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CSC 466 Project:
Better
Shuffle
By: Aidan Berman, Austin Bailey,
Madison Findley

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Spotify Dev Tools

2 months

Requirements

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Infinite Time

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Survey Results

8 weeks

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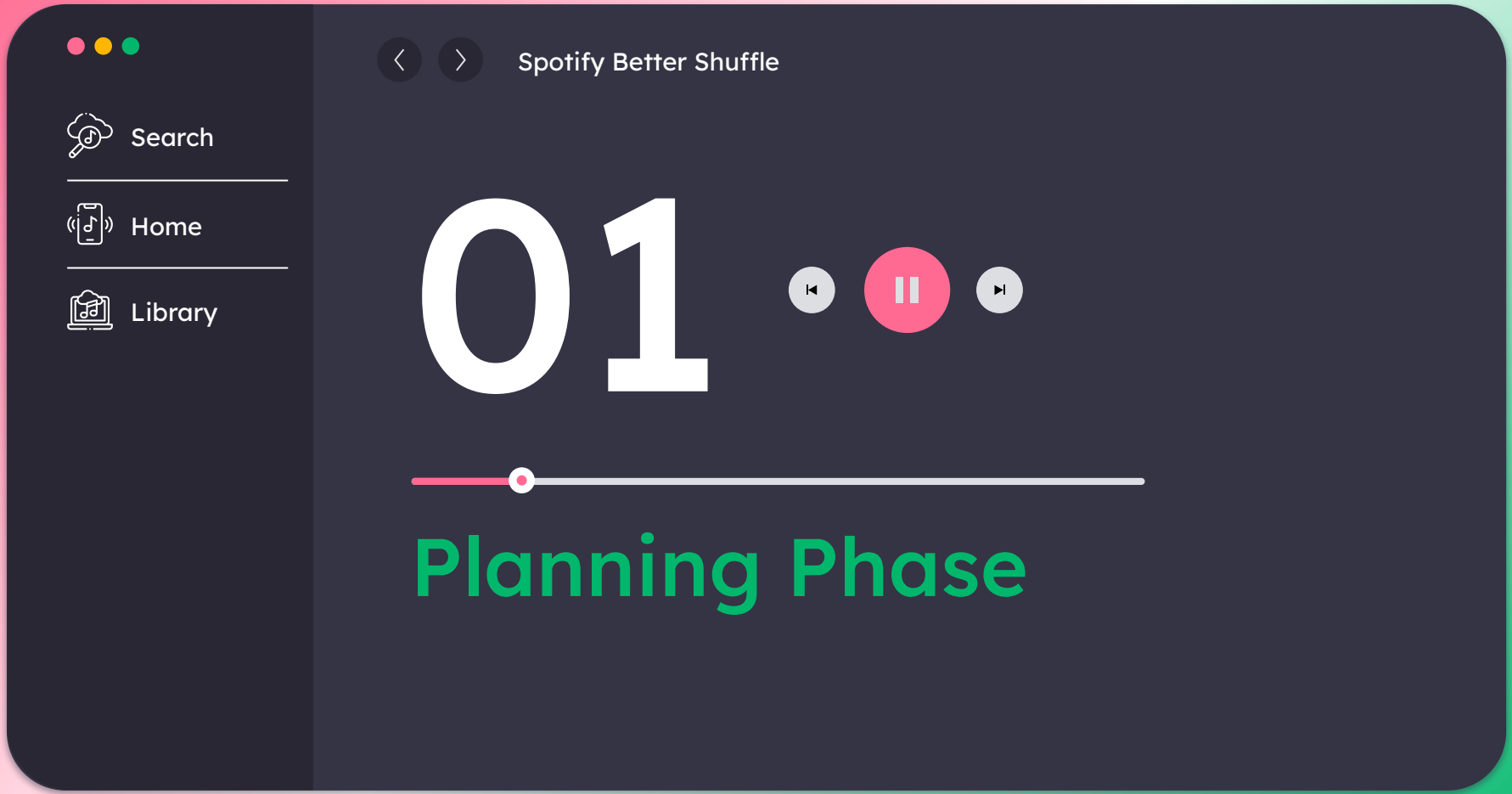
Guess The Song
“First things first I’ma say all the words inside my head, I’m fired up and tired of the way that things have been oh-ooh.”
—Imagine Dragons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Spotify Better Shuffle
01
Planning Phase

