Day-11
Principal Component Analysis (PCA)

PCA is a dimensionality reduction technique used to transform high-dimensional data into a lower-dimensional form while retaining as much variance as possible.

Why It Is Used:

- **Dimensionality Reduction**: Simplifies the dataset by reducing the number of features.
- **Feature Extraction**: Identifies new features (principal components) that capture the most variance.
- **Visualisation**: Helps in visualising high-dimensional data in 2D or 3D.

Scenario: A property company wants to compare properties based on room and washroom sizes.

Steps:

1. **Collect Data**: Gather sizes for rooms and washrooms for each property.
2. **Standardise Data**: Normalise the sizes so they are on the same scale.
3. **Apply PCA**: Reduce the data to principal components to simplify comparison.
4. **Visualise**: Plot properties based on principal components to easily compare space utilisation.

Outcome: PCA helps visualise and interpret property sizes and layouts, making it easier to identify spacious or well-designed properties.