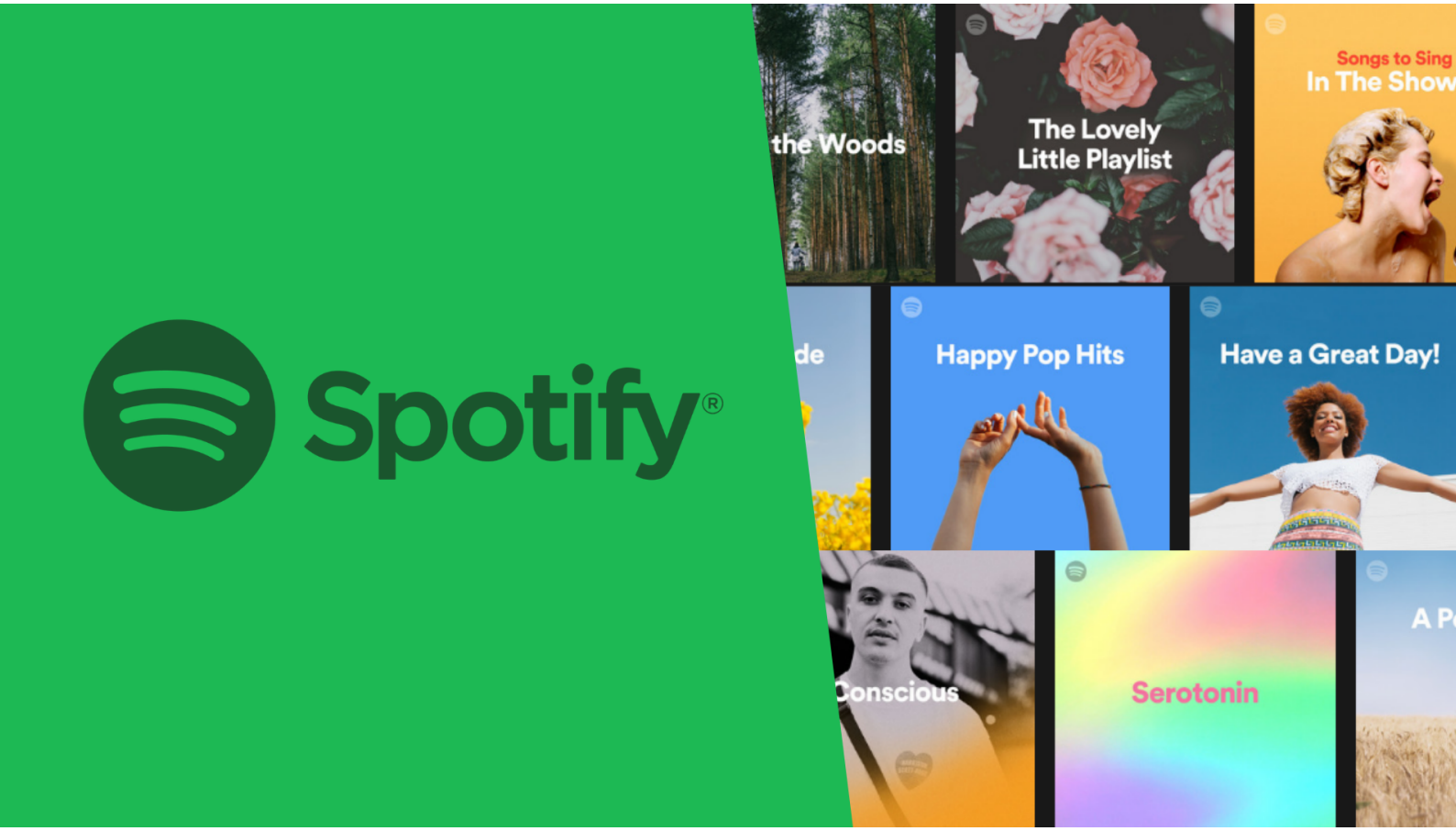
Clustering Level22 playlist



Analysis using Spotify for Developers

Clustering Level22 playlist

Clustering is grouping of objects based on similarities between them.