Planning Phase

- Spotify Dev Tools — Follow
- Research — Follow
- Planning — Follow

Spotify Dev Tools Good and Bad

Positives

- We can access endless data
- Access to users top tracks, liked songs, and more

Negatives

- Premium account is required for playback
- No real-time event streaming

Spotify Dev Tools Constraints

- **Constraint** 1:01

  Does not allow for integration with Spotify itself

- **Constraint** 1:02

  User authentication is an annoyance

- **Constraint** 1:03

  Searching for data is limited to track, album, artist, and playlist

Researching Process

Step 1

2 Weeks

Finding information about Spotify Dev Tools and how we can utilize it properly

Step 2

1 week

Learning about different Algorithms to use for creating a better shuffle system

Step 3

3 weeks

Creating a study for individuals to compare and contrast a shuffle queue

Step 4

1 week

Creating a plan for the implementation process so we have an MVP

Planning Process for Implementation

Step 1

2 years

Gather all information from the research process

Step 2

2 seconds

Set up the IDE and requirements

Step 3

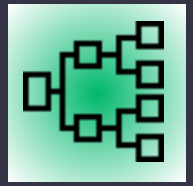
A lifetime

Set up OAuth for Spotify Dev Tools

Step 4

30 seconds

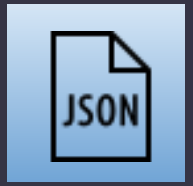
Retrieve Data from entry query



Step 5

10 seconds

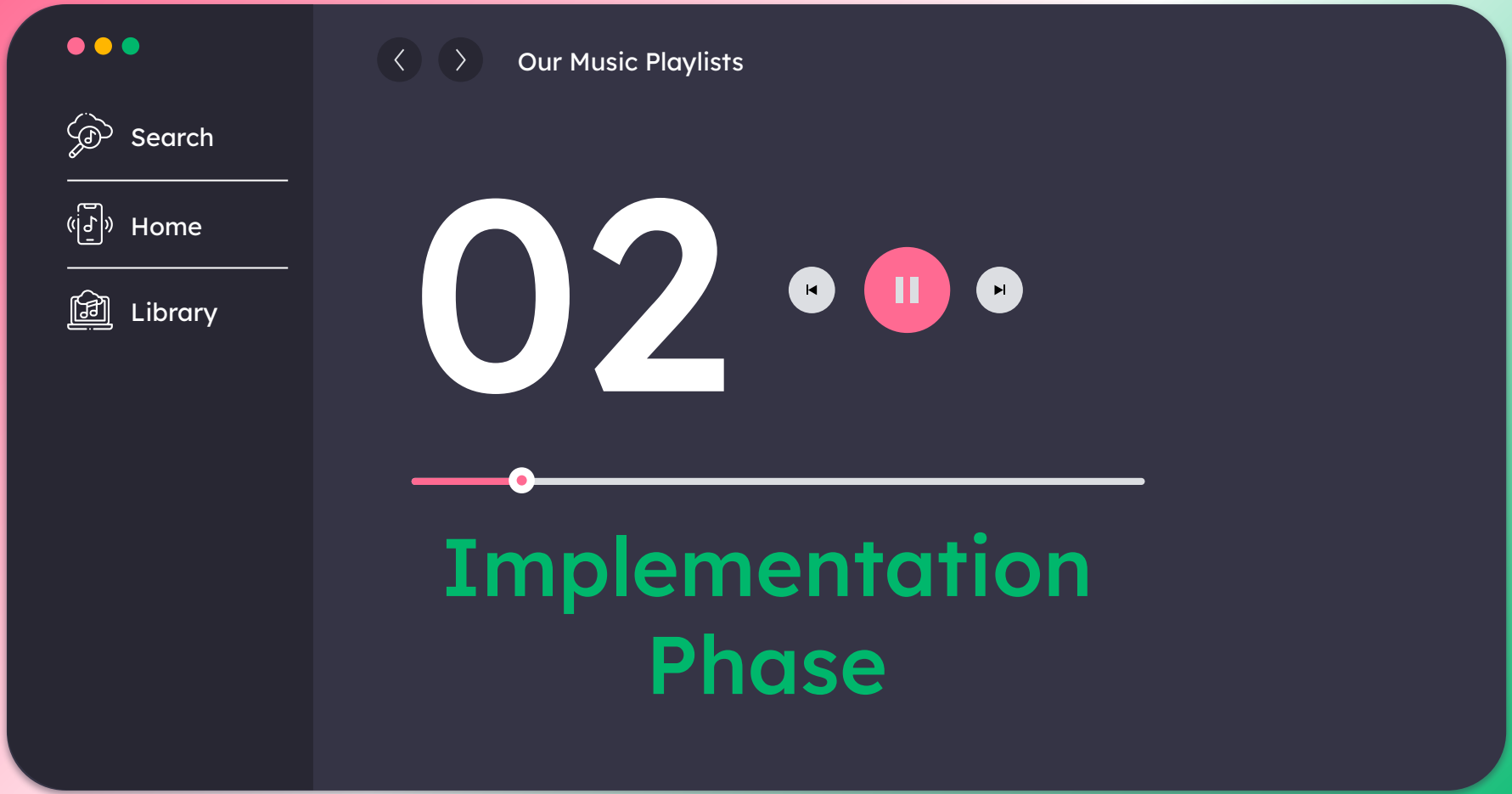
Put retrieved data through our TF-IDF algorithm



