AUDIO MEDIA PLAYER

DATA STRUCTURES AND ALGORITHMS

(CSE2003)

PROJECT

By,

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SLOT: E1

NAME OF THE FACULTY

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INTRODUCTION

Often people have problems and difficulties in searching or finding out the song or a set of songs according to their choices and preferences in conventional media players. The work of searching a particular song or particular type of songs can be stressful and exhausting. So, the project mainly aims to minimise the efforts of the users by the implementation of appropriate data structures and algorithms for searching and filtering purpose. Hence, this project is mainly based on the file handling which can be very useful in such types of situations, as well as in other similar applications.

The audio media player created, consists of the following features:

- Filtering out the songs according to:
    - Language
    - Genre
    - Album
- Obtaining the details of each song
- Performing basic media functions:
    - Play
    - Stop
- Displaying all the recently played songs (Here 'recently played songs' are referred to all the songs played within the single application runtime; the recently played songs of previous run are not saved)
- Displaying the moment of time, the application is started (So, you can see the time in the application window and the actual time to figure out how much time you spent on it)
- Besides, it has list of all the songs displayed alphabetically on the right side of the application window. (So, if you want to play a song or get details of that particular song you can find it here and type the correct spelling so ass to get a correct output)

APPLICATIONS AND PLATFORMS REQUIERD:

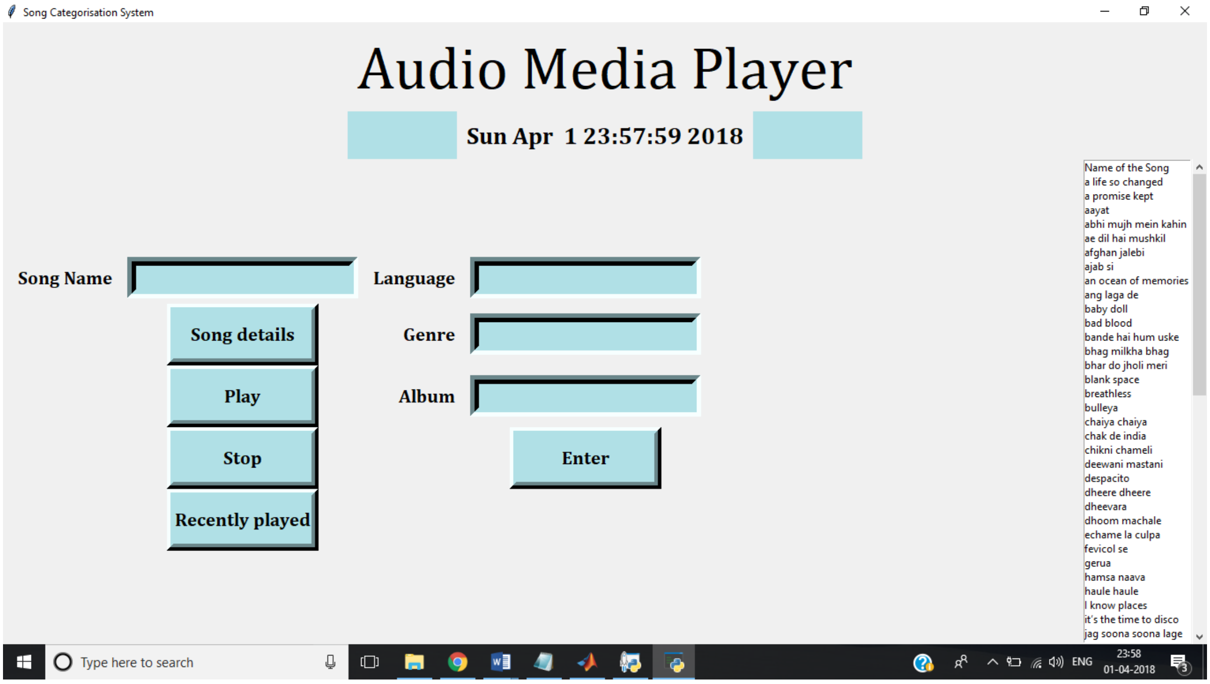
1. Platform for coding: Python
2. Platform for building a database of songs and details of each song: Microsoft Excel Sheet
3. Setups imported in python shell:
    a. Tkinter: Used for creating GUI windows
    b. Pygame: Used for playing .ogg music files
4. Audio file converter: To convert .mp3 files to .ogg (Since all the songs we had were in mp3 format and pygame doesn't support mp3)

HOW WAS THE APPLICATION BUILT?

