EXPLAINING PYTHON DATA STRUCTURES USING EXAMPLES FROM “SPOTIFY”.

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LISTS

Eg- Spotify Playlist.

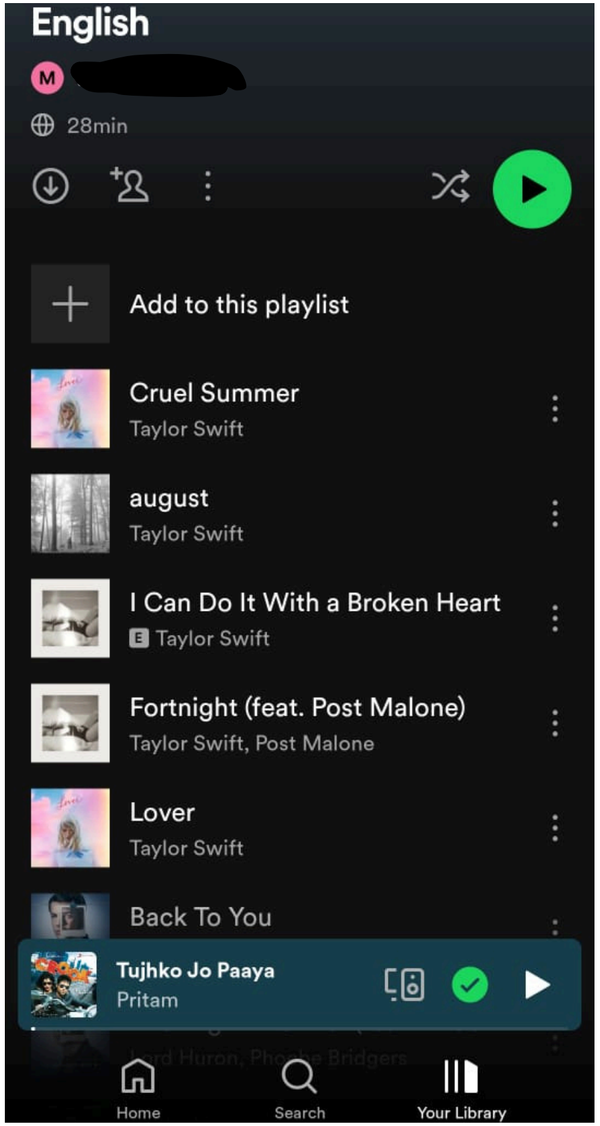
A list in Python is an ordered collection that can hold multiple items. It's mutable, meaning you can change its elements after creation.

Spotify Example: Imagine you have a playlist on Spotify. The songs in that playlist can be thought of as a list. You can add or remove songs, change the order, and even replace songs with new ones.

```
playlist = ["Song A", "Song B", "Song C", "Song D"]
```

Here, playlist is a list containing the songs in a specific order. You can modify this list, such as adding a new song:

```
playlist.append("Song E")
```



