Simulation Lab (MC503)

Assignment-4

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1. Create a **simple pie chart** for the AQI of Indian cities on 10 Feb 2021 and also, plot a **3D pie chart** for the given data below. Also add title of the chart, slice percentage and chart legend.

City	Patna	Ratlam	Mysore	Jaunpur	Pitampura	Panchkula
AQI	276	7	92	268	412	86

2. Create a bar plot of the run scored by Indian players in the Cricket T-20 match between India Vs Pakistan given below and add chart title as "Player performance" and x-axis and y-axis labels as "Players names" and "Runs" respectively. Find the correlation and covariance between runs and balls.

Table 1: Indian player's score

Player's Name	Runs	Balls
Rohit	12	18
KL Rahul	0	1
Kohali	35	34
Jadeja	35	29
Suryakumar	18	18
Pandya	33	17
D Kartik	1	1

3. Import **score table** of Indian Cricket player in the 1st inning of the 1st Cricket test match between India Vs England(2021). Create a bar chart with the groups of bar and stacks in each bar by using a matrix as input values. Add bar chart title x-axis and y-axis levels as players name and performance respectively. Also, add a legend to the chart with Runs, Balls and 4 runs with different colors.

Table 2: Indian player's score

Player's Name	Runs	Balls	4s
Rohit	6	9	1
Subhman	29	28	5
Pujara	73	173	11
Kohali	11	48	0
Rahane	1	6	0
Pant	91	58	9
Washington	85	138	12
Ashwin	31	91	2
Nadeem	0	12	0
Ishant	4	11	1
Bumrah	0	2	0

4. Plot the graph of the functions and draw the legend in suitable place.

$$f_1(x) = \sin(x^3 + 5x),\ x \in (0, 10)$$
$$f_2(x) = \cos(|x| + e^{x^2}),\ x \in (-2, 5)$$
$$f_3(x) = f_1(x) + f_2(x),\ x \in (-2, 5).$$

5. Create a box plot graphs for the relationship between mpgl (miles per gallon) and cyl (number of cylinders) is "mtcars" datasets. Add main title as "Mileage Data" and x and y-axis labels as "Number of cylinders" and "Miles per Gallon" respectively.

6. Generate 50 random integers between 0 to 100 and create a histogram plot by specifying x-axis level, color, border color, x-axis and y-axis limits and breaks.

7. Draw a scatter plot of the function $y = \sin(x^2) + 4\cos(x), x \in [0, 2\pi]$ and here, type of scatter plot is "h" and also use "red, green, blue and gold" colors for the interval $[0, \pi/2], [\pi/2, \pi], [\pi, 3\pi/2]$ and $[3\pi/2, 2\pi]$ respectively. (consider, step size=0.01)