

2021

BillBoard Checkina

Top10 Hot List 🔥

2021-09-09

Butter - BTS
Stay - The Kid LAROI & Justin Bieber
Bad Habits - Ed Sheeran
Good 4 U - Olivia Rodrigo
Kiss Me More - Doja Cat Featuring SZA
Hurricane - Kanye West
Industry Baby - Lil Nas X & Jack Harlow
Levitating - Dua Lipa
Fancy Like - Walker Hayes
Jail - Kanye West

Lyrics... 🎧

[Search for MV on YouTube](#)

Butter by BTS

[Jung Kook, V]
Smooth like butter
Like a criminal undercover
Gon' pop like trouble
Breakin' into your heart like that (Ooh)
Cool shade stunner
Yeah, I owe it all to my mother
Hot like summer
Yeah, I'm makin' you sweat like that
Break it down

[Jin, RM]
Oh, when I look in the mirror
I'll melt your heart into two
I got that superstar glow so (Ooh)
Do the boogie like

[Jung Kook, Jimin, V]
Side step, right, left to my beat (Heartbeat)
High like the moon, rock with me, baby
Know that I got that heat
Let me show you 'cause talk is cheap
Side step, right, left to my beat (Heartbeat)
Get it, let it roll

[Jung Kook, V, Jin]
Smooth like butter
Pull you in like no other
Don't need no Usher
To remind me you got it bad
Ain't no other
That can sweep you up like a robber
Straight up, I got ya
Makin' you fall like that

News... 📰

- [Olivia Rodrigo, BTS win early awards in VMA show packed with surprises - Reuters](#)
- [This BTS Billboard Was Removed for 'Promoting Homosexuality'](#)
- [35 BTS Facts About The Costumes In "WandaVision," "Black Panther," And Other MCU Projects](#)
- [BTS and Megan Thee Stallion Share "Butter" Remix: Listen](#)
- [BTS Officially Cancels 'Map of the Soul' World Tour](#)
- [Power of BTS Compels You: These BTS-Backed Phones Broke Pre-Order Records for Samsung](#)
- [BTS and Megan Thee Stallion Drop Lively "Butter" Remix](#)
- [Coldplay and BTS to Release New Single, "My Universe"](#)
- [Megan Thee Stallion Says Label Attempted to Block BTS Remix That's Reportedly Coming This Week](#)
- [BTS Officially Cancel Map of the Soul Tour](#)

CAB432 Assignment 1

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10603280

Contents

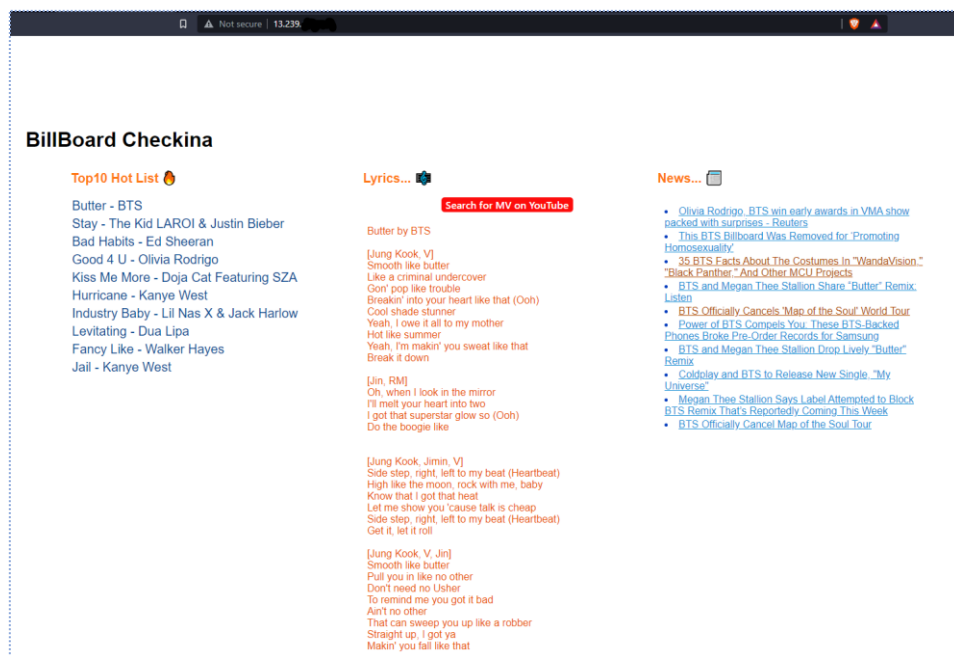
Mashup Purpose & description	2
Services used.....	2
BillBoard API via RapidAPI.....	2
Lyrics API: Lyricsovh via apiary.....	2
News api.....	3
Mashup Use Cases and Services	3
Top10 hit songs today.....	3
Song lyrics search	4
Music video search.....	4
Related news search	5
Technical breakdown	6
Architecture and Data Flow	6
Deployment and the Use of Docker.....	11
Test plan.....	12
Difficulties / Exclusions / unresolved & persistent errors.....	12
Extensions	13
User guide	13
References	15
Appendices.....	16

Introduction

Mashup Purpose & description

BillBoard Checkina is an application built for music enthusiasts. And more specifically, this app is for those who wish to access to the current top10 hit songs and view their lyrics and related news, conveniently at once in just one website.

Usually, in order to know the recent uprising songs, users have to check the BillBoard websites for songs, search on YouTube for music videos and google lyrics and news on any website that provides. They are 3 separate and lengthy processes. So, this app has collated and packed 3 different APIs (each one for top song list, lyrics and news) into one app and displayed this information on the homepage. I also added a button which opens a new tab searching for the song's music video on YouTube using the prepared query keywords. This helps users look up the song on YouTube even more convenient.



Homepage of BillBoard Checkina App

Services used

BillBoard API via RapidAPI

Providing the Billboard top10 rankings and information on titles, artists.

