TIKTOK ANALYTICS GRADER

Design PDF

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ENAE380 | Section 0105

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INTRODUCTION

My program, *A TikTok Analytics Grader*, allows the user to import an analytics data file from TikTok, and outputs calculated statistics from this data. Additionally, it grades the user's data based on optimized social media metrics and provides targeted feedback on ways to improve content creation on TikTok.

I decided on this project because of my personal interest in social media. Over the past two years, I have actively been growing both my Instagram and TikTok fitness-related accounts. I have spent a lot of time looking at my analytics and seeking ways to improve all aspects of my social medias (account reach, growth, interaction consistency). I thought that this program would not only be helpful for me, but also other people who are interested in starting or growing their TikTok. I have seen websites online that do something similar to my program, however, all of the ones I have looked into require you to manually type in your data. This obviously makes this process tedious and would steer most people away from utilizing it. Being able to download a personal analytics file and simply run it through a program is much more user-friendly. Also, being able to provide both context and user-specific feedback makes the user much more likely to actually learn and improve their TikTok content.

I ended up having to do some research on optimal metrics, since I needed them in the form of numbers (specifically percentages) for my grading to work consistently with the imported TikTok data. I researched ideal statistics such as the percent of your views that you should you be getting in terms of likes (or your like-to-view ratio). I researched this for multiple different metrics such as likes-to-comments, likes-to-shares, and views-to-follows. I typically found that the recommended numbers for these ratios were 10:1 (Newberry 2023). So, if we take the ratio between likes and comments, the user should get around 10% of their likes in terms of comments. In other words, if you have 1000 likes on a TikTok video, you should aim to have around 100 comments. However, it is beneficial to have a closer ratio, because the more interactions on a post, the better engagement it will receive, and the more your account will grow. In fact, I learned that for the TikTok algorithm to continue sharing your video on the "For You" page, you need to have a view-to-like ratio of 10:1 (Edgett 2021). Another metric I calculate in my program is an ideal growth rate in terms of pure following. I learned that you should gain about 6-8% of your original following per month ((initial following * 0.06) + initial following = expected final following) (Udescu 2023).

After researching and determining all the metrics I would need to calculate in my program, I had to come up with tips to improve content performance. I found all these recommendations in Lily Powell's article, *Expert Tips on How to Grow Social Media Followers in*

2023 (cited below). I researched the best ways to improve account growth, more specifically, to gain a large following or audience. This can be done through promoting your account on other social media platforms such as Instagram, Snapchat, and YouTube. Next, I investigated ways to improve account reach, or attract widespread attention. I found that you should create content based on trends, this includes using trending audios and hashtags. It is also important keep your videos short but still interesting, so that you can retain your audience's attention. The last thing I researched was ways to improve account consistency, which is basically how well you can generate a steady following, which further provides you with constant interactions. This is done through finding and deciding on a niche that you are passionate about, whether it be something like fitness, fashion, baking, etc. This way, you can establish a reliable audience, who shares that specific hobby or passion with you. I also found that it is important to post consistently, at consistent times, specifically during the week around noon to about 5pm (P.T 2023). Once completing my research, I began planning out my code.

DESIGN PROCESS

When beginning this project, my biggest concern was figuring out how to import analytics data from social media into Python. I initially began trying to download my personal Instagram insights. However, the only way to download them was through a third-party website that required you to give them your personal data (username and password). Obviously, I figured that most people would be uncomfortable sharing this type of information with an unknown site, so Instagram was out of the picture. Additionally, I planned on allowing YouTube metrics, but I don't have a YouTube account. This made it difficult as I would not have any data files to import and test. I then tried researching whether TikTok allows you to download your account metrics, and lucky for me, it did! So, I decided to focus my project only onto TikTok instead of allowing metrics to be imported from multiple social media platforms. Although this was not what I had initially planned, creating a program that allowed the user to import data from multiple platforms was unrealistic and would have taken way too much time.