Your Spotify playlist was grouped based on the following features:

- acousticness - confidence measure from 0.0 to 1.0 of whether the track is acoustic; 1.0 represents high confidence the track is acoustic
- danceability - describes how suitable a track is for dancing based on a combination of musical elements including tempo, rhythm stability, beat strength, and overall regularity; a value of 0.0 is least danceable and 1.0 is most danceable
- duration_ms - duration of track in miliseconds
- energy - measure from 0.0 to 1.0 that represents a perceptual measure of intensity and activity; typically, energetic tracks feel fast, loud, and noisy. For example, death metal has high energy, while a Bach prelude scores low on the scale. Perceptual features contributing to this attribute include dynamic range, perceived loudness, timbre, onset rate, and general entropy
- instrumentalness - predicts whether a track contains no vocals.; "ooh" and "aah" sounds are treated as instrumental in this context; rap or spoken word tracks are clearly "vocal"; the closer the instrumentalness value is to 1.0, the greater likelihood the track contains no vocal content
- key - the key of the track using Pitch Class Notation (values 0-11, if no key detected - value of -1)
- liveness - detects the presence of an audience in the recording; higher liveness values represent an increased probability that the track was performed live; a value above 0.8 provides strong likelihood that the track is live
- loudness - the overall loudness of a track in decibels (dB); loudness values are averaged across the entire track and are useful for comparing relative loudness of tracks; loudness is the quality of a sound that is the primary psychological correlate of physical strength (amplitude)
- mode - is the song major (1) or minor (0)
- speechiness - detects the presence of spoken words in a track; the more exclusively speech-like the recording (e.g. talk show, audio book, poetry), the closer to 1.0 the attribute value
- tempo - the overall estimated tempo of a track in beats per minute (BPM); in musical terminology, tempo is the speed or pace of a given piece and derives directly from the average beat duration
- time_signature - a notational convention to specify how many beats are in each bar (or measure); the time signature ranges from 3 to 7 indicating time signatures of "3/4", to "7/4"
- valence - a measure from 0.0 to 1.0 describing the musical positiveness conveyed by a track; tracks with high valence sound more positive (e.g. happy, cheerful, euphoric), while tracks with low valence sound more negative (e.g. sad, depressed, angry)