Endpoint: [https://billboard-api2.p.rapidapi.com/hot-100?date=\[yyyy-mm-dd\]&range=1-10](https://billboard-api2.p.rapidapi.com/hot-100?date=[yyyy-mm-dd]&range=1-10)

Docs: <https://rapidapi.com/LDVIN/api/billboard-api/details>

Lyrics API: Lyricsovh via apiary

Providing the song lyrics

Endpoint: [https://api.lyrics.ovh/v1/\[artist\]/\[title\]](https://api.lyrics.ovh/v1/[artist]/[title])

Docs: <https://lyricsovz.docs.apiary.io/#reference/0/lyrics-of-a-song/search?console=1>

News api

Providing news articles published by worldwide sources

Endpoint:

[https://newsapi.org/v2/everything?qInTitle=\\${artist}&apiKey=a8c0e76acc3849c09783c31fbcc58283&totalResults=5](https://newsapi.org/v2/everything?qInTitle=${artist}&apiKey=a8c0e76acc3849c09783c31fbcc58283&totalResults=5)

Docs: [Documentation - News API](#)

Mashup Use Cases and Services

Top10 hit songs today

As a	Music enthusiast
I want	To know what the top10 trending songs are today
So that	I know some more new good songs to listen to

Like most music listeners, I want to catch up with the world and know what songs are on top trending at the moment. One solution is that I will go to official Billboard website and get the list of top hit songs this week. So, for this app, I used a BillBoard API from RapidAPI to get this information instead of the official Billboard API because it charges a subscription fee.

With the JSON result from the endpoint (as shown below), I loop through each item in "content" in Pug to get the title and the artist of each song title on the top10 list

```
{ 2 items
  "info": { 4 items
    "category": "Billboard"
    "chart": "HOT 100"
    "date": "2019-05-11"
    "source": "Billboard-API"
  }
  "content": { 10 items
    "1": { 8 items
      "rank": "1"
      "title": "Old Town Road"
      "artist": "Lil Nas X Featuring Billy Ray Cyrus"
      "weeks at no.1": "5"
      "last week": "1"
      "peak position": "1"
      "weeks on chart": "9"
      "detail": "same"
    }
    "2": { ... } 7 items
    "3": { ... } 7 items
    "4": { ... } 7 items
    "5": { ... } 7 items
    "6": { ... } 7 items
    "7": { ... } 7 items
    "8": { ... } 7 items
```

JSON result from endpoint

```
each title in hitList
  .songItem
    button.songTitle #{title.title} - #{title.artist}
```

For loop in Pug to display song title and artist

Song lyrics search

As a	Music enthusiast
I want	To know the lyrics of the songs of top10 today
So that	I can learn to sing them

When I find a song really good, I will search for its lyrics and learn to sing it. So I integrated the lyrics API into the app to help me do this job. The API requires the artist name and the song name which can be extracted from the textContent in button element (class = "songTitle") from top10 hit list in Pug.

The JSON result is rather simple:

```
{"lyrics":"Paroles de la chanson Adventure Of A Lifetime par Coldplay\r\nTurn your magic on\r\nTo me she ... more lyrics..."}
```

And it is then fetched into a <div> element (ID = "lyrics") using JavaScript.

```
h3 Lyrics... 🎵
#youtubeSearch
#lyrics
br
```

Lyrics part in Pug

```
// Fetch lyrics to pug
fetch(`/lyrics/${artist}/${songTitle}/`)
  .then((res) => res.json())
  .then((data) => {
    const lyricsParent = document.getElementById("lyrics");
    // Fix lyrics
    lyricsParent.innerHTML = data.lyrics
      .replace(/\n/, "<br/><br/>")
      .replace(/\n/g, "<br/>")
      .replace("Paroles de la chanson ", "")
      .replace(" par ", " by ");
```

JavaScript code using to fetch lyrics to Pug

Music video search

As a	Music enthusiast
I want	To have a YouTube search button to search for song's music video
So that	It directs me to YouTube with search phrases: Song title + artist + MV

YouTube search button is rather simple since I use the song title and artist extracted from the textContent in button element (class = "songTitle") and use them as query phrases in the URL link. This is then put into a <div> element (ID = "youtubeSearch").

```
// Add youtube search button
const youtubeSearch = document.getElementById("youtubeSearch");
youtubeSearch.innerHTML = "<input "+
    "type='button' "+
    "onclick=\"window.open('https://www.youtube.com/results?search_query=" +
    songTitle + "+" + artist + "+mv" + "', '_blank')\" +
    "value='Search for MV on YouTube'/'>";
```

Related news search

As a	Music enthusiast
I want	To read news relating to the artist
So that	I can know a bit more about them e.g., their new released album, scandal, tour shows, etc.

The JSON result from News API looks like this:

```
{
  "status": "ok",
  "totalResults": 227,
  "articles": [
    {
      "source": {
        "id": null,
        "name": "The Guardian"
      },
      "author": "Ben Beaumont-Thomas",
      "title": "Ed Sheeran announces new album, =",
      "description": "Lead single from 'coming of age' follow-up to 2019's No 6 Collaborations Project has spent seven weeks at No 1 in the UKEd Sheeran has announced his fifth s",
      "url": "https://amp.theguardian.com/music/2021/aug/19/ed-sheeran-announces-new-album-equals",
      "urlToImage": "https://i.guim.co.uk/img/media/6f8e8f9ce172022d7e24785eb473f7214399ef2a/61_64_2119_1271/master/2119.jpg?width=1200&height=630&quality=85&auto=format&fit=crop",
      "publishedAt": "2021-08-19T13:51:32Z",
      "content": "Ed Sheeran has announced his fifth studio album, = (pronounced equals), to be released on 29 October.\n\nSheeran had trailed the album with an image of a chrys"
    },
    {
      "source": {
        "id": "buzzfeed",
        "name": "Buzzfeed"
      },
      "author": "[{"@type":"Person","name":"Alex Gurley","url":"https://www.buzzfeed.com/alexgurley","jobTitle":"Buzzfeed Contributor"}]",
      "title": "Ed Sheeran Bought Elton John A Giant Marble Penis And I'm Not Really Sure Why",
      "description": "\nIt's really big, it's beautifully made.\nView Entire Post >",
      "url": "https://www.buzzfeed.com/alexgurley/ed-sheeran-elton-john-present",
      "urlToImage": "https://img.buzzfeed.com/buzzfeed-static/static/2021-08/26/22/campaign_images/675ca749d6b6/ed-sheeran-bought-elton-john-a-giant-marble-penis-2-658-163001685",
      "publishedAt": "2021-08-26T22:35:38Z",
      "content": "\nIt's really big, its beautifully made.\n"
```

I only used the news title and the URL of each article and turned it into an `` element. After gathering 10 articles like that, I fetch them into `<div>` element (ID="news") in Pug.

```
th
h3 News...
#news
```