After I figured out how I could download my analytics file from TikTok, I had to figure out whether it should be in XLSX or CSV format. I ultimately decided on a CSV file as it supposedly is quicker and easier to load into Python. I then started to write my program. I began by creating a function that took in a CSV file and stored it in a column dictionary. I originally had my program set to output the entire dictionary to the user, I thought that it could be useful for them to have access to. Although, I later decided that it made my output more confusing to the viewer while also looking less professional. I then calculated and compared different averages from each column dictionary. I used the data from the CSV file to calculate metrics that the file didn't already include and combined all this data to create standards for my grading system. The grading system individually analyzes the user's data based on three things: account growth, account consistency, and account reach. This grading system went through a few different

revisions before I perfected it. At first, I wanted to output only a letter grade, instead of a numerical grade. I ended up grading multiple different metrics for each grading category because I felt it would offer a more well-rounded analysis. I still, however, only wanted to output a single grade for each category. By assigning numerical values to each letter grade, I was able to not only improve the functionality of the grading system, but I also found it much easier to calculate the user's final grades.

After finalizing my grading system, I wanted to expand my current knowledge on social media marketing and content creation, so I spent time research additional ways to improve each of the three different aspects I was grading on. I created three separate lists of tips and recommended ways to improve their content. The feedback on each list correlated to a grading category – so I had specific tips for improving your account growth, and then different tips that corresponded to account reach, etc. I programmed my code so that if the user receives a grade of a C or lower (less than an 80%) in specific area, it will output the recommendations to improve in that subtopic. If they have a grade of a B or higher (80% and above) they are given a brief explanation of the key means to maintain and continuously improve their account based on that criterion. This way, the user understands which areas they are succeeding in and which ones they need to focus on improving.

RESULTS

My final program is run entirely in Python. To run my code, all you need is Python and a TikTok account. My program takes in two different file paths as user inputs, one to a "keymetrics.csv" file and the other to a "totalfollowers.csv" file. An example of this file format, taken directly from TikTok can be viewed below (in Figure 1).

keymetrics

Date	Video Views	Profile Views	Likes	Comments	Shares	Unique Viewers
2023-10-05	102	8	4	0	0	48
2023-10-06	82	4	0	0	0	32
2023-10-07	88	5	1	0	0	25
2023-10-08	27	2	1	0	0	19
2023-10-09	36	2	2	0	0	22
2023-10-10	15	1	0	0	0	13
2023-10-11	30	2	0	0	0	15
2023-10-12	36	3	0	0	0	19
2023-10-13	29	2	0	0	0	13
2023-10-14	40	5	0	0	0	14
2023-10-15	859	56	128	2	1	575
2023-10-16	66	3	3	3	0	20
2023-10-17	108	5	5	0	0	20
2023-10-18	48	1	0	0	0	16
2023-10-19	53	2	2	0	0	16
2023-10-20	473	50	83	2	0	332
2023-10-21	92	4	6	0	0	30
2023-10-22	148	3	6	0	0	24
2023-10-23	20	0	2	0	0	18
2023-10-24	43	2	2	0	0	15
2023-10-25	42	4	1	0	0	25
2023-10-26	434	22	31	0	0	269
2023-10-27	39	2	1	0	0	23
2023-10-28	360	18	37	0	0	239
2023-10-29	1234	61	174	2	3	780

Fig. 1: The CSV file format – straight from TikTok

These two files need to be downloaded from your TikTok account on an online browser. The exact steps to download this file are included separately in my documentation PDF. Below is an image of the user prompt.