1. All the songs are obtained in .ogg format and stored in a particular folder.
2. An excel sheet is created where the details of all the songs are stored. (NOTE: The .ogg file name of the song must be same as entered in the excel sheet)
3. The code is built on Python, where the GUI code is also written.
4. This GUI part of the code has created the GUI window, displayed the title, time, specified the space to type a song name, language, genre or album as input and the radio buttons to give the appropriate output.
5. Input given in the GUI windows is taken and verified with the data in the excel sheet.
6. The excel sheet is accessed by the code with the help of file handling concept.
7. The input is verified from the excel sheet and appropriate output is obtained.
8. To sort a song according to the language, input in the language section. Same is the case with album and genre. Any two of them or all the three inputs can also be given and output is obtained as desired.
9. To know the details of a song, type the name of the song in the space provided and click on the 'Song details' button. If you want to play the song click on the 'Play' button; and 'Stop' for stopping the song which is currently being played.

10. To view all the recently viewed songs (all the songs played since the application is started) according to the order in which they were played, click on the ‘Recently played’ button. (The song played latest will be on the top, while the song played for the first time will be displayed at the last). Here, the concept of stack is used.

This is how the application window looks like:



Name of the Song
a life so changed
a promise kept
aayat
abhi mujh mein kahin
ae dil hai mushkil
afghan jalebi
ajab si
an ocean of memories
ang laga de
baby doll
bad blood
bande hai hum uske
bhag milkha bhag
bhar do jholi meri
blank space
breathless
bulleya
chaiya chaiya
chak de india
chikni chameli
deewani mastani
despacito
dheere dheere
dheevara
dhoom machale
echame la culpa
fevicol se
gerua
hamsa naava
haule haule
I know places
it's the time to disco
jag soona soona lage

ALGORITHM

Algorithm for sorting:

Here, the worst case for sorting is considered. The worst case is when all the three parameters (language, genre and album) are given as an input. The algorithm is as follows:

```
Else if(Lang.get()!=" and Genre.get()!=" and Album.get()!="):         1
    for i in range(0,70):                                              1
      if(lang1[i]==Lang.get()):                                        n (=70)
        genre2.append(genre1[i])                                       n
        lang2.append(lang1[i])                                         n
        name2.append(name1[i])                                         n
        album2.append(album1[i])                                       n
        comp2.append(comp1[i])                                         n
        e+=1                                                           n
    for i in range(0,e):                                               n (worst case: e=n)
      if(genre2[i]==Genre.get()):                                      n
        genre3.append(genre2[i])                                       n
        lang3.append(lang2[i])                                         n
        name3.append(name2[i])                                         n
        album3.append(album2[i])                                       n
        comp3.append(comp2[i])                                         n
        q=q+1                                                          n
    for i in range(0,q):                                               n (worst case: q=n)
      if(album3[i]==Album.get()):                                      n
        genre4.append(genre3[i])                                       n
        lang4.append(lang3[i])                                         n
        name4.append(name3[i])                                         n
        album4.append(album3[i])                                       n
        comp4.append(comp3[i])                                         n
        g=g+1;                                                         n
    for i in range(0,g):                                               n (worst case: g=n)
      print('\n')                                                      n
      print('             Song : ' + name4[i])                         n
      print('         Language : ' + lang4[i])                         n
      print('            Genre : ' + genre4[i])                        n
      print('            Album : ' + album4[i])                        n
      print('Composers/Singers : ' + comp4[i])                         n
    print('****************************************')                   1
    if(g==0):                                                      1
        print("Data not available")                                1
        print("****************************************")           1
```

Time Complexity: O(n)

****

Algorithm for ‘Song Details’:

```
t=0                                                                1
    while name1[t] != song_name.get():                             1
        if(t==69):                                                 n (=70)
            print(‘Data not available’)                            n
            print(‘*************************************’)         n
            return                                                 n
        else:                                                      n
            t=t+1                                                  n

    print(‘            Song : ‘ + name1[t])                        1
    print(‘        Language : ‘ + lang1[t])                        1
    print(‘           Genre : ‘ + genre1[t])                       1
    print(‘           Album : ‘ + album1[t])                       1
    print(‘Composers/Singers : ‘ + comp1[t])                       1
    print(‘*****************************************’)             1
```

Time Complexity: O(n)

****

Algorithm for ‘Play’:

The algorithm for ‘play’ is same as that of ‘Song Details’.

```
t=0                                                                1
    while name1[t] != song_name.get():                             1
        if(t==70):                                                 n (=70)
            print('Data not available')                            n
            print('*************************************')         n
            return                                                 n
        else:                                                      n
            t=t+1                                                  n
    print("Playing......")                                         1
    print('            Song : ' + name1[t])                        1
    print('           Album : ' + album1[t])                       1
```

```
  print('Composers/Singers : ' + comp1[t])                    1
  l="F:\College\DSA\dsa project"                              1
  l=l+'/'+song_name.get()+'.ogg'                              1
  mixer.init()                                                1
  mixer.music.load(l)                                         1
  mixer.music.play()                                          1
  s.push(name1[t])                                            1
```

