PCA – Exercise

Band spectra is the name given to groups of lines so closely spaced that each group appears to be a band, *e.g.,* nitrogen spectrum. Band spectra, or molecular spectra, are produced by molecules radiating their rotational or vibrational energies, or both simultaneously.

Astronomical spectroscopy is the study of astronomy using the techniques of spectroscopy to measure the spectrum of electromagnetic radiation, including visible light and radio, which radiates from stars and other celestial objects. A **stellar spectrum** can reveal many properties of stars, such as their chemical composition, temperature, density, mass, distance, luminosity, and relative motion using Doppler shift measurements. Spectroscopy is also used to study the physical properties of many other types of celestial objects such as planets, nebulae, galaxies, and active galactic nuclei.

In an astronomical observation, researchers used 17 different bands of the spectrum to analyze 4 celestial objects. Using the PCA - Principal component analysis find out which of the 4 celestial objects does not behave like a star.

	Object 1	Object 2	Object 3	Object 4
Band 1	375	135	458	475
Band 2	57	47	53	73
Band 3	245	267	242	227
Band 4	1472	1494	1462	1582
Band 5	105	66	103	103
Band 6	54	41	62	64
Band 7	193	209	184	235
Band 8	147	93	122	160
Band 9	1102	674	957	1137
Band 10	720	1033	566	874
Band 11	253	143	171	265
Band 12	685	586	750	803
Band 13	488	355	418	570
Band 14	198	187	220	203
Band 15	360	334	337	365
Band 16	1374	1506	1572	1256
Band 17	156	139	147	175

Send your reply to evandro@datah.ai along with your python code or a git link. In the code put the description of your solution, witch components you are using, print a correlation matrix and generate a graph that proves your answer.

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