TUPLES

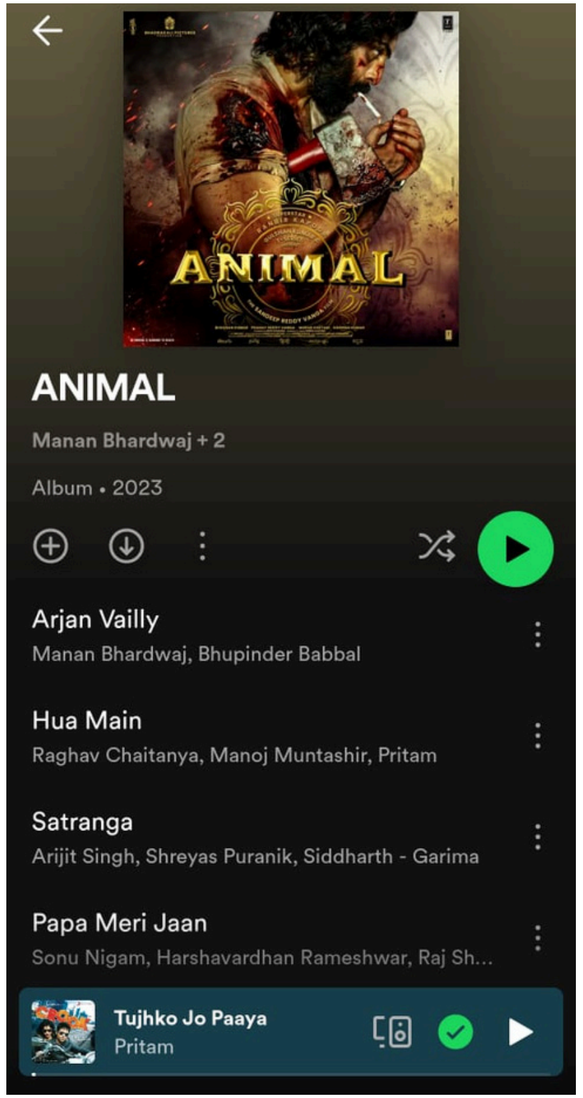
Eg- Spotify album

A tuple is similar to a list, but it's immutable. Once created, you can't change its elements.

Spotify Example: Think of a tuple as a Spotify album. The tracks in an album are in a specific order, and you can't change that order or the tracks themselves.

album = ("Track 1", "Track 2", "Track 3", "Track 4")

Here, album is a tuple. You can access the tracks, but you can't add, remove, or change them.



SETS

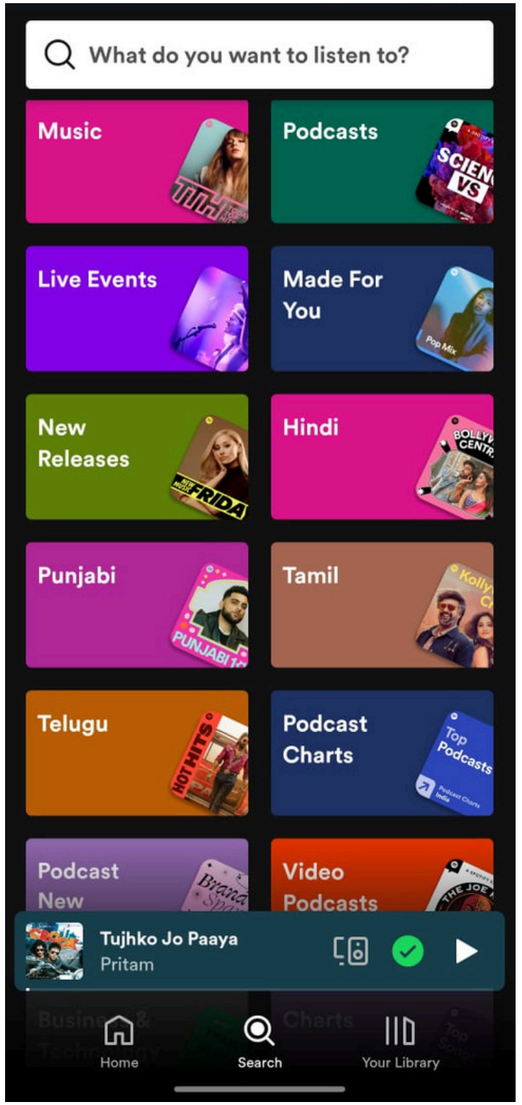
Eg- Spotify Genres

A set is an unordered collection of unique elements. It doesn’t allow duplicate values.

Imagine you want to find out the unique genres in your entire Spotify library. Since genres can repeat across different songs, you use a set to store only unique genres.

```
genres = {"Pop", "Rock", "Jazz", "Pop"}  # "Pop" appears twice, but only one will be stored
```

Here, genres is a set, and it will store only unique genre names, automatically removing any duplicates.



DICTIONARIES

Eg- User Library

A dictionary in Python is an unordered collection of key-value pairs. It's like a real-life dictionary where you look up a word (key) to find its meaning (value).

if we're thinking about the whole app, a more comprehensive dictionary could represent the user's library:

```
user_library = {
  "playlist_1": {
    "name": "Chill Vibes",
    "songs": ["Song A", "Song B", "Song C"],
    "created_date": "2023-01-01"
  },
  "playlist_2": {
    "name": "Workout Mix",
    "songs": ["Song D", "Song E", "Song F"],
    "created_date": "2024-08-01"
  },
  "liked_songs": ["Song G", "Song H", "Song I"]
}
```

Explanation:

- user_library: The main dictionary that represents the entire user's library on Spotify.
- playlist_1, playlist_2: Keys that represent different playlists the user has created.
- Each playlist has its own dictionary containing the playlist's name, a list of songs, and the creation date.
- liked_songs: A key representing a list of songs the user has liked.