energy adoption. For instance, Germany implements green policies.

North America: This region exhibits high GDP per capita alongside high CO_2 emissions, as seen in the U.S. and Canada. This is likely due to factors such as industrialization, energy-intensive lifestyles, and reliance on fossil fuels.

Asia: Mixed trends. Developed nations (e.g., Japan, South Korea) have high GDP and emissions, while developing countries (e.g., India) show lower GDP but rising emissions due to industrialisation.

Africa: Low GDP per capita and low emissions, as many economies are agrarian and less industrialised. Exceptions like South Africa have higher emissions.
South America: Moderate GDP and emissions; Brazil balances resource extraction and economic growth.

Oceania: High GDP and emissions due to mining and transportation in Australia and New Zealand.

Wealthier countries generally emit more CO_2 per person, reflecting a positive correlation between CO_2 emissions and GDP per capita. However, exceptions exist due to different energy policies, economic structures, and population sizes.

Practical Task 2

1. Graphs along the diagonal:

The graphs along the diagonal display **histograms** illustrating the distribution of each variable (e.g., Size of Living Area, Size of Garage, Year House was Built, Sale Price). Histograms depict the frequency of data points within specified value ranges for each variable.

2. Garage size comparison:

Most garages in Ames are **under 1000 ft²**. The histogram for "Size of Garage" shows more bars on the left (0-500 ft²), indicating most garages are below 1000 ft².

3. Most expensive houses by construction year:

The priciest houses in Ames were built after 1950. The scatterplot of "Year Built" vs. "Sale Price" shows high-priced properties mainly from post-1950.

4. Relationship between 'Size of Living Area' and 'Sale Price':

There is a strong positive correlation between the two variables. As the Size of Living Area increases, the Sale Price tends to increase. The scatterplot shows an upward trend, with larger living areas corresponding to higher sale prices.