Step 6

1 minute

Write a JSON file for all songs similar to the entry query


Search
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Our Music Playlists
02
Implementation
Phase

Programming Classes

#1 Spotify OAuth
Accesses Spotify Dev Tools

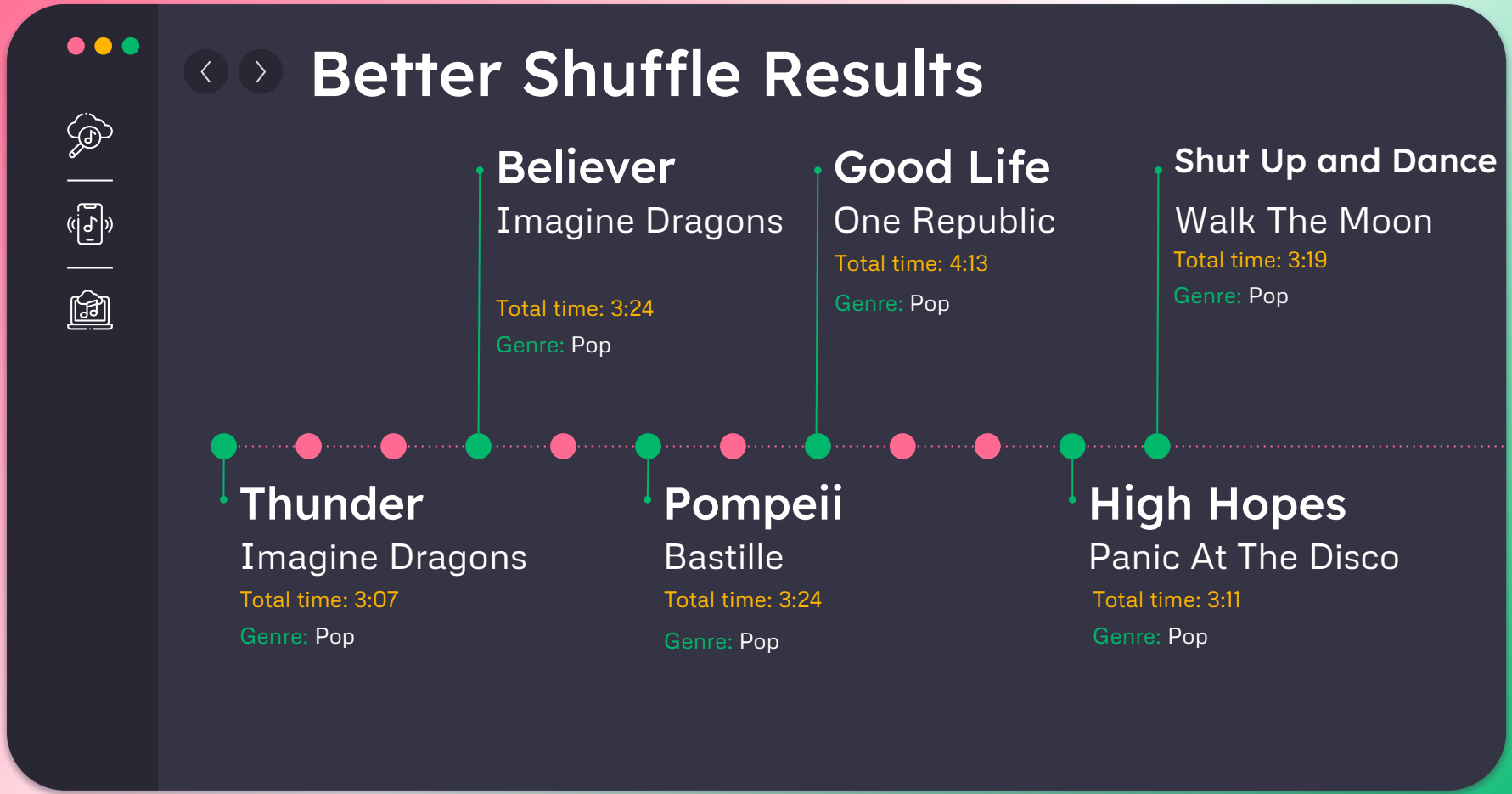
#2 Spotify API
Retrieves, parses, and stores data