News part in Pug

```
// Fetch news to pug
fetch(`/news/${artist}`)
  .then((res) => res.json())
  .then((data) => ([data] = data))
  .then((data) => {
    const newsParent = document.getElementById("news");
    var p = document.createElement("div");
    p.setAttribute('id', 'newsLink');
    // Clean any existing news
    newsParent.innerHTML = '';
    // Append news headlines
    p.innerHTML += '<ul>';
    for (let i = 0; i < 10; i++) {
      p.innerHTML += `<li><a href=${data[i].url} target="_blank" rel="noopener noreferrer">${data[i].title}</a></li>`;
      newsParent.append(p);
    }
    p.innerHTML += '</ul>';
  });
```

JavaScript code using to fetch news to Pug

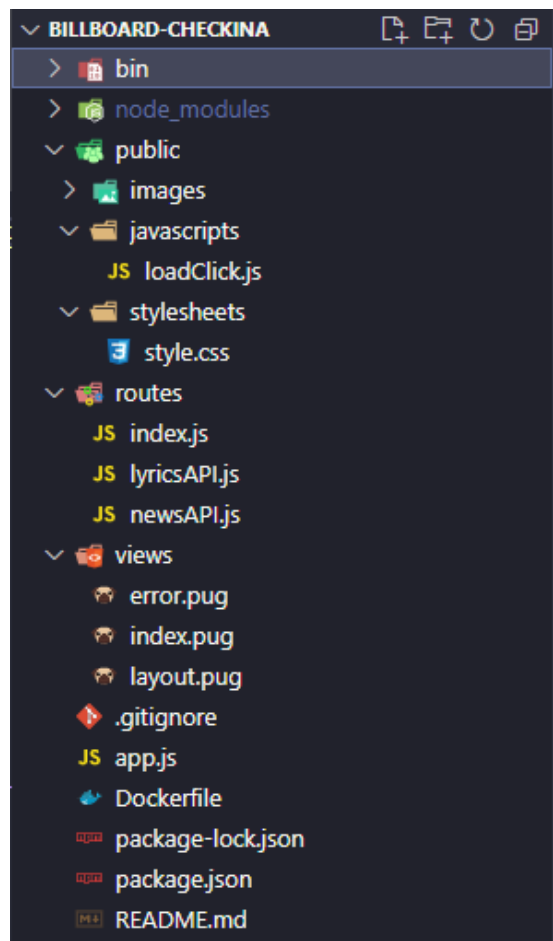
Technical breakdown

Architecture and Data Flow

This application is built with Express with the **app.js** at root directory handling routes, errors and modules.

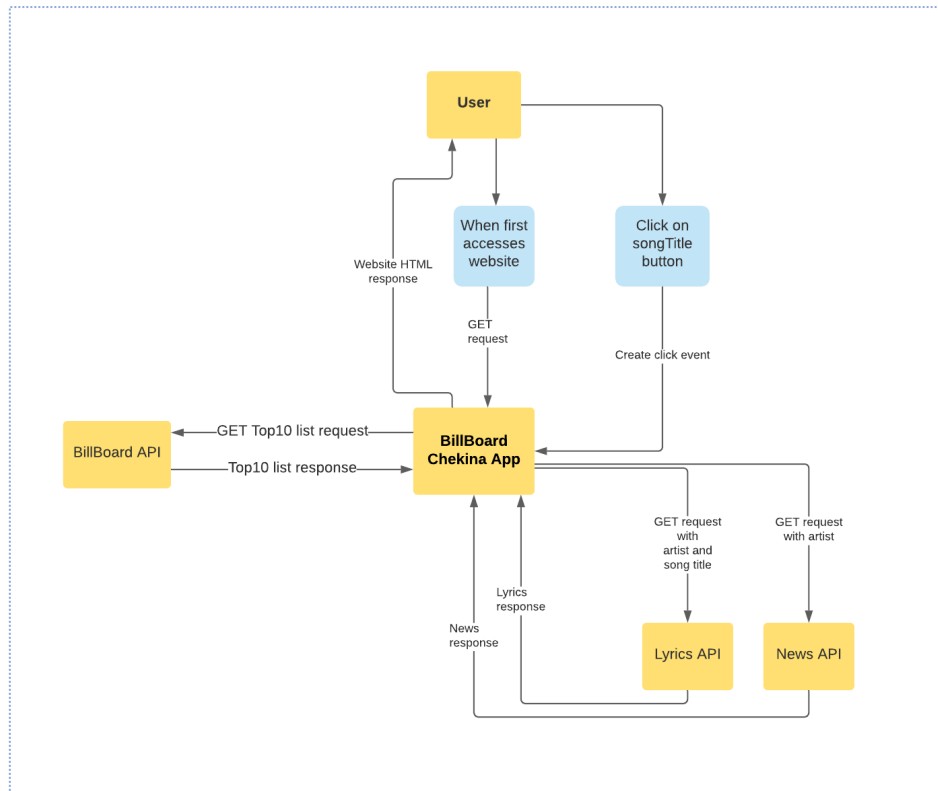
There are 3 routes in this app:

- index: Get Top10 Billboard Hit list and display it to users
- /lyrics/:artist/:songTitle : to get the lyrics from an API and return as a JSON
- /news/:artist : to get related news (to artist) from an API and return as a JSON



App structure

Data and control flow can be viewed in this diagram:



Flow diagram of the app

When user first enters the app's URL, they send a GET request to the app and it will then send a response of the website HTML back to user browser. But before sending the response, the app gets the recent Top10 Hit list from BillBoard API and add each song title as a button in the HTML (as shown in the code excerpt below).

```

routes > JS index.js > ...
6
7 /* GET home page. */
8 router.get("/", async function (req, res, next) {
9
10   const date = getCurrentDate();
11   const top10urlHeaders = {
12     "x-rapidapi-host": "billboard-api2.p.rapidapi.com",
13     "x-rapidapi-key": "180ee45f07msh90fcc9d4a80c4bcp112791jsne242605f010e",
14   };
15   const top10url = "https://billboard-api2.p.rapidapi.com/hot-100?range=1-10&date=" + date;
16
17   // Getting top10 hit list
18   const top10 = await axios
19     .get(top10url, { headers: top10urlHeaders })
20     .then((top10) => top10.data)
21     .then((top10) => Object.values(top10.content))
22     .catch((e) => {
23       const statusCode = e.response.status;
24       if (statusCode === 429)
25         return res.status(statusCode).json({
26           error: true,
27           statusCode: statusCode,
28           message: "Monthly API request quota reached!",
29         });
30       res
31         .status(statusCode)
32         .json({ error: true, statusCode: statusCode, message: e.message });
33     });
  
```

index.js excerpt

BillBoard Checkina

Top10 Hot List 🔥

Lyrics... 📄

News... 📄

2021-09-09

Butter - BTS

Stay - The Kid LAROI & Justin Bieber

Bad Habits - Ed Sheeran

Good 4 U - Olivia Rodrigo

Kiss Me More - Doja Cat Featuring SZA

Hurricane - Kanye West

Industry Baby - Lil Nas X & Jack Harlow

Levitating - Dua Lipa

Fancy Like - Walker Hayes

Jail - Kanye West

App screenshot when user first enters

When user clicks any song title, the click event associated with that button is triggered. After that, the server sends GET requests to 2 API, lyrics and news, by using the app's available routes to get related information for that song title.

