Mine Automation and Data Analytics Lab Assignments

LAB-7

1. Apply PCA to the Customer Purchase Behaviour Dataset and reduce it to two principal components while retaining at least 90% of the variance.

   Customer Purchase Behavior Dataset

	Customer_ID	Age	Annual_Income	Spending_Score	Savings
1	1	25	50000	39	5000
2	2	45	80000	81	15000
3	3	35	60000	6	8000
4	4	52	120000	77	20000
5	5	23	45000	40	4500

2. Perform PCA on the Vehicle Specifications Dataset and identify which features contribute most to the first principal component.

   Vehicle Specifications Dataset

	Vehicle_ID	Engine_Size	Horsepower	Weight	Fuel_Efficiency
1	101	2.0	150	1500	15
2	102	3.5	250	2000	10
3	103	1.8	130	1200	18
4	104	2.5	180	1600	14
5	105	3.0	220	1800	12

3. What is dimensionality reduction and why it is needed

4. Use PCA to reduce the Health Indicators Dataset to two dimensions and visualize the data using a scatter plot.

   Health Indicators Dataset

	Patient_ID	Age	Blood_Pressure	Cholesterol	BMI
1	1	30	120	180	24
2	2	45	140	220	28
3	3	50	130	200	26
4	4	28	110	170	22
5	5	33	125	190	25