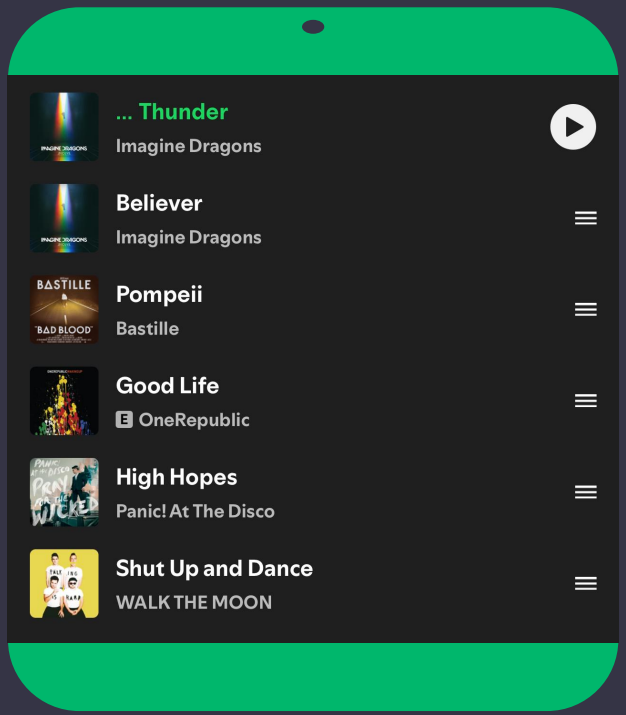
#3 Song
Getter's and Setter's

#4 TF-IDF Algorithm
Calculates Similar Songs

#5 Playlist Generator
Ranks songs based on TF-IDF scores

#6 Main
All code is executed through here


Better Shuffle Results
Thunder
Imagine Dragons
Total time: 3:07
Genre: Pop
Believer
Imagine Dragons
Total time: 3:24
Genre: Pop
Pompeii
Bastille
Total time: 3:24
Genre: Pop
Good Life
One Republic
Total time: 4:13
Genre: Pop
High Hopes
Panic At The Disco
Total time: 3:11
Genre: Pop
Shut Up and Dance
Walk The Moon
Total time: 3:19
Genre: Pop



Thoughts on our shuffled playlist?

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Fun Fact
All 6 songs combined have been listened to on Spotify
12,196,944,962
Times. Approximately...

More Playlists

My Playlist #12

I Ain't Comin' Back (feat. Post Malon...
Morgan Wallen, Post Malone

I Had Some Help (Feat. Morgan Wal...
E Post Malone, Morgan Wallen

I Never Lie
Zach Top

Am I Okay?
Megan Moroney

Ojos Tristes (with The Marías)
Selena Gomez, benny blanco, The Marías

Call Me When You Break Up (with G...
Selena Gomez, benny blanco, Gracie Abrams

Chest Pain (I Love)
Malcolm Todd

luther (with sza)
Kendrick Lamar, SZA

Die With A Smile
Lady Gaga, Bruno Mars

My Playlist #15

Did It Again
E Lil Tecca

LOT OF ME
Lil Tecca

Proud of You (feat. Lil Uzi Vert & Yun...
E Young Stoner Life, Young Thug, Yung Kay...

