TASK SHEET

1. Plot a 3D scatter plot showing the relationship between math, reading, and writing scores, with the marker size representing the student's overall score (average of the three scores) and color representing their race/ethnicity, and markers styled with 3D shapes.
2. Create a dendrogram showing the hierarchical clustering of students based on their scores, with the color representing their parental level of education, the line style representing their lunch type, and different levels of clustering annotated with labels.
3. Generate a violin plot for math scores grouped by lunch types and parental level of education, with the width of the violins scaled by the number of students in each group, overlaid with a swarm plot showing individual data points, and annotations indicating statistical measures (e.g., mean, median).
4. Plot a ternary contour plot showing the density of students based on their average scores in math, reading, and writing, with different contour levels for different quartiles of student density, labels indicating the quartiles, and a legend explaining the contour levels.
5. Create a radar chart comparing the average scores for each subject (math, reading, writing) across different race/ethnicity groups, with the radar area representing the proportion of students in each group, annotations showing the exact average scores, and a legend explaining the groups.
6. Generate a network graph showing the connections between students who have similar score distributions, with node size representing the number of students, edge color representing their parental level of education, edge thickness representing the similarity between students, and nodes styled with varying shapes based on their lunch type.
7. Plot a streamplot showing the change in scores over time for students who completed the test preparation course, with time represented by lunch type and stream thickness representing the magnitude of score change, arrows indicating the direction of change, and streamlines styled with different patterns based on the student's gender.
8. Create a parallel coordinates plot to visualize the distribution of scores across different subjects for each student, with lines colored by their test preparation completion status, transparency representing their race/ethnicity, and annotations indicating the student's ID.
9. Generate a Sankey diagram illustrating the flow of students from different parental levels of education through different race/ethnicity groups, with the width of the flow representing the number of students in each group, color representing their test preparation completion status, and annotations indicating the exact counts.
10. Plot a 3D surface plot showing the relationship between math scores, reading scores, and writing scores, with the color representing the average score across the three subjects, transparency representing the proportion of students in each score combination, annotations showing the exact average score, and a colorbar indicating the score scale.
11. Plot a 3D scatter plot showing the relationship between math, reading, and writing scores, with the marker size representing the student's overall score (average of the three scores) and color representing their test preparation completion status, and utilize interactive 3D rotation for better exploration.
12. Create a dendrogram showing the hierarchical clustering of students based on their scores, with the color representing their lunch type, the line style representing their race/ethnicity, and different levels of clustering annotated with labels, and implement hover tooltips to display additional information about each student upon mouseover.
13. Generate a violin plot for math scores grouped by lunch types and parental level of education, with the width of the violins scaled by the number of students in each group, overlaid with a swarm plot showing individual data points, and annotations indicating statistical measures (e.g., mean, median), and implement interactivity to allow users to filter and highlight specific groups.
14. Plot a ternary contour plot showing the density of students based on their average scores in math, reading, and writing, with different contour levels for different quartiles of student density, labels indicating the quartiles, a legend explaining the contour levels, and implement sliders to dynamically adjust the quartile levels.
15. Create a radar chart comparing the average scores for each subject (math, reading, writing) across different race/ethnicity groups, with the radar area representing the proportion of students in each group, annotations showing the exact average scores, a legend explaining the groups, and implement dropdown menus to switch between different race/ethnicity groups for comparison.