'fetchSongData' function which is responsible for fetch calls in the event of 'click' looks like this:

```
3 | // Fetch the song's data
4 | const fetchSongData = (event) => {
5 |   const textContent = event.target.textContent;
6 |   // Process and extract needed data from textContent
7 |   const temp = textContent.replace(" Featuring ", " - ").split(" - ");
8 |   const songTitle = temp[0];
9 |   const artist = temp[1].split(" & ")[0];
10 |
11 |   // Fetch news to pug
12 |   fetch(`/news/${artist}`)
13 |     .then((res) => res.json())
14 |     .then((data) => ([data] = data))
15 |     .then((data) => { ...
28 |   });
29 |
30 |   // Fetch lyrics to pug
31 |   fetch(`/lyrics/${artist}/${songTitle}/`)
32 |     .then((res) => res.json())
33 |     .then((data) => { ...
49 |   })
50 |     .catch((error) => { ...
54 |   });
55 | };
```

'fetchSongData' function

BillBoard Checkina's built-in routes are `/lyrics/:artist/:songTitle` and `/news/:artist`.

```

routes > JS lyricsAPI.js > ...
1  var express = require('express');
2  var router = express.Router();
3  const axios = require("axios");
4
5  /* GET lyrics */
6  router.get('/:artist/:songTitle', function(req, res, next) {
7    const { artist, songTitle } = req.params;
8    const lyricsUrl = "https://private-amnesiac-2ca08-lyricsovh.apiary-proxy.com/v1/" +
9      |         |         |         |         |         |         |         |         |         |
10     artist + "/" + songTitle;
11
12     axios
13       .get(lyricsUrl)
14       .then(response => {
15         // console.log(response.data);
16         return res.json(response.data);
17       })
18       .catch((error) => console.log(error));
19   });
20   module.exports = router;
21

```

Codes in Lyrics route

```

routes > JS newsAPI.js > router.get("/:artist") callback > then() callback
1  /** @format */
2
3  var express = require("express");
4  var router = express.Router();
5  const axios = require("axios");
6
7  /* GET news */
8  router.get("/:artist", function(req, res, next) {
9    const { artist } = req.params;
10    const newsUrl = "https://newsapi.org/v2/everything?qInTitle=${artist}&apiKey=a8c0e76acc3849c09783c31fbcc58";
11
12    axios
13      .get(newsUrl)
14      .then((response) => {
15        return res.json(response.data.articles);
16      })
17      .catch((error) => console.log(error));
18   });
19
20   module.exports = router;
21

```

Codes in news route

2 parameters are utilized for fetch calls in this function are 'artist' and 'songTitle' all retrieved from the button's 'textContent'.

The responses from API are then added to html elements of the website.

In the 'news' part, a list of articles relating to artist is presented in unordered list dot points with their URLs as href attributes and that list is appended to the <div> element (id='newsLink'):

```

.then((data) => {
    const newsParent = document.getElementById("news");
    var p = document.createElement("div");
    p.setAttribute('id', 'newsLink');
    // Clean any existing news
    newsParent.innerHTML = '';
    // Append news headlines
    p.innerHTML += '<ul>';
    for (let i = 0; i < 10; i++) {
        p.innerHTML += `<li><a href=${data[i].url} target="
        newsParent.append(p);
    }
    p.innerHTML += '</ul>';
});

```

As for 'lyrics', <div> element (id='lyrics') content is changed to the song lyrics with some modifications from the original result received from the Lyrics API. In addition, 'songTitle' and 'artist' variables are utilized to create a button whose job is to search for the song's Music Video on YouTube in a new opened tab.

```

// Fetch lyrics to pug
fetch(`/lyrics/${artist}/${songTitle}/`)
    .then((res) => res.json())
    .then((data) => {
        const lyricsParent = document.getElementById("lyrics");
        // Fix lyrics
        lyricsParent.innerHTML = data.lyrics
        .replace(/\n/, "<br/><br/>")
        .replace(/\n/g, "<br/>")
        .replace("Paroles de la chanson ", "")
        .replace(" par ", " by ");

        // Add youtube search button
        const youtubeSearch = document.getElementById("youtubeSearch");
        youtubeSearch.innerHTML = "<input "+
            "type='button' "+
            "onclick=\"window.open('https://www.youtube.com/results?search_query=" +
            songTitle + "+" + artist + "+mv" + "', '_blank')\" "+
            "value='Search for MV on YouTube'/>";
    })
    .catch((error) => { ...
});

```

And in the end, after user has clicked a song title and server has done processing the fetchSongData function above, our website should look like this:

BillBoard Checkina

Top10 Hot List 🔥

2021-09-09

Butter - BTS
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Bad Habits - Ed Sheeran
Good 4 U - Olivia Rodrigo
Kiss Me More - Doja Cat Featuring SZA
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Industry Baby - Lil Nas X & Jack Harlow
Levitating - Dua Lipa
Fancy Like - Walker Hayes
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Lyrics... 🎵

Search for MV on YouTube

Butter by BTS

[Jung Kook, V]
Smooth like butter
Like a criminal undercover
Gon' pop like trouble
Breakin' into your heart like that (Ooh)
Cool shade stunner
Yeah, I owe it all to my mother
Hot like summer
Yeah, I'm makin' you sweat like that
Break it down

[Jin, RM]
Oh, when I look in the mirror
I'll melt your heart into two
I got that superstar glow so (Ooh)
Do the boogie like

[Jung Kook, Jimin, V]
Side step, right, left to my beat (Heartbeat)
High like the moon, rock with me, baby
Know that I got that heat
Let me show you 'cause talk is cheap
Side step, right, left to my beat (Heartbeat)
Get it, let it roll

[Jung Kook, V, Jin]
Smooth like butter
Pull you in like no other
Don't need no Usher
To remind me you got it bad
Ain't no other
That can sweep you up like a robber
Straight up, I got ya
Makin' you fall like that

News... 📰

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- [BTS Officially Cancel Map of the Soul Tour](#)

Final result with lyrics and news fetched in

Deployment and the Use of Docker

The Dockerfile is rather simple for an Express app like BillBoard Checkina.

```
Dockerfile > ...
1 FROM node:erbium
2
3 COPY . /src
4 WORKDIR /src
5 RUN npm install
6 EXPOSE 3000
7 CMD ["npm", "start"]
```

To pull and run this app from Docker, enter this command line in your machine:

```
// install docker on the machine
sudo curl -fsSL https://get.docker.com/ | sh

// need to login if it's a private repository
sudo docker login

sudo docker run --name billboard-checkina -p 80:3000 -i
-d -t rodo82/billboard-checkina
```

The app is set to be expose on port 3000 in default. So, when running the app from Docker, I set -p 80:3000 to map the machine and the container's ports, -d flag to daemonise the application.

