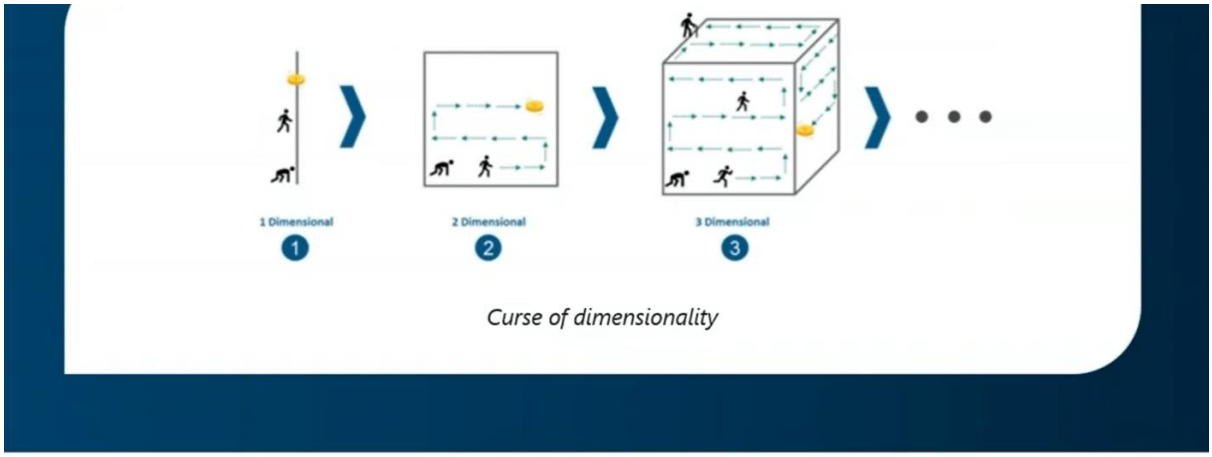
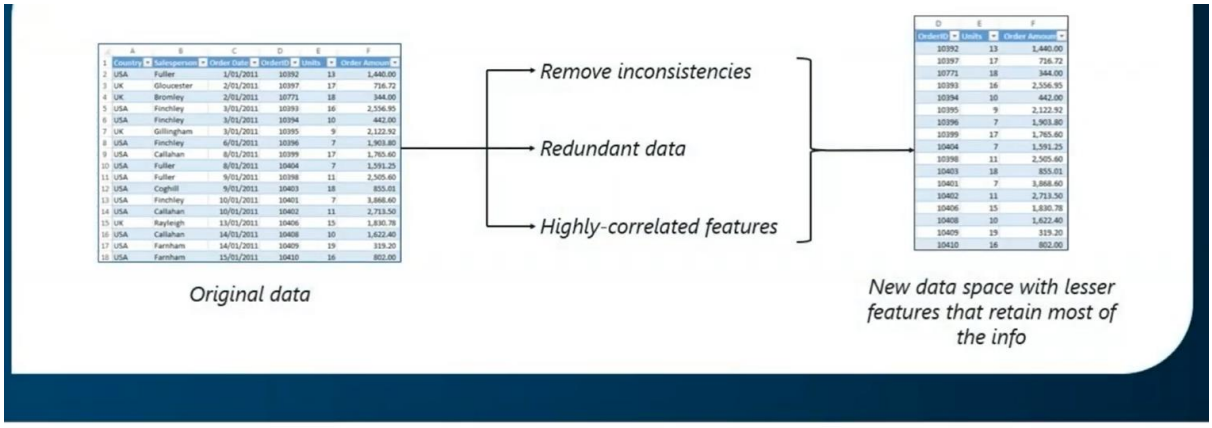
Need for Principle Component Analysis
What is PCA?
Step by Step Computation of PCA
Principle Component Analysis with Python