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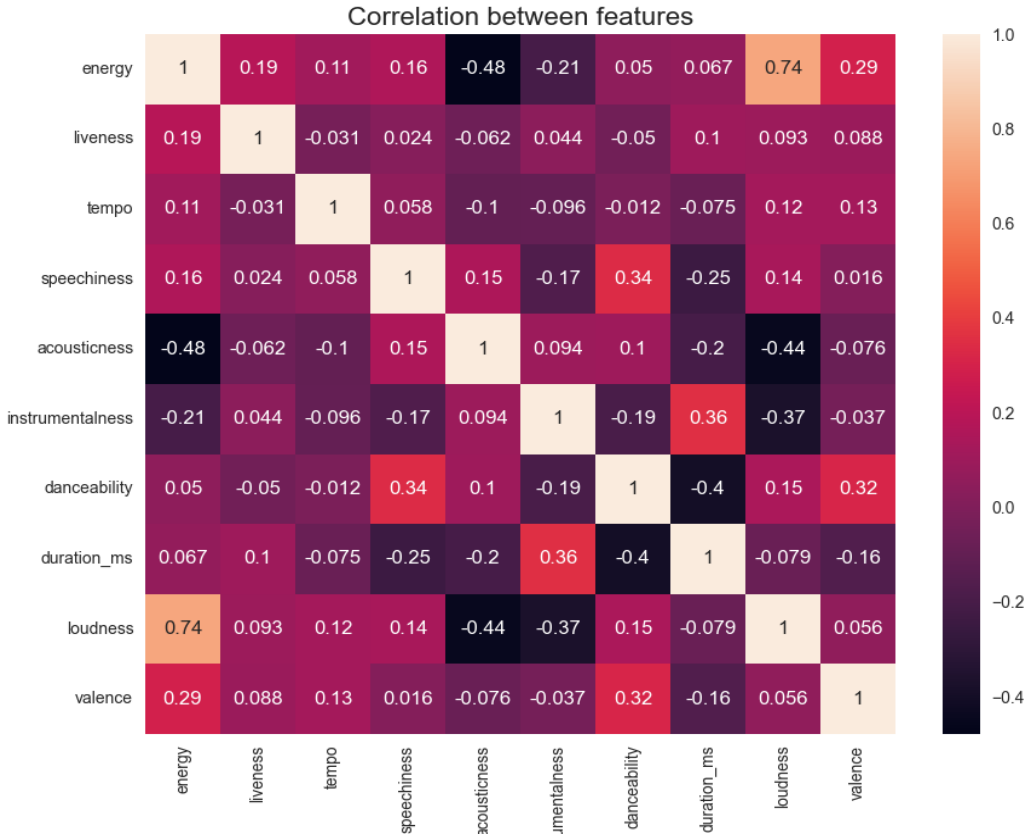
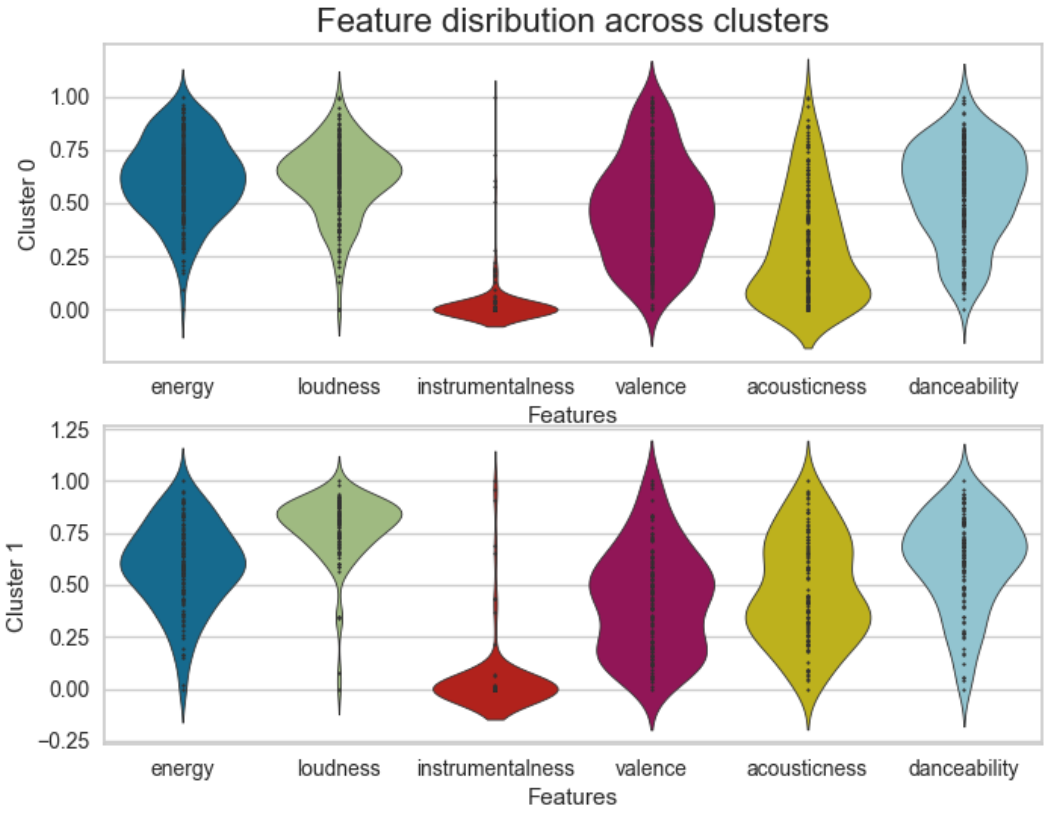
The following figure represents the correlations between the features displayed by your playlist:

- value close to 0 - there is no relationship between the features
- value close to 1 - the features coexist together
- value close to -1 - one feature has a high value, the other has a low value



Clustering Level22 playlist

Kmeans algorithm is an unsupervised machine learning algorithm that can divide a group of objects into smaller groups based on similarities between them. In this case, each group will display a different set of features. Let's see how their distribution looks like:



As you can see, some of the features look totally different between the clusters. Thanks to this difference and the fact that the songs within each cluster have similar values of these features, we can group the songs. This way, your playlist can be divided into two or more playlists that display a specific set of features. Sometimes it happens that the clustering algorithm is capable of dividing the playlists by genres. Let's see how it worked in your case.

In the first picture you can see the overall division of songs when it comes to three features: loudness, acousticness and valence. Next, you can see all songs that have been added to both groups. Some titles might not fit much to any playlist (they are called outliers). They are separated from the rest of the songs.