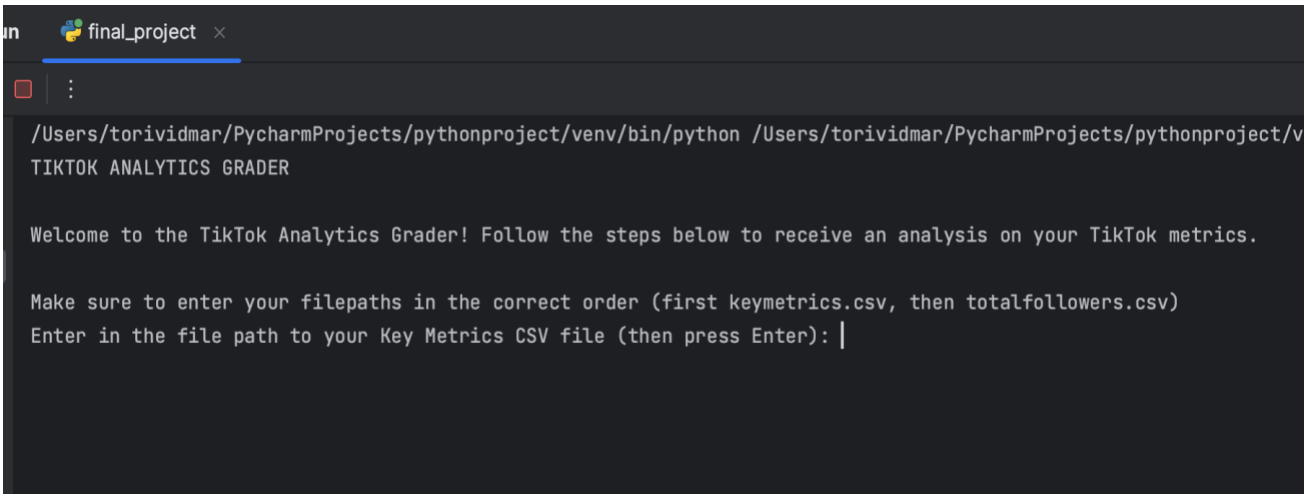

Fig. 2: Initial User Prompt

After these file paths are entered, my program will sort the user's data into a data dictionary and calculate averages and other social media. It will output these calculated metrics in a user-friendly format, so that it is easy to understand. It also outputs two sets of graphs for all of the different metrics (see below).