Need For PCA

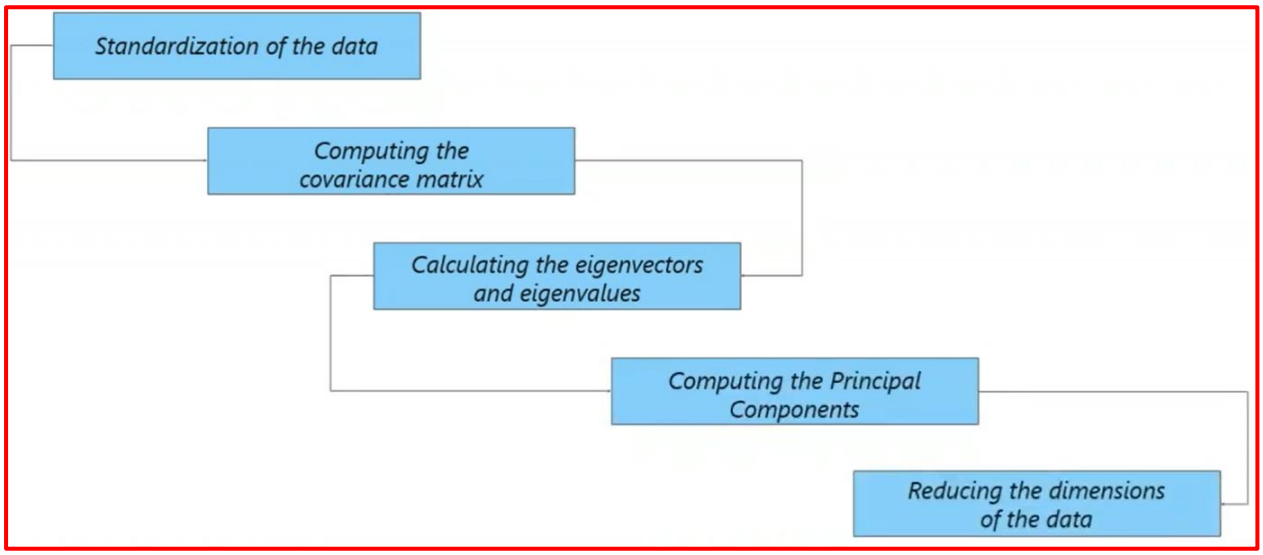
High dimension data is extremely complex to process due to inconsistencies in the features which increase the computation time and make data processing and EDA more convoluted.

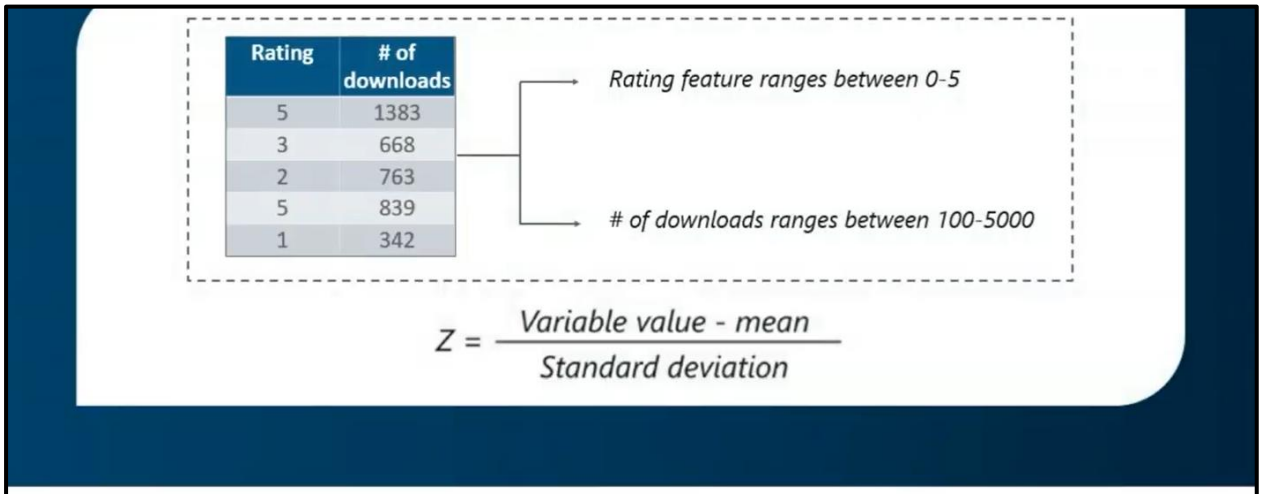


What Is Principal Component Analysis (PCA)?

Principal components analysis (PCA) is a dimensionality reduction technique that enables you to identify correlations and patterns in a data set so that it can be transformed into a data set of significantly lower dimension without loss of any important information.

