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Big Data System Engineering with Scala

Spring 2023

Assignment - Working with APIs



- **GitHub Repo URL** - <https://github.com/harshilshahneu/CSYE7200-Harshil-Shah>

- List of Tasks Implemented

You may use Scala requests to get the Spotify Playlist data in JSON format.

The ID of the playlist is : 5Rrf7mqN8uus2AaQQQNdc1

The Spotify developer API is : <https://developer.spotify.com/console/get-playlist/Links> to an external site.

Playlist : <https://open.spotify.com/playlist/5Rrf7mqN8uus2AaQQQNdc1Links> to an external site.

In the JSON response, you will have the duration_ms field. This is the duration of each song in milliseconds. You are to find the top 10 longest songs. Each song will have an Artist name and an artist ID. There may be multiple artists for the same song. You are to query the artist details of every artist in the top 10 longest songs and display them in order of their followers.

The Spotify API to query the artist is :

<https://developer.spotify.com/console/get-artist/Links> to an external site.

You must call this API for every artist ID in the top 10 longest songs.

The expected output would be :

Part 1)

Songname1 , duration_ms

Songname2 , duration_ms

.....

Songname10 , duration_ms

Part 2)

Artist1 : follower_count

Artist2 : follower_count ... etc

All code must be in Scala.

- Code

SpotifyApi.scala

```
package edu.neu.coe.csye7200.asstmd
import spray.json._
import scala.annotation.tailrec

case class Artist(id: String, name: String, followers: Option[Int])

case class Track(name: String, duration_ms: Long, artists: Seq[Artist])

case class Item(track: Track)

case class PlaylistResponse(items: Seq[Item], limit: Int, total: Int, next: Option[String])

object MyJsonProtocol extends DefaultJsonProtocol {
  implicit val artistFormat: RootJsonFormat[Artist] = new RootJsonFormat[Artist] {
    override def write(obj: Artist): JsValue = {
      val baseMap = Map(
        "id" -> JsString(obj.id),
        "name" -> JsString(obj.name)
      )
      val followersMap = obj.followers.map(f => Map("followers" -> JsNumber(f))).getOrElse(Map.empty)
      JsObject(baseMap ++ followersMap)
    }

    def read(json: JsValue): Artist = {
      val fields = json.asJsObject.fields
      val id = fields("id").convertTo[String]
      val name = fields("name").convertTo[String]
      val followers = fields.get("followers").flatMap {
        case JsObject(followersFields) => followersFields.get("total").map(_.convertTo[Int])
        case _ => None
      }
      Artist(id, name, followers)
    }
  }

  implicit val trackFormat: RootJsonFormat[Track] = jsonFormat3(Track)
  implicit val itemFormat: RootJsonFormat[Item] = jsonFormat1(Item)
  implicit val playlistResponseFormat: RootJsonFormat[PlaylistResponse] = jsonFormat4(PlaylistResponse)
}

object SpotifyApi extends App {
  val OAuth = "Bearer BQAjx21DmPsCEbW_KqKp61724PueJRY90rJ09G9DtMPR-xPLW2Ej6Dhs12GxMcQf0XPINNuVHu_KIhxr31hctxfBRVJT56v7wCeyM"
  val url = "https://api.spotify.com/v1/playlists/5Rrf7mqN8uus2AaQQQNdc1/tracks?offset=0&limit=100"
  val headers = Map(
    "Authorization" -> OAuth,
  )
}
```

```

47 import MyJsonProtocol._
48
49 @tailrec
50 def getAllTracks(url: String, tracks: Seq[Track]): Seq[Track] = {
51   val response = requests.get(url, headers = headers)
52   val json = response.text.parseJson
53   val playlistResponse = json.convertTo[PlaylistResponse]
54   val allTracks = tracks ++ playlistResponse.items.map(_.track)
55
56   playlistResponse.next match {
57     case Some(nextUrl) => getAllTracks(nextUrl, allTracks)
58     case None => allTracks
59   }
60 }
61
62 val allTracks = getAllTracks(url, Seq.empty)
63 val top10LongestTracks = allTracks.sortBy(_.duration_ms)(Ordering.Long.reverse).take(10)
64 top10LongestTracks.foreach(track => println(s"Name: ${track.name}, Duration: ${track.duration_ms} ms"))
65
66 val top10LongestTracksWithArtists = top10LongestTracks.map(track => {
67   val artists = track.artists.map(artist => {
68     val artistUrl = s"https://api.spotify.com/v1/artists/${artist.id}"
69     val response = requests.get(artistUrl, headers = headers)
70     val json = response.text.parseJson
71     val artistObj = json.convertTo[Artist]
72     (artistObj, track.duration_ms)
73   })
74   (track, artists)
75 })
76
77 val sortedArtists = top10LongestTracksWithArtists.flatMap(_._2).map(_._1).distinct.sortBy(_.followers.getOrElse(0))(Ordering.Int.reverse)
78 println("-----")
79 sortedArtists.foreach(artist => println(s"Name: ${artist.name}, Followers: ${artist.followers.getOrElse(0)}"))
80 }
81

```

Build.sbt

```

ThisBuild / version := "0.1.0-SNAPSHOT"

ThisBuild / scalaVersion := "2.13.10"

lazy val root = (project in file("."))
  .settings(
    name := "assignment-spotify-api"
  )

libraryDependencies += Seq(
  "com.lihaoyi" %% "requests" % "0.8.0",
  "io.spray" %% "spray-json" % "1.3.6"
)

```

- Results

1. Top 10 longest songs

Name: The End - New Stereo Mix Advanced Resolution, Duration: 699533 ms

Name: Desolation Row, Duration: 681400 ms

Name: Free Bird, Duration: 550066 ms

Name: Purple Rain, Duration: 520786 ms

Name: Kashmir - 1990 Remaster, Duration: 508200 ms

Name: Iron Man - Live, Duration: 500693 ms

Name: Good Times, Duration: 495400 ms

Name: Stairway to Heaven - 1990 Remaster, Duration: 478173 ms

Name: L.A. Woman, Duration: 471160 ms

Name: A Whiter Shade Of Pale - Live, Duration: 466506 ms

2. Artists of top 10 songs in order of their followers

Name: Led Zeppelin, Followers: 13148831

Name: The Doors, Followers: 7105007

Name: Black Sabbath, Followers: 6806788

Name: Prince, Followers: 6644900

Name: Bob Dylan, Followers: 6019697

Name: Lynyrd Skynyrd, Followers: 4517304

Name: CHIC, Followers: 645895

Name: Procol Harum, Followers: 400400

Name: The Danish National Concert Orchestra and Choir, Followers: 75

Execution Screenshots

```
Name: The End - New Stereo Mix Advanced Resolution, Duration: 699533 ms
Name: Desolation Row, Duration: 681400 ms
Name: Free Bird, Duration: 550066 ms
Name: Purple Rain, Duration: 520786 ms
Name: Kashmir - 1990 Remaster, Duration: 508200 ms
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