

BPM: A Better Playlist Builder

Alana Anderson (afa2132), Katie Pflieger (kjp2157), Matt Kronegold (mak2265), Tristan Orlofski (tio2001)

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 will be cached for every song that is retrieved. We plan to convert the BPM that is retrieved for every song to SPM (steps per minute) in order to determine the cadence of a specific song. We will cache that calculated SPM for each song.

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. 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

2. 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:

- If my credentials are correct: my Spotify history is persistent when I login
- If my credentials are incorrect: a message will appear stating to re-enter my login credentials or create a new Spotify account

3. 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 steps per minute), and end speed of my run (in steps per minute).

My conditions of satisfaction include:

- 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
- 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
- The first few songs of my playlist will have a BPM of my inputted start speed
- Throughout my workout, the BPM of the songs increase or decrease so that within the last few songs, I am able to hit my target speed

4. 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:

- 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
- 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

5. Name 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

6. 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:

- 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

7. Logout

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 3: Acceptance Testing

1. Login

Input	Pass	Fail
Common Cases		
(1) A new user logs into the system	User is taken to <u>Welcome</u>	User is treated as a returning user
(2) An existing user logs into the system	If the user has created playlists before, they are asked if they would like to work on a new playlist (0) or modify an existing playlist (1)	User is taken to <u>Welcome</u>
(3) User presses “0” to indicate that they would like to work on a new playlist	User is taken to <u>Enter Inputs</u>	User is shown a menu of their existing playlists and prompted to choose one
(4) User presses “1” to indicate that they would like to modify an existing playlist	User is shown a menu of their existing playlists and prompted to choose one	User is taken to <u>Enter Inputs</u>
(5) User chooses an existing playlist to modify	User is taken to the <u>Review Mode</u> for that playlist	User
Special Cases		
(1) User has a playlist that has not been synced with their Spotify account	User is asked if they would like to save the playlist to Spotify	The playlist is lost

2. Welcome

Input	Pass	Fail
Common Cases		
(1) User is prompted for login	Wait for input	Timeout
(2) User enters successful credentials	Move to next story	Reject login

(3) User enters incorrect credentials	Reject login, prompt again	Move to next story
---------------------------------------	----------------------------	--------------------

3. Enter Inputs

Input	Pass	Fail
Common Cases		
(1) User inputs playlist length in minutes	User is taken to step (2) if the input is a valid length (i.e. an integer value between 5-90)	User is taken to step (2) with an invalid input
(2) User is presented a list of genres and prompted to input a number corresponding to their selections (i.e. 0 rock, 1 hip hop, etc.)	User is taken to step (3) if it is a valid input (i.e. an integer corresponding to the menu presented)	User is taken to step (3) with an invalid input
(3) User is prompted to enter start speed	User is taken to step (4) if the input is a valid BPM (i.e.between 50-300 BPM)	User is taken to step (4) with an invalid input
(4) User is prompted to enter end speed	User is taken to <u>Review Mode</u> if the input is a valid BPM (i.e.between 50-300 BPM)	User is taken to <u>Review Mode</u> with an invalid input

4. Review Mode

Input	Pass	Fail
Common Cases		
(1) User is prompted to indicate if they are happy with their playlist (0) or want to make any changes (1)	Wait for input	System changes without user input
(2) User presses “0” to indicate that they are happy with their playlist	Playlist is saved as is and user is taken to <u>Name Playlist</u>	User is taken to step (4)
(3) User presses “1” to indicate that they would like to make changes to their playlist	User is taken to step (4)	Playlist is saved as is and user is taken to <u>Name Playlist</u>
(4) User is prompted to	Wait for input	System changes without user

indicate if they want to change the parameters of their playlist (0) or change a song on the playlist (1)		input
(5) User presses “0” to indicate that they want to change the parameters	User is taken back to <u>Enter Inputs</u>	User is not taken back to <u>Enter Input</u>
(6) User presses “1” to indicate that they would like to change a song on the playlist	User is prompted to enter the number corresponding to the song they would like to change	User is not prompted to indicate which song they would like to change
(7) User enters a number to indicate which song they want to change	User is presented an alternative of the same BPM and taken back to the beginning of <u>Review Mode</u>	User is not presented an alternative User is presented an alternative but is not taken back to <u>Review Mode</u>

5. Name Playlist

Input	Pass	Fail
Common Cases		
(1) User inputs playlist name	Playlist name is saved if unique Playlist name is saved with an appended number if not unique	Playlist name is not saved Non-unique playlist name is saved
Special Cases		
(1) System cannot connect to Spotify	The playlist is cached with the user’s data The user is presented the playlist the next time they log in	The playlist is lost

6. Open Spotify

Input	Pass	Fail
Common Cases		

(1) Spotify is installed on local machine	Spotify opens automatically	Spotify is not opened
(2) Spotify not installed	User is prompted to download the Spotify app	User is not prompted
Special Cases		
(1) OS not supported by Spotify	Open web player	Try to open local application

7. Logout

Input	Pass	Fail
Common Cases		
(1) User enters “logout” at any stage that accepts input	Program logs out of user’s account and returns to <u>Welcome</u> stage	Program ignores or rejects the “logout” keyword
Special Cases		
(1) User enters “logout” at a stage that does not accept input	Program is not interrupted	Program is interrupted

Appendix: 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