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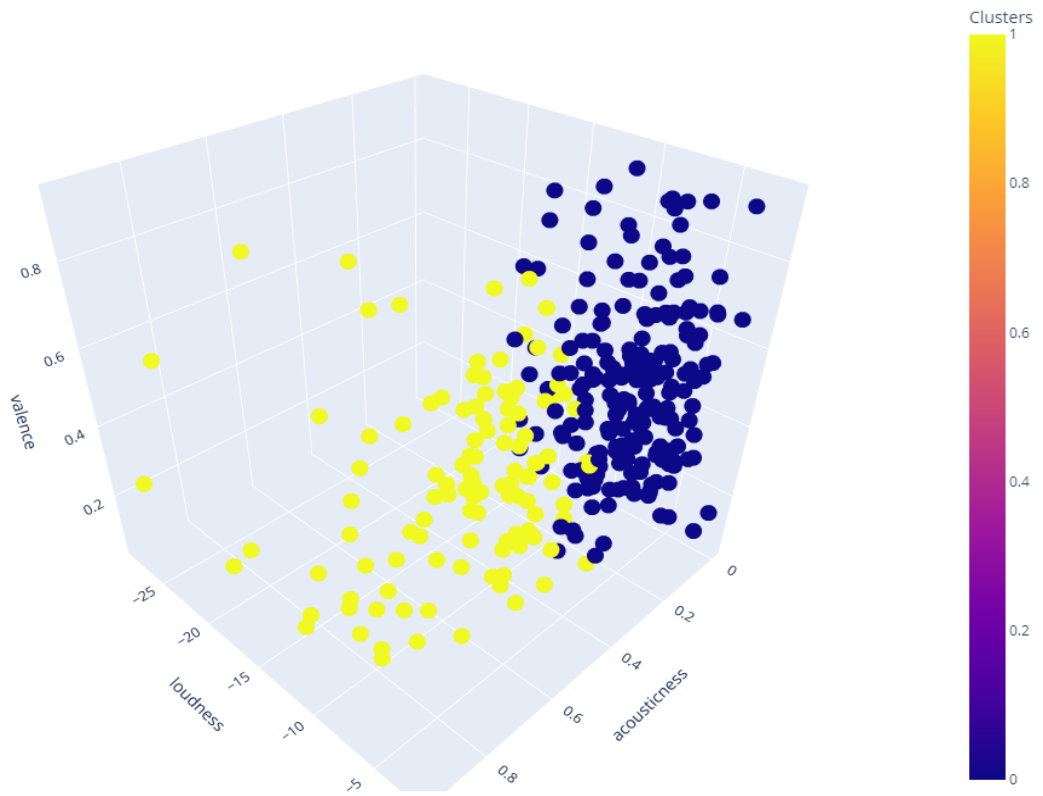
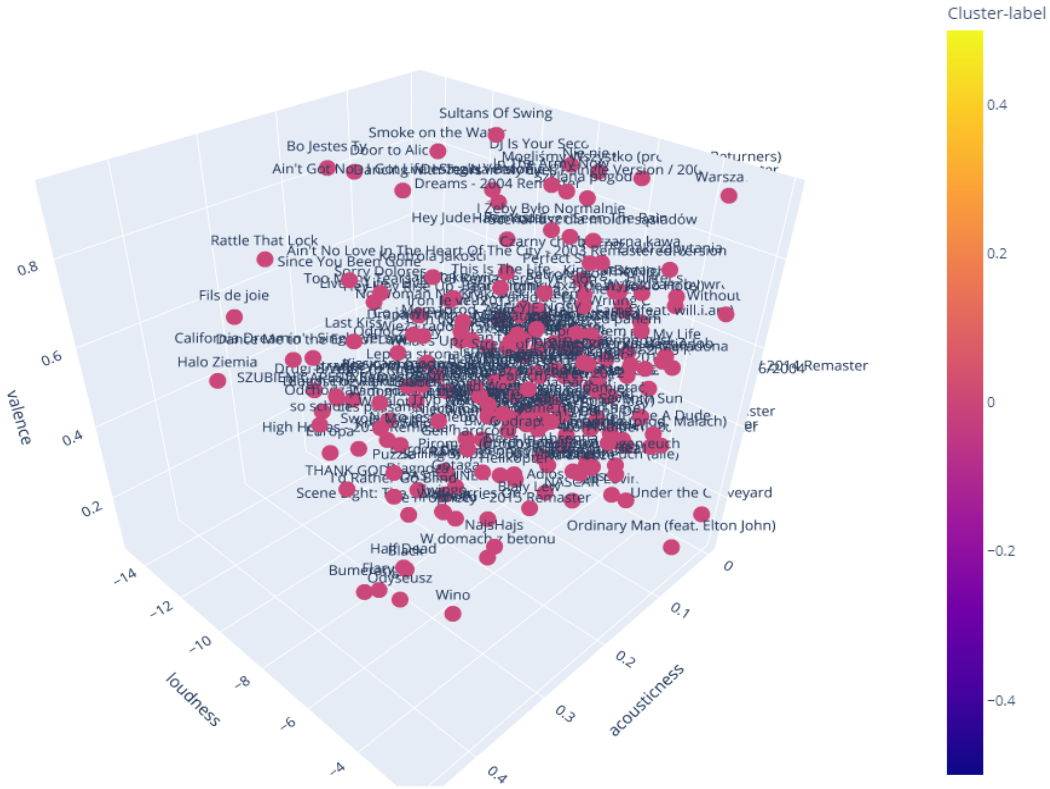
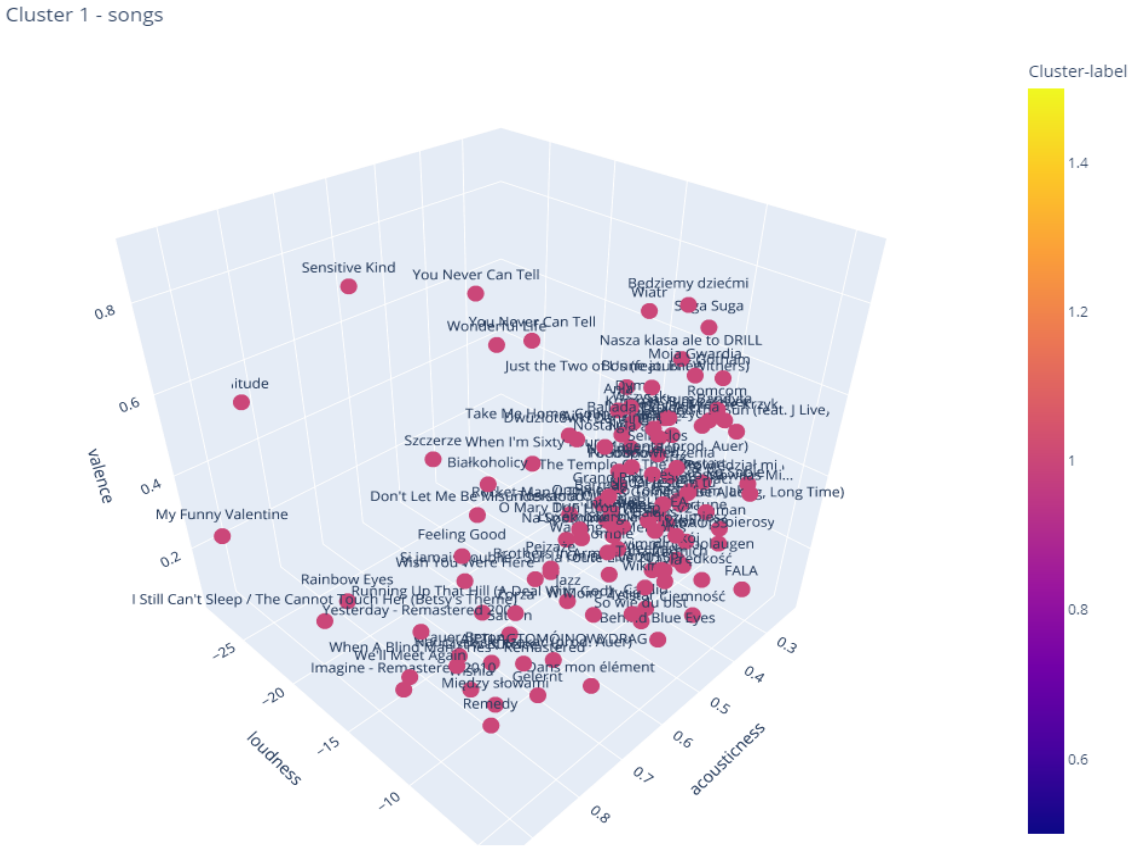
Cluster division



Cluster 0 - songs



Clustering Level22 playlist



Now, you can check your spotify - new playlists have been created on your account!