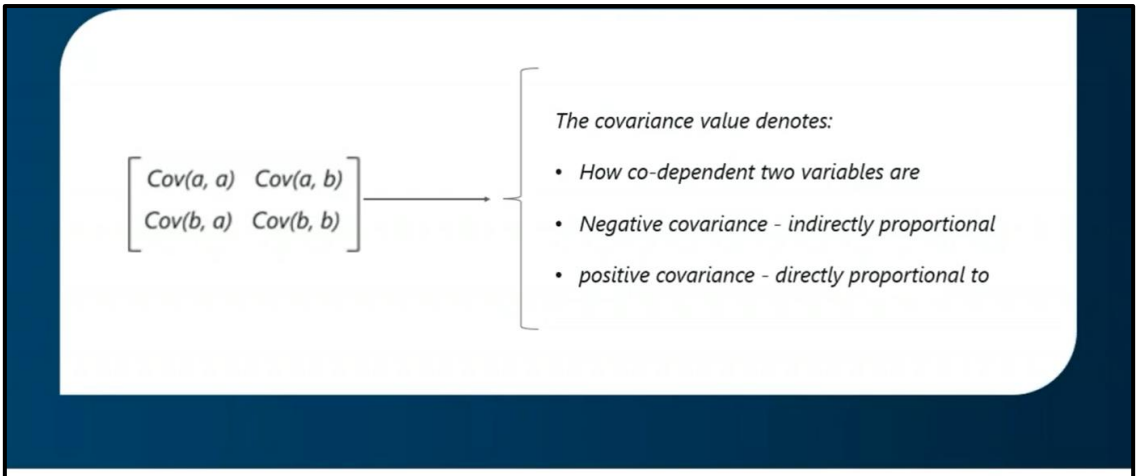
STEP BY STEP PCA





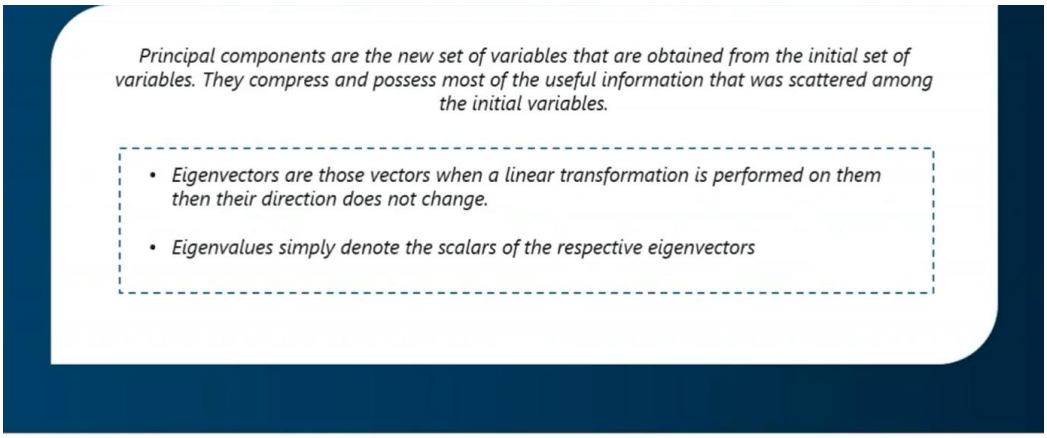
Step 1: Standardization of the data

Standardization is all about scaling your data in such a way that all the variables and their values lie within a similar range.



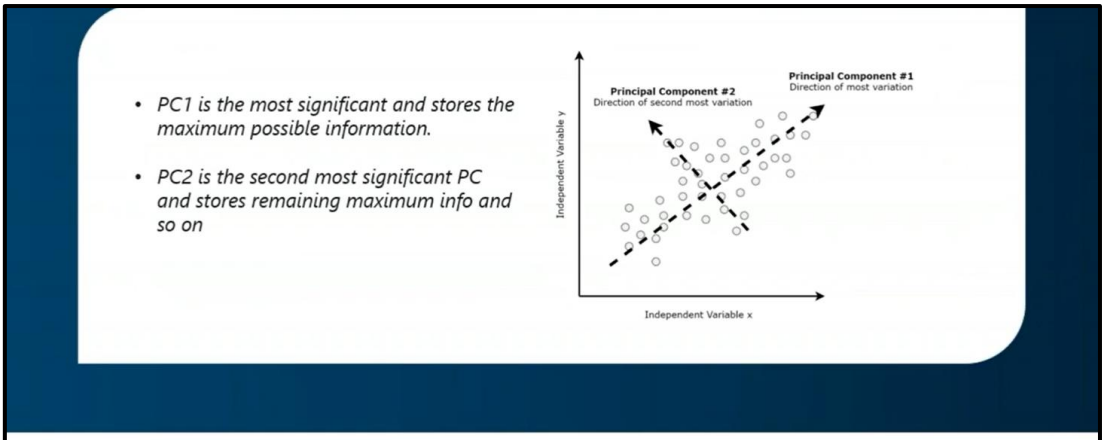
Step 2: Computing the covariance matrix

A covariance matrix expresses the correlation between the different variables in the data set. It is essential to identify heavily dependent variables because they contain biased and redundant information which reduces the overall performance of the model.



Step 3: Calculating the Eigenvectors and Eigenvalues

Eigenvectors and eigenvalues are the mathematical constructs that must be computed from the covariance matrix in order to determine the principal components of the data set.



Step 4: Computing the Principal Components

Once we have computed the Eigenvectors and eigenvalues, all we have to do is order them in the descending order, where the eigenvector with the highest eigenvalue is the most significant and thus forms the first principal component.