

BPM: A Better Playlist Builder

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Part 0: Language and Platform

Our project will be written in python, built on the Mac OS, and use a key-value store.

Part 1: Proposal

For many athletes, music is the metronome that sets the pace for their workout. In fact, from SoulCycle instructors to marathon runners, building the perfect playlist is an essential prelude to any training session. While millions of people crave this feeling of synchronization, there are only a handful of products that allow users to find music from their library that matches a specific cadence. BPM is here to fix that. We are building a tool to allow runners to build a custom running playlist, populated with songs from their own library, that matches their desired speed and duration. With our help, anyone will be able to quickly and easily create a custom playlist to propel them through their workout.

We will implement this tool as a command line application, written in python. We plan to leverage the python library Spotipy (a lightweight library for the Spotify Web API) in order to access a user's spotify account, query music metadata (such as BPM), and create playlists based on user parameters. The application will cache track metadata in a key-value store to make future playlist creation faster. One specific key-value store that will be cached is for every song that is retrieved, the MPH will be calculated using the BPM from the metadata set.

As this application will be written in python, users running various operating systems will be able to create running playlists using the application. To test our application, we will use Prospector (a static analysis tool for python) in conjunction with the python unit test framework. Finally, we will use Github as our version control system.

Part 2: User Stories

1. Welcome: As a user, I want to be able to log in to my spotify account so that my library and spotify history are used to create my running playlist with songs that I like. My conditions of satisfaction are that my Spotify history is persistent when I login and if my login is incorrect, a message will appear stating to re-enter my login credentials or create a new Spotify account.
2. Enter Inputs: As a user, I want to be able to enter specifications for my playlist so that I have a playlist customized to my workout. I would like to enter the length of my playlist, genre of music, start speed of my run (in MPH), and end speed of my run (in MPH). My conditions of satisfaction include: that the length of my generated playlist will be within a 30 second window of my inputted duration so that I can listen to the playlist during my workout; that the songs in my generated playlist will be from my specified genre so that I am able to customize my running playlist to my mood; that the first few songs of my playlist will have a BPM of my inputted start

speed; and that throughout my workout, the BPM of the songs increase so that within the last few songs, I am able to hit my target speed.

3. Review mode: As a user, I want to be able to review the details of my playlist and make any changes so that my playlist is complete before I begin my workout. My conditions of satisfaction include: that I am able to remove certain songs from my playlist where a menu will give me the choice to replace the removed song with one that has a similar BPM, or forcibly remove the song where I am aware that the playlist length and incremental BPM will no longer be the same as my inputs; and that I am able to change the start/end speed before I save my playlist where a warning menu will appear stating that a new playlist will be generated for me.
4. Name the playlist: As a user, I want to be able to give a unique name to my playlist so that I am able to refer back to it at a later time when I want to begin a new workout. My conditions of satisfaction are that I am able to save my playlist to my Spotify account with a unique name and retrieve it from my Spotify app at a later time.
5. Open Spotify: As a user, I want to have the option to open Spotify from my downloaded desktop application so that I am able to start playing my new playlist. My conditions of satisfaction are that I am given the choice to open Spotify from my desktop app or am prompted to download the application if it is not already there.
6. Logout and New User Login: As a user, I want to have the option to logout of my Spotify account from the command line app and allow a different user to login so that multiple users can utilize the playlist generator from the same desktop. My conditions of satisfaction are that I can logout of my account at any point throughout the command-line application and can either login again or allow another user to successfully login.

Part 2: User Stories Wishlist

1. Specify song preferences: As a user, I want to be able to review a previous playlist where I can “dislike” specific songs in that playlist so that they will not appear in future playlist. My conditions of satisfaction are that I can review any of my saved playlists and select songs to “dislike” where a message will appear stating that if I proceed with this act then it will never appear in a future playlist.
2. Persistent login: As a user, I want to be able to enter my login credentials one time so that when I close the application and reopen it, my history will be pulled up and I will not have to re-login. My conditions of satisfaction are that I am able to login one time (my first visit to the application), close the application, and reopen it from the same desktop without having to login again.