Test plan

Task	Expected outcome	Result	Screenshot/s
Query the latest top10 hit songs	Top10 songs are displayed in then ascending order	Pass	Appendices 1
Lyrics search for each song	Song lyrics are returned successfully for each song	Pass	Appendices 2
Song interaction – lyrics	Lyrics is displayed when user clicks on its song title	Pass	Appendices 2
Song interaction – YouTube search button	YouTube search button is displayed when user clicks on its song title	Pass	Appendices 2
Song interaction – News	10 related news about the artist are displayed when user clicks on its song title	Pass	Appendices 2
All YouTube Search buttons function	Clicking YouTube buttons will open a new tab which will search for MV of the song	Pass	Appendices 3
All news links function	Clicking news link will open a new tab to that article.	Pass	Appendices 4
Website UI adapts with browser window size	The website UI remains acceptable and usable with changed window size	Pass	Appendices 5, 6
Results are returned correctly with special cases of songTitle (2 artists, single quote mark, &, etc.) – Lyrics and News	Lyrics and News are returned correctly.	Pass	Appendices 7, 8
Results are returned correctly with special cases of songTitle (2 artists, single quote mark, &, etc.) – YouTube search button	YouTube search button functions for each new songTitle	Pass	
Correct date	Return the correct date of the top10 hot list - the last Saturday	Pass	Appendices 8
Handle 'Request quota reached' error	Display 'Request quota reached' error information	Pass	Appendices 9

Difficulties / Exclusions / unresolved & persistent errors /

- Limited API requests from RapidAPI. During the development process, I requested so many times that it finally reached the maximum quota allowed of 30 requests per month. I dealt with this by creating a new account to get more requests. Furthermore, I reduced the number of times requesting directly from the endpoint by assigning the data returned in a variable and worked with it during the development process. And when I finally completed the app, I changed it back. In addition, I add a catch for this type of error.
- Billboard API only accepts several days of the week since the list is updated every Saturday. Otherwise, sending request with unsuitable days will cause error. So, I create a function which is responsible for getting the last Saturday date and use that date to put in the request parameters.
- Some songTitle has 2 artists. This makes the lyrics request returns 'Lyrics not found' because Lyrics API cannot handle 2 artists. So, I extract and request the Lyrics API with only 1 artist who comes first in the songTitle. This was done by removing the second artist and any character appears such as '&', single quote mark.

- The same issue happened with YouTube search button as some songTitle contains special, unwanted characters (for example single quote mark) and this ruined the HTML attributes string. So, I removed them before putting into the HTML attributes.

Extensions

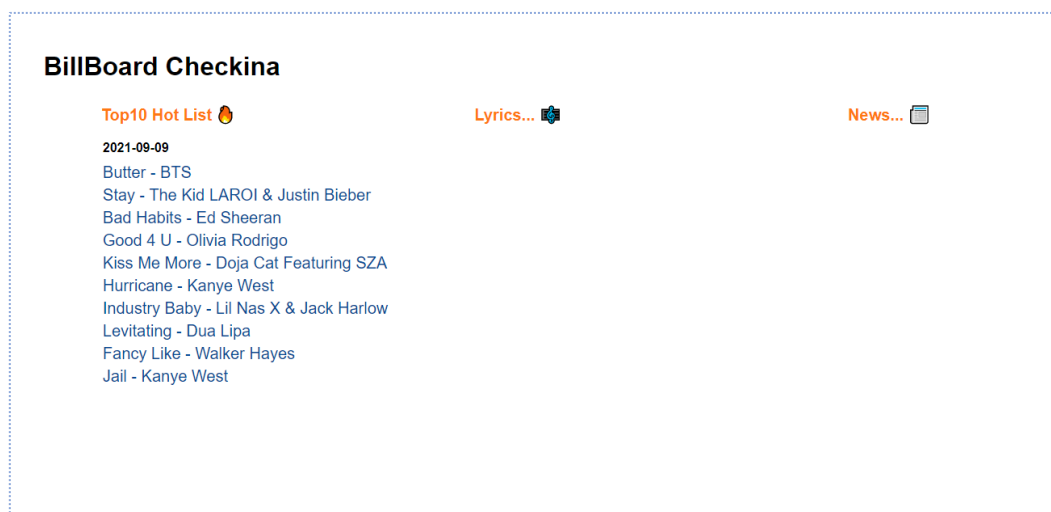
There are some ideas I would like to further develop my app:

- Add YouTube iframe of the song's Music Video: I would do this by using another API that is able to get the MV's YouTube URL and then add it as an iframe in my app. This benefits users as they can watch the MV directly from the app without moving outside of the website tab.
- Top10 Hit List search with Date selected by user: Currently, the Date is automatically set to the last Saturday. And I think many users want to discover what songs are on the Billboard list on a certain date by typing their desired date.
- App UI: better decorate the app with more suitable font with music theme. Lyrics and News are only shown if user clicks on a song title to view more.

User guide

After entering the command line to run the image from Docker (in the 'Deployment and the Use of Docker' section), navigate to the machine URL to access the application.

On the first look, the latest Billboard Top10 Hit list should appear on the left column of the app along with the released date of the list



Click any song Title and we will see its lyrics and news on the second and third column respectively.