Sanguine Paradise
E Lil Uzi Vert

Wants and Needs (feat. Lil Baby)
E Drake, Lil Baby

Watch (feat. Lil Uzi Vert & Kanye W...
E Travis Scott, Lil Uzi Vert, Kanye West

Headshot (feat. Polo G & Fivio Forei...
E Lil Tjay, Polo G, Fivio Foreign

Don't Need Friends (feat. Lil Baby)
E NAV, Lil Baby

RELENTLESS (feat. Lil Uzi Vert)
E Gunna, Lil Uzi Vert

My Playlist #16

Alright
Darius Rucker

How Not To
Dan + Shay

Hard To Love
Lee Brice

Drink to That All Night
Jerrod Niemann

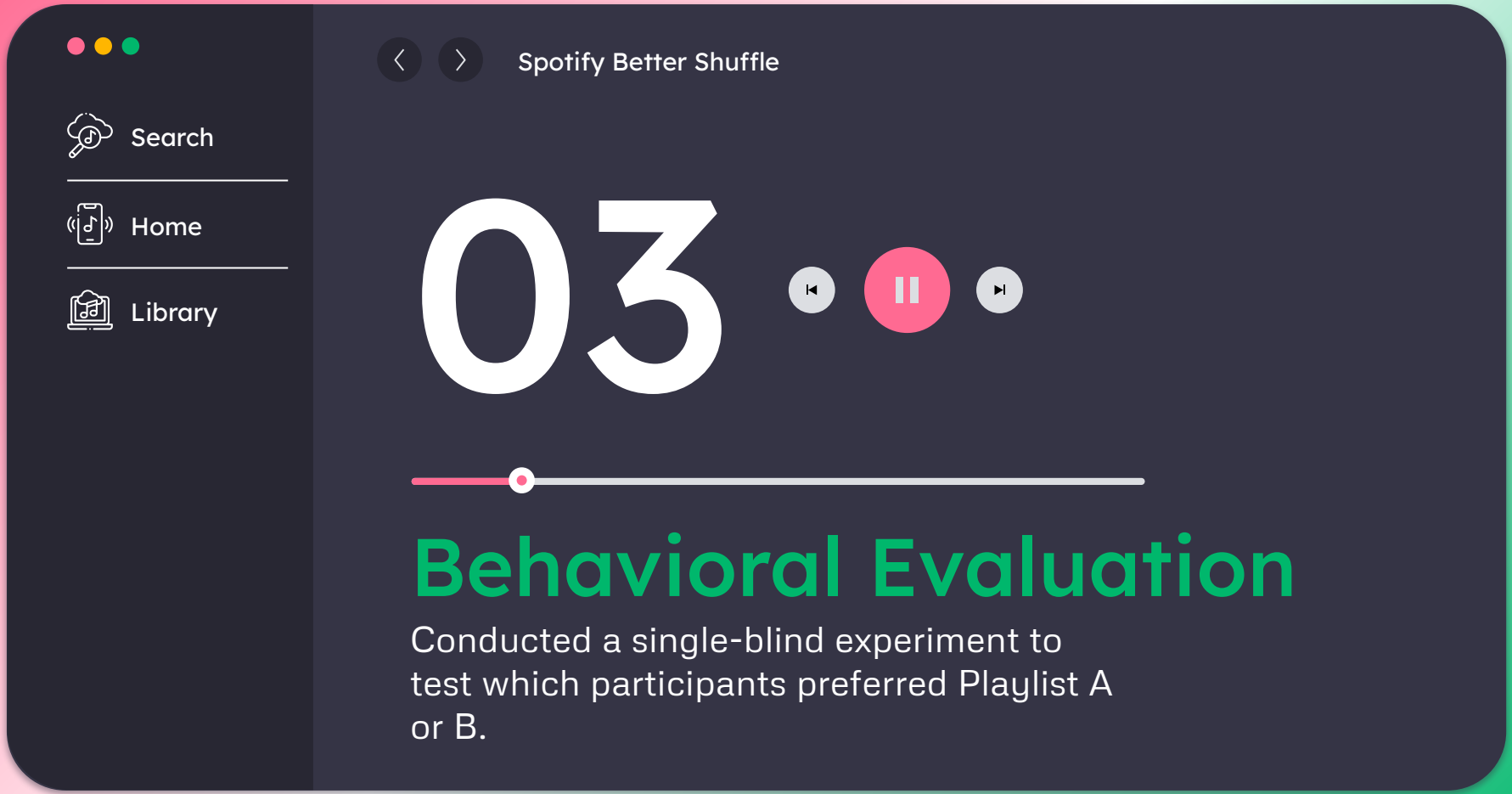
You Don't Know Her Like I Do
Brantley Gilbert