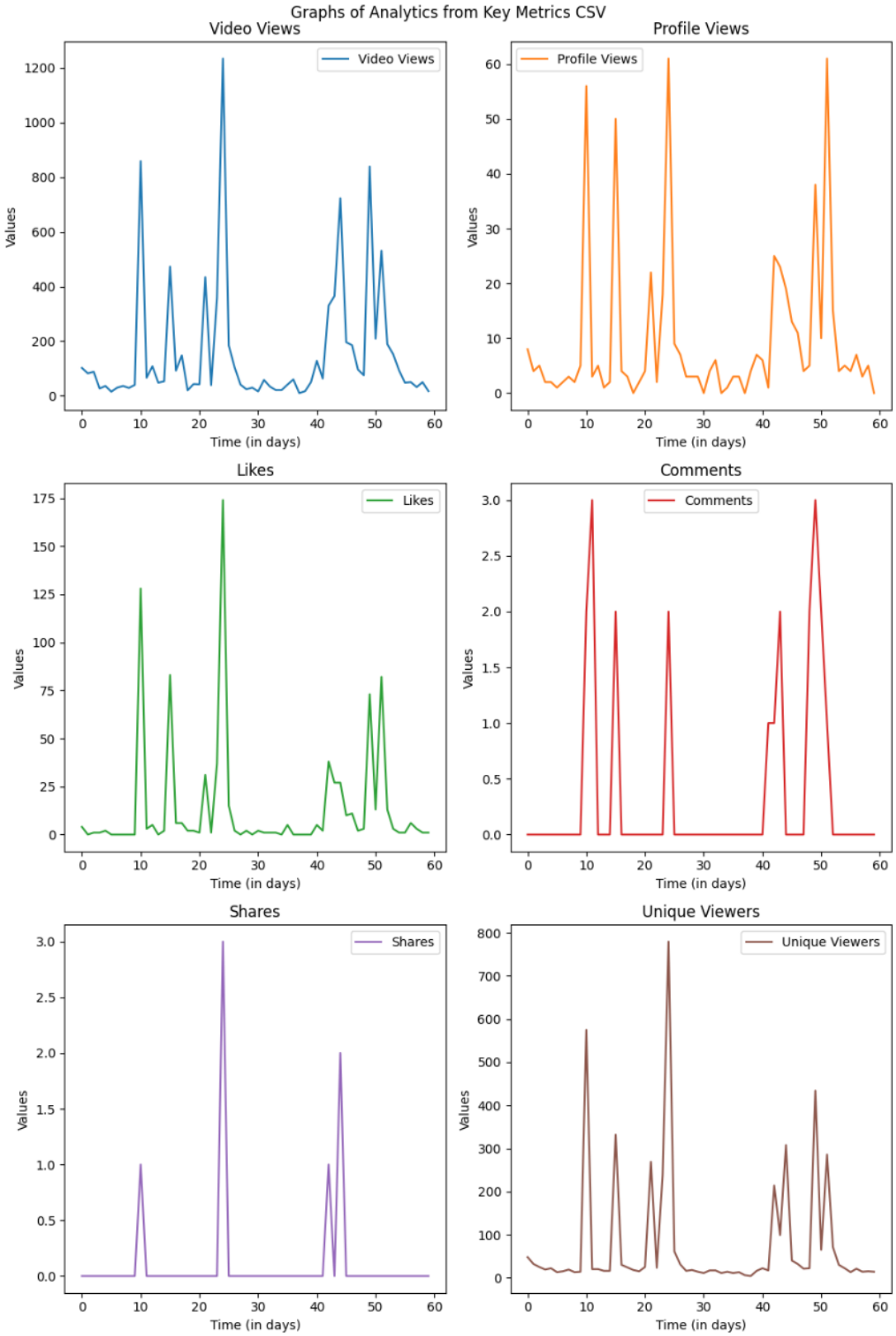

Fig. 3: First Set of Graphs from Key Metrics Datafile

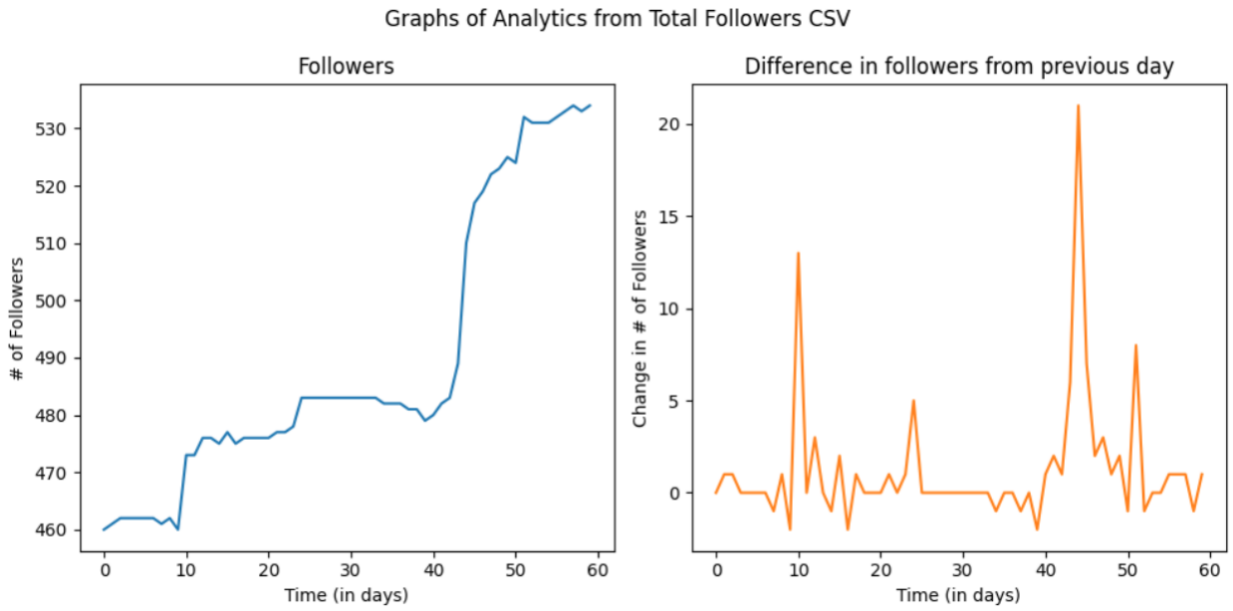

Fig. 4: Second Set of Graphs from Total Followers Datafile

After these graphs are outputted, the program begins the grading process. The user's data is grade based on three different criteria: account growth, account reach, and account consistency. My program analyzes account growth based on metrics like percent follower growth and viewer-to-follower ratio. I analyzed account reach using calculated statistics such as virality rate, which is the percent chance a video has to go viral, and like-to-share ratio. These metrics were able to distinguish how well the user's account is reaching unique viewers.
The last thing I analyzed was account consistency. I based this off the difference in followers (day-to-day) and through comparing both maximum likes and views to their corresponding averages. This data determines how reliable the user's viewers are, which would correlate to how consistent their interactions (likes, comments, shares) are.

After the program grades the user's data files, I output the grades to the user and use their grades to provide them with adequate feedback specific to their weaknesses. For example, if the user has a low grade for their account growth, they will receive tips on how to better grow their account. This is an example of the result code that would be outputted to the command window (using my account's TikTok data):

OUTPUTTED CODE BEGINS HERE

TIKTOK ANALYTICS GRADER

Welcome to the TikTok Analytics Grader! Follow the steps below to receive an analysis on your TikTok metrics.

Make sure to enter your file paths in the correct order (first keymetrics.csv, then totalfollowers.csv)

Enter in the file path to your Key Metrics CSV file (then press Enter):
/Users/torividmar/Downloads/final_project_380/keymetrics.csv
Now Enter in the file path to your Total Followers CSV file (then press Enter):
/Users/torividmar/Downloads/final_project_380/totalfollowers.csv

These are your Key Metrics averages (per day):
Video Views: 159.77
Profile Views: 9.65
Likes: 14.0
Comments: 0.35
Shares: 0.12
Unique Viewers: 77.37

Here are a few more averages, but from your Followers data:
Average Follower Count (over the past 60 days): 489.28
Change in Followers from Previous Day: 1.23

Here are a few interesting stats from your data...
Also make sure to check out the graphs of your analytics under the top right toolbar!