BillBoard Checkina

Top10 Hot List 🏆

2021-09-09

Butter - BTS
Stay - The Kid LAROI & Justin Bieber
Bad Habits - Ed Sheeran
Good 4 U - Olivia Rodrigo
Kiss Me More - Doja Cat Featuring SZA
Hurricane - Kanye West
Industry Baby - Lil Nas X & Jack Harlow
Levitating - Dua Lipa
Fancy Like - Walker Hayes
Jail - Kanye West

Lyrics... 📖

[Search for MV on YouTube](#)

Butter by BTS

[Jung Kook, V]
Smooth like butter
Like a criminal undercover
Gon' pop like trouble
Breakin' into your heart like that (Ooh)
Cool shade slunner
Yeah, I owe it all to my mother
Hot like summer
Yeah, I'm makin' you sweat like that
Break it down

[Jin, RM]
Oh, when I look in the mirror
I'll melt your heart into two
I got that superstar glow so (Ooh)
Do the boogie like

[Jung Kook, Jimin, V]
Side step, right, left to my beat (Heartbeat)
High like the moon, rock with me, baby
Know that I got that heat
Let me show you 'cause talk is cheap
Side step, right, left to my beat (Heartbeat)
Get it, let it roll

[Jung Kook, V, Jin]
Smooth like butter
Pull you in like no other
Don't need no Usher
To remind me you got it bad
Ain't no other
That can sweep you up like a robber
Straight up, I got ya
Makin' you fall like that

News... 📰

- [Olivia Rodrigo, BTS win early awards in VMA show packed with surprises - Reuters](#)
- [This BTS Billboard Was Removed for 'Promoting Homosexuality'](#)
- [35 BTS Facts About The Costumes In "WandaVision," "Black Panther," And Other MCU Projects](#)
- [BTS and Megan Thee Stallion Share "Butter" Remix Listen](#)
- [BTS Officially Cancels 'Map of the Soul' World Tour](#)
- [Power of BTS Compels You: These BTS-Backed Phones Broke Pre-Order Records for Samsung](#)
- [BTS and Megan Thee Stallion Drop Lively "Butter" Remix](#)
- [Coldplay and BTS to Release New Single "My Universe"](#)
- [Megan Thee Stallion Says Label Attempted to Block BTS Remix That's Reportedly Coming This Week](#)
- [BTS Officially Cancel Map of the Soul Tour](#)

From here, user can:

- Click on 'Search MV on YouTube' button to open a new tab and look up for the song's MV on YouTube
- View the lyrics which has just appeared
- Click on any news article to read it in the new open tab
- Click another song title on the top10 list to view its lyrics and news

References

Hogan, J. (2021, September 15). CAB432 Cloud Computing: Week 6 [Practical: Containerising an Express App]. Blackboard.

https://blackboard.qut.edu.au/webapps/blackboard/content/listContent.jsp?course_id=156775_1&content_id=9449367_1&mode=view

Appendices

1.

BillBoard Checkina

Top10 Hot List 🔥
2021-09-09
Butter - BTS
Stay - The Kid LAROI & Justin Bieber
Bad Habits - Ed Sheeran
Good 4 U - Olivia Rodrigo
Kiss Me More - Doja Cat Featuring SZA
Hurricane - Kanye West
Industry Baby - Lil Nas X & Jack Harlow
Levitating - Dua Lipa
Fancy Like - Walker Hayes
Jail - Kanye West

Lyrics... 🎧

News... 📰

2.

BillBoard Checkina

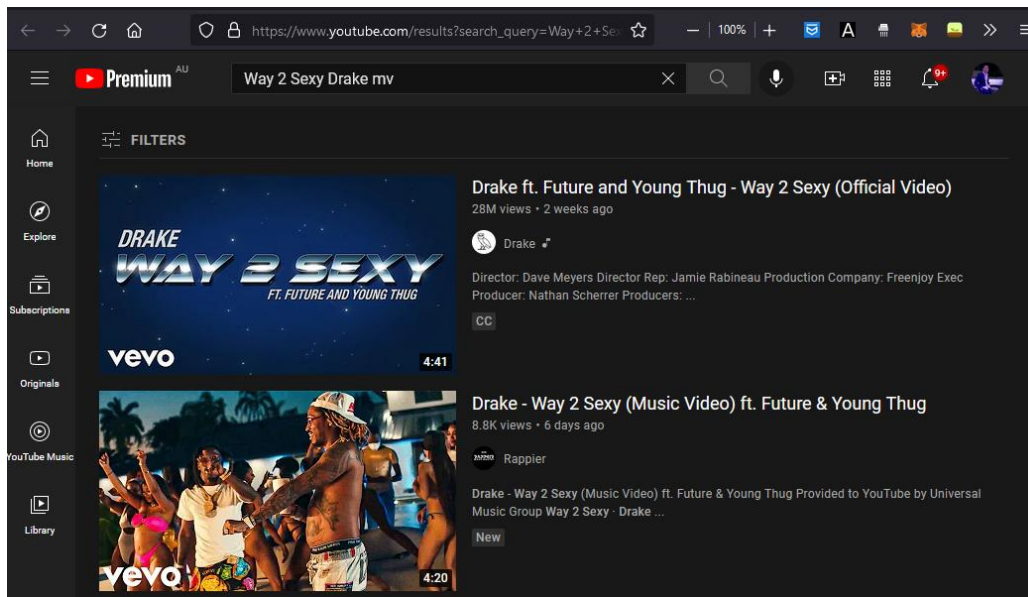
Top10 Hot List 🔥
2021-09-09
Butter - BTS
Stay - The Kid LAROI & Justin Bieber
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Lyrics... 🎧
[Search for MV on YouTube](#)
Butter by BTS
[Jung Kook, V]
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Straight up, I got ya
Makin' you fall like that