Get to You
Michael Ray

Nobody
Dylan Scott

Nothing To Do Town
Dylan Scott

Day Drunk
Morgan Evans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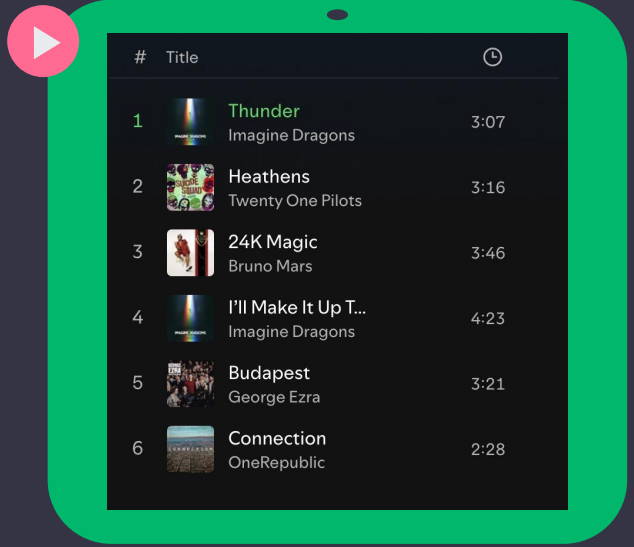
03
Behavioral Evaluation
Conducted a single-blind experiment to test which participants preferred Playlist A or B.