You have a view-to-like ratio of 11:1. In other words, you get about 11 views for every like on your videos.
You have a like-to-comment ratio of 40:1. So, you get about 40 likes for every comment on your videos.
You have a like-to-share ratio of 120:1. So, you get about 120 likes for every share on your videos.

Over the past 60 days...
You have gained 74.0 followers.
579 people have viewed your profile.
4642 unique users have viewed your TikTok videos.

Now, let's grade your data and see how you can improve your TikTok!
You will be graded based on three different metrics: account reach, growth, and consistency.

Let's start by reviewing your account growth...

For every 8 people who viewed your profile, one person followed you.
Meaning that about 12.78% of users that clicked on your profile, also pressed the follow button.
Obviously, the higher this percentage is, the better.
Based on our calculations, your overall grade in account growth over the past 60 days is: A - 90.0%
You are excelling in your account growth! Keep doing what you are doing, it's clearly working.

Let's now move on to your account's reach...

For every 120 people who liked your videos, one person shared it with someone else.
In other words, your total shares were 0.86% of the number of likes liked your videos.
You should be aiming for around 10%, however, the higher, the better.
Over the past 60 days, you had a virality rate of 0.15%.
The higher this percentage is, the more likely you are to go viral.
Your overall grade in account reach is: F - 65.0%
Your account reach needs serious improvement.

Lastly, what about your account's consistency...

You gained about 1.23 followers each day in the past 60 days.
For optimized consistency, this number needs to be positive. You want to consistently GAIN followers.
The most views you got in a day was 1234.0 views, while you averaged 159.77 views daily.
The most likes you got in a day was 174.0 likes, while you averaged 14.0 likes daily.
The closer together these numbers are, the better. You want to have consistent video views and interactions.
Your overall grade in consistency over the past 60 days is: B - 81.67%
Your account consistency is pretty good but could be better.

Finally, we have some personalized tips on how you can improve your account!

FOR ACCOUNT GROWTH:
Based on our analysis, your account growth is doing well. But we still have some tips for you:
Although you are doing well with your overall growth, make sure continue focusing on creating short but engaging content that is able to hold your audience's attention.