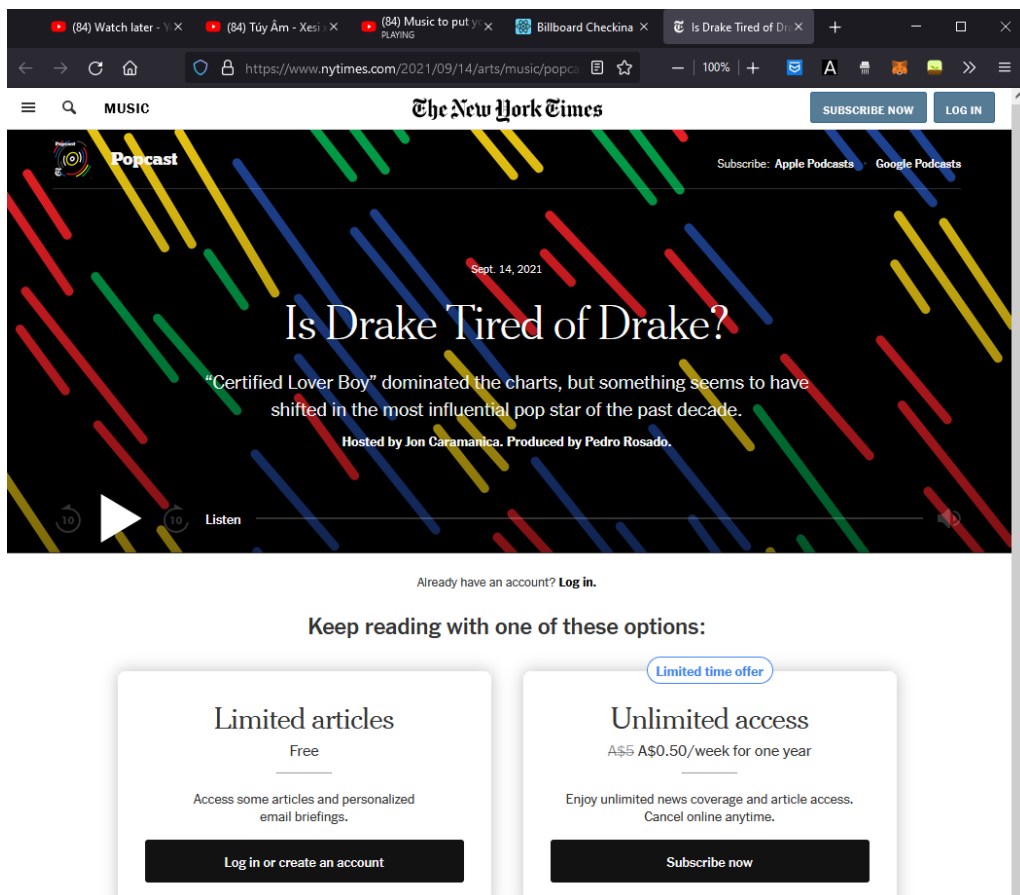
News... 📰

- [Olivia Rodrigo: BTS win early awards in VMA show packed with surprises - Reuters](#)
- [This BTS Billboard Was Removed for 'Promoting Homosexuality'](#)
- [35 BTS Facts About The Costumes In "WandaVision", "Black Panther," And Other MCU Projects](#)
- [BTS and Megan Thee Stallion Share "Butter" Remix, Listen](#)
- [BTS Officially Cancels 'Map of the Soul' World Tour](#)
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- [Megan Thee Stallion Says Label Attempted to Block BTS Remix That's Reportedly Coming This Week](#)
- [BTS Officially Cancel Map of the Soul Tour](#)

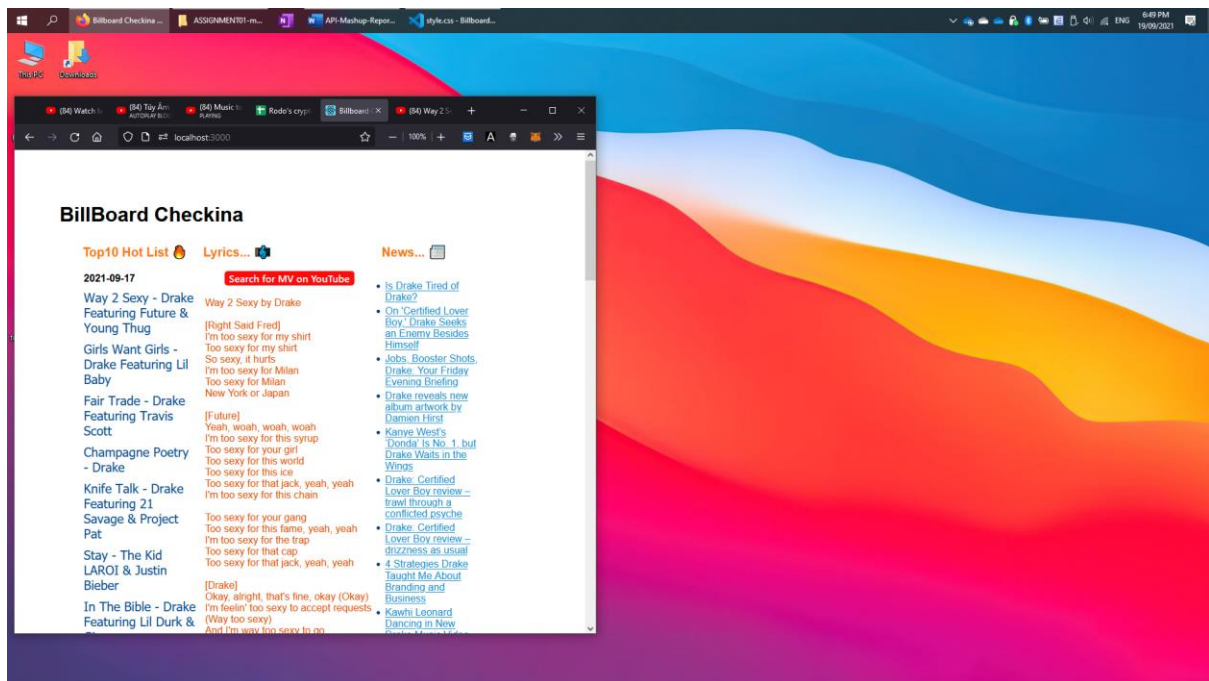
3. New tab is opened with preset query string for the song MV after clicking the 'Search for MV on YouTube' button