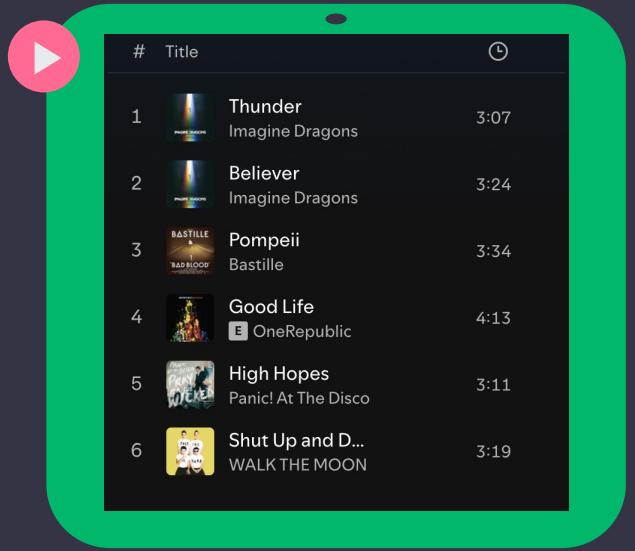
Group 1

Order by

Playlist A: Spotify Shuffle



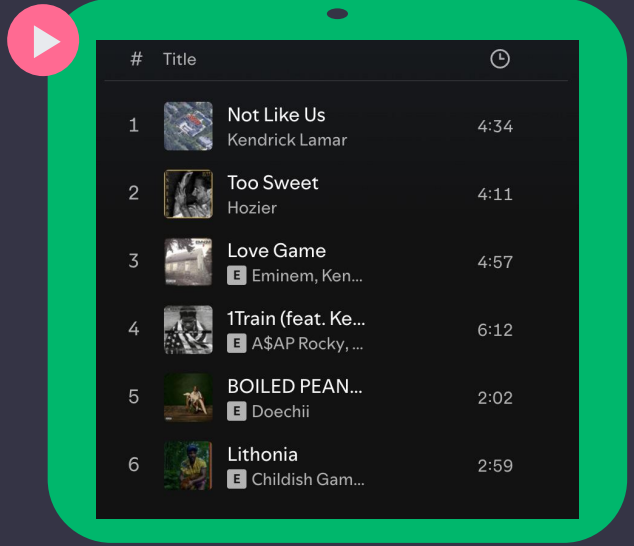
Playlist B: Our Shuffle



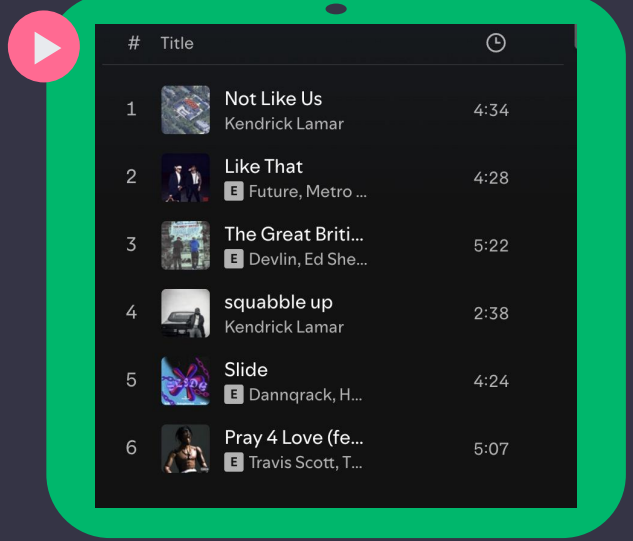
Group 2

Order by

Playlist A: Spotify Shuffle



Playlist B: Our Shuffle



Main Focus

Question 1

Follow

“Which playlist do you prefer?”

Full playlist

Question 2

Follow

“How well did the songs in Playlist A & B flow together?”

Full playlist

What makes a good shuffling playlist?

Participant 1h4min

“A playlist is well shuffled/cohesive when the songs flow together, meaning that it doesn’t have to be the same artist because that is lazy but the feelings elicited should be similar. So similar vibes, subject matter, etc...”

Participant 45min

“Same BPM, same frequencies, makes the listener feel the same things.”

Participant 30min

“The tempo and mood of the songs meld into each other.”

Participant 1h15min

“Songs that can be associated with the others in the playlist. (Same genre, same vibe, same time period, etc.)”

Binomial Test

Which playlist is preferred: Playlist A or Playlist B?

SpotifyPreferred & AlgorithmPreferred

SpotifyPreferred	AlgorithmPreferred Yes	No
Yes	0	5
No	5	0

Test Statistics[a]

	SpotifyPreferred & AlgorithmPreferred
N	10
Exact Sig. (2-tailed)	1.000[b]

a. McNemar Test

b. Binomial distribution used.

Paired Samples T-Test

Comparison of cohesion between Playlist A and Playlist B

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Cohesiveness of Playlist A	2.8000	10	.78881	.24944
	Cohesiveness of Group Playlist B	3.1000	10	.56765	.17951

Paired Samples Correlations

		N	Correlation	Significance One-Sided p	Significance Two-Sided p
Pair 1	Cohesiveness of Playlist A & Cohesiveness of Group Playlist B	10	-.199	.291	.582

Paired Samples Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the ... Lower
Pair 1	Cohesiveness of Playlist A - Cohesiveness of Group Playlist B	-.30000	1.05935	.33500	-1.05781

Paired Samples Test

		Paired ... 95% Confidence Interval of the ... Upper	t	df	Significance One-Sided p	Significance Two-Sided p
Pair 1	Cohesiveness of Playlist A - Cohesiveness of Group Playlist B	.45781	-.896	9	.197	.394

Hypothetical Data

What if a bigger sample size was used?

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Cohesiveness of Playlist A	2.8000	50	.75593	.10690
	Cohesiveness of Group Playlist B	3.1000	50	.54398	.07693