FOR ACCOUNT REACH:
Based on our analysis, your account is not reaching many people. In order to improve, we recommend:
- Use trending audios in your videos and posts.
- Also, use hashtags related to the content you are posting. This will target people in your niche, who are more.
  likely to interact with you.
- Keep up with popular TikTok trends, if you can catch onto a trend early, you are more likely to gain popularity,
  or even go viral!

FOUR ACCOUNT CONSISTENCY:
Based on our analysis, your account has a reliable audience who consistently interacts with your content.

Don't change much with what you're doing in regard to consistency. Keep in mind, the more consistent you are with what and when you post, the more viewers and interactions you will get.

Thank you for trying the TikTok Analytics Grader! Enjoy the rest of your day :)

Process finished with exit code 0

OUTPUTTED CODE ENDS HERE

CONCEPTS LEARNED

Over the course of this project, I was able to apply a lot of what I learned over the course of this semester. Prior to taking this course, I had never written code in Python before. I have coded in MATLAB and C++, so I had experience coding, but Python was an entirely different language. However, I quickly learned that Python was very intuitive and was much easier to learn and use than any other language I had used before.

A majority of what I utilized in my project, I learned from class. The concepts I used from this class mostly consisted of logic gates, different types of iterative loops, variable declaration, and Python syntax in general. I used logic gates in a lot of my functions, typically in the form of 'and' or 'or' statements, which evaluate whether a statement is true or false. These logic gates were useful when I was writing the criteria for my grading system. I also included multiple iterative loops, mainly 'if' and 'for' loops, which helped a lot with processing all the dictionary data. Python syntax and variable declaration was used throughout my entire program, whether it be in my defined functions or in my main code. This syntax includes formatting variables (int, float, str), using mathematical operations, and other built-in functions.

I also used techniques such as defining functions, writing dictionaries, as well as plotting data and outputting graphs for that data. I had to figure out how to read and sort through a CSV file, as we had not worked with this file type before. An important technique I used was defining a function, which basically is a piece of code that only runs when you call it in main. These functions were used in my code to read in files, create a data dictionary, plot graphs, calculate averages/metrics, etc. Another technique I used was importing data into a dictionary. I stored all the data from my CSV file into a column dictionary, which essentially takes in data and sorts it into key-value pairs. An additional technique I used, was plotting and outputting graphs using the Python library, Matplotlib. I used this library to output all of the data for each key-value pair, so that the user could better visualize their TikTok metrics. The last technique I learned, was reading in a CSV file. Although we have learned how to read in files, I had never worked with a CSV file before, and had to figure out its format and how to sort the data stored in it.

RETROSPECTIVE

Overall, I felt that my project was a success. However, if I had more time to complete this project, there are some aspects I would have liked to change.

Initially, I wanted to be able to import data from a variety of social media platforms (particularly, TikTok, Instagram, and YouTube). However, as I mentioned earlier Instagram does not allow you to export any sort of content-related metrics. Also, since I don't have a YouTube account, I was not able to export any sort of data file to test run through my program. These two factors made my original goal quite unrealistic, especially for the scope of this project.

I also would have liked to output the text somewhere other than the command window., preferably, into an outputted file or infographic. This would have formatted the data in a much more aesthetic and clear-cut way, and the user could access it again with ease. This idea, however, was relatively complex for my current understanding in Python. Anyways, I think outputting the text straight to the command window would result in less confusion, particularly when it comes to finding and viewing the output file.

Lastly, I would have liked to input a few other data files from TikTok. TikTok allows you to import data files that include specific videos that you post and their individual data. However, I had little to no idea on how I could read in and analyze video files into Python. Furthermore, I could not come up with an accurate enough grading system for video data, since I assume it would be subjective.

Although all of these possibilities would have been great additions to my project, I was proud of my final program. As someone who had zero coding experience in Python prior to this class, I was impressed to see how far I had come since the beginning of the school year. It was so satisfying to use the coding techniques and other various information I learned throughout this semester and apply it to something specific to my own interests.

Thank you for a great semester ☺

CITATIONS

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