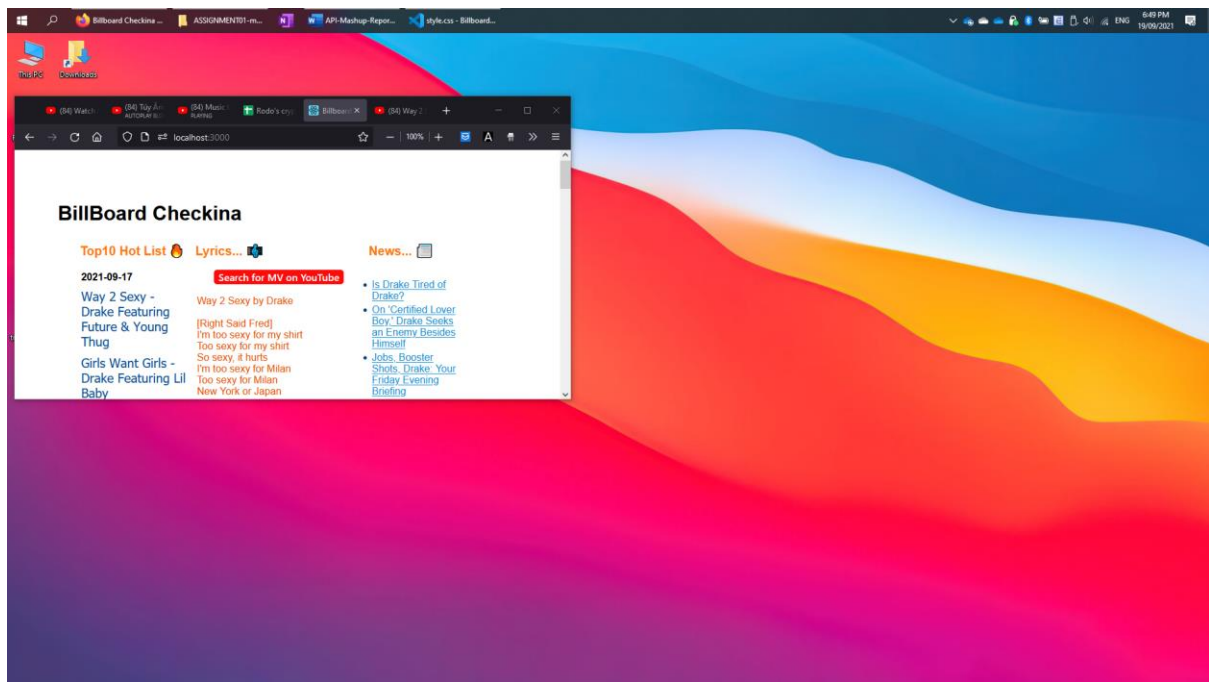
4. News article link functions correctly



5.



6.



7. Result returned correctly with special character (single quote mark) in song title "Papi's home - Drake"

BillBoard Checkina

Top10 Hot List 🏆

2021-09-17

- Way 2 Sexy - Drake
Featuring Future & Young Thug
- Girls Want Girls - Drake
Featuring Lil Baby
- Fair Trade - Drake
Featuring Travis Scott
- Champagne Poetry - Drake
- Knife Talk - Drake
Featuring 21 Savage & Project Pat
- Stay - The Kid LAROI
& Justin Bieber
- In The Bible - Drake
Featuring Lil Durk & Giveon
- Papi's Home - Drake
- TSU - Drake
- Love All - Drake
Featuring JAY-Z

Lyrics... 📄

Search for MV on YouTube

I know that I hurt you

Yeah
I was a child trying to be a man
To all my sons worldwide
I walked out on my only son
All my juniors

I left you in your mother's hands

I apologize for my absence, I know I left
you without a name to drop

And now I'm standing right here

I don't know how I expected you to get
your clout up and get your money up, but

With tears, with tears streaming from my eyes

Don't worry

See your mother raised a fine young man

Daddy's home

And I know I missed so much of your life

Turn me up (Mario)

Yeah

News... 📰

- [Is Drake Tired of Drake?](#)
- [On 'Certified Lover Boy,' Drake Seeks an Enemy Besides Himself](#)
- [Jobs, Booster Shots, Drake: Your Friday Evening Briefing](#)
- [Drake reveals new album artwork by Damien Hirst](#)
- [Kanye West's 'Donda' Is No. 1, but Drake Waits in the Wings](#)
- [Drake: Certified Lover Boy review – trawl through a conflicted psyche](#)
- [Drake: Certified Lover Boy review – drizziness as usual](#)
- [4 Strategies Drake Taught Me About Branding and Business](#)
- [Kawhi Leonard Dancing in New Drake Music Video - Sports Illustrated](#)
- [Drake Album 'Certified Lover Boy' Breaks Apple Music's One-Day Streaming Record](#)

8. Result returned correctly with 2 artists and special character (&) in song title “Stay – The Kid’s LAROI & Justin Bieber”

The screenshot shows a web browser at localhost:3000 displaying a page titled "BillBoard Checkina". The page is divided into three main sections: "Top10 Hot List", "Lyrics...", and "News...".

Top10 Hot List

2021-09-17

- Way 2 Sexy - Drake Featuring Future & Young Thug
- Girls Want Girls - Drake Featuring Lil Baby
- Fair Trade - Drake Featuring Travis Scott
- Champagne Poetry - Drake
- Knife Talk - Drake Featuring 21 Savage & Project Pat
- Stay - The Kid LAROI & Justin Bieber
- In The Bible - Drake Featuring Lil Durk & Giveon
- Papi's Home - Drake
- TSU - Drake
- Love All - Drake Featuring JAY-Z

Lyrics...

Search for MV on YouTube

Stay by The Kid LAROI

Woah-oh, woah-oh

[The Kid LAROI]
I do the same thing I told you that I never would
I told you I'd change, even when I knew I never could
I know that I can't find nobody else as good as you
I need you to stay, need you to stay, hey (Oh)

[The Kid LAROI]
I get drunk, wake up, I'm wasted still
I realize the time that I wasted here
I feel like you can't feel the way I feel
Oh, I'll be fucked up, if you can't be right here

[The Kid LAROI]
Oh, ooh-woah (Oh, ooh-woah, ooh-woah)
Oh, ooh-woah (Oh, ooh-woah, ooh-woah)
Oh, ooh-woah (Oh, ooh-woah, ooh-woah)
Oh, I'll be fucked up, if you can't be right here

[The Kid LAROI]
I do the same thing I told you that I never would
I told you I'd change, even when I knew I never could

News...

- MTV VMAs 2021: Watch Justin Bieber and the Kid LAROI Perform "Stay"
- The Kid LAROI Plots 'End of the World' Tour
- Justin Bieber To Bring Jaden Smith, The Kid LAROI and More to Las Vegas Festival
- girl in red – "Stay" (The Kid LAROI & Justin Bieber Cover)
- The Kid LAROI and Justin Bieber's 'Stay' Is 2021's Song of the Summer
- The Kid LAROI Announces 2022 End of the World Tour
- Justin Bieber and The Kid LAROI Team Up for "Stay," "Ghost" at 2021 MTV VMAs: Watch
- The Kid LAROI & Justin Bieber's 'Stay' Continues Global Chart Reign, BTS' 'Butter' Surges
- Justin Bieber Invites The Kid LAROI, Jaden Smith, Kehlani & More for His 3-Day Vegas Weekender
- Jack Harlow, The Kid LAROI, Ozuna & Tainy Join 2021 MTV VMAs Performers Lineup

9. Error handled and displayed correctly

The screenshot shows a web browser at localhost:3000 displaying a JSON response. The response is an error message:

```
{
  "error": true,
  "statusCode": 429,
  "message": "Monthly API request quota reached!"
}
```