Paired Samples Correlations

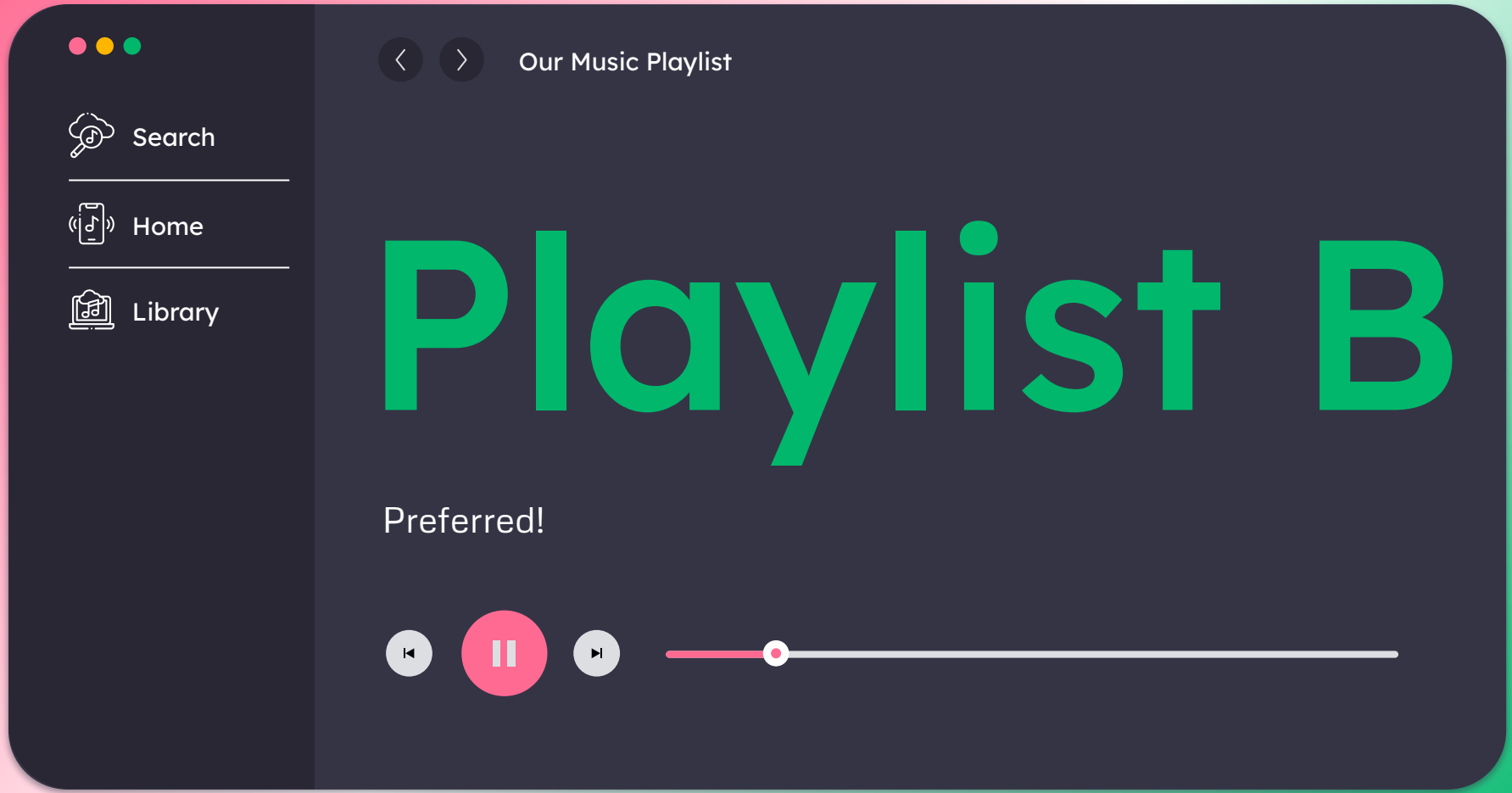
		N	Correlation	Significance One-Sided p	Significance Two-Sided p
Pair 1	Cohesiveness of Playlist A & Cohesiveness of Group Playlist B	50	-.199	.083	.167

Paired Samples Test

		Paired Differences				
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the ... Lower	
Pair 1	Cohesiveness of Playlist A - Cohesiveness of Group Playlist B	-.30000	1.01519	.14357	-.58851	

Paired Samples Test

		Paired ... 95% Confidence Interval of the ... Upper	t	df	Significance One-Sided p	Significance Two-Sided p
Pair 1	Cohesiveness of Playlist A - Cohesiveness of Group Playlist B	-.01149	-2.090	49	.021	.042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Our Music Playlist
Playlist B
Preferred!

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Spotify Better Shuffle

Thank You!

Do you have any questions?