Time Complexity: O(n)

****

Algorithm for ‘Stop’:

```
print('Stopped.........')                                     1
print('****************************************')             1
mixer.music.stop()                                            1
```

Time Complexity: O(1)

****

Algorithm for ‘Recently Played’:

```
while s.size()!=0:                                    1
    print(s.pop())                                    n (if n songs are played)
```

Time Complexity: O(n)

****

Algorithm for printing th list on the right side:

```
mylist=Listbox(root,yscrollcommand=scroll.set)                1
for x in bb:                                                  1
  mylist.insert(END,x)                                        n (length of list)
```

Time Complexity: O(n)

****

Algorithm for file handling:

```
name1 = []; lang1 = []; genre1 = []; album1 = []; comp1 = [];     5
bb = [];                                                          1
i = 0; j = 0                                                      2
with open("F:\College\DSA\dsa project\Book1.csv",'r') as file:    1
  reader = csv.reader(file)                                       1
```

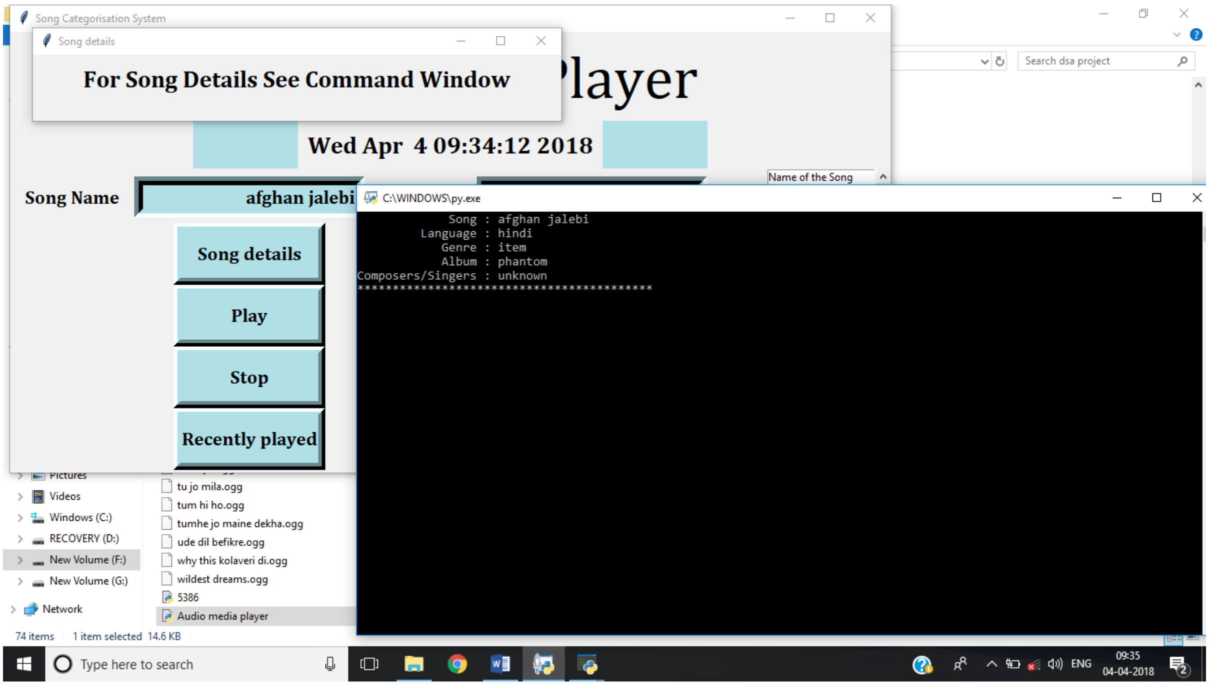
```
for line in reader:                              1
    album1.append(line[3])                   n (if line[3] of the file has n elements)
    lang1.append(line[1])                    n (if line[1] of the file has n elements)
    name1.append(line[0])                    n (if line[0] of the file has n elements)
    bb.append(line[0])                       n (if line[0] of the file has n elements)
    genre1.append(line[2])                   n (if line[2] of the file has n elements)
    comp1.append(line[4])                    n (if line[4] of the file has n elements)
    i+=1                                     n
```

Since, the data is present for each song all the lines in the .csv file will have n details if n songs are present.

Time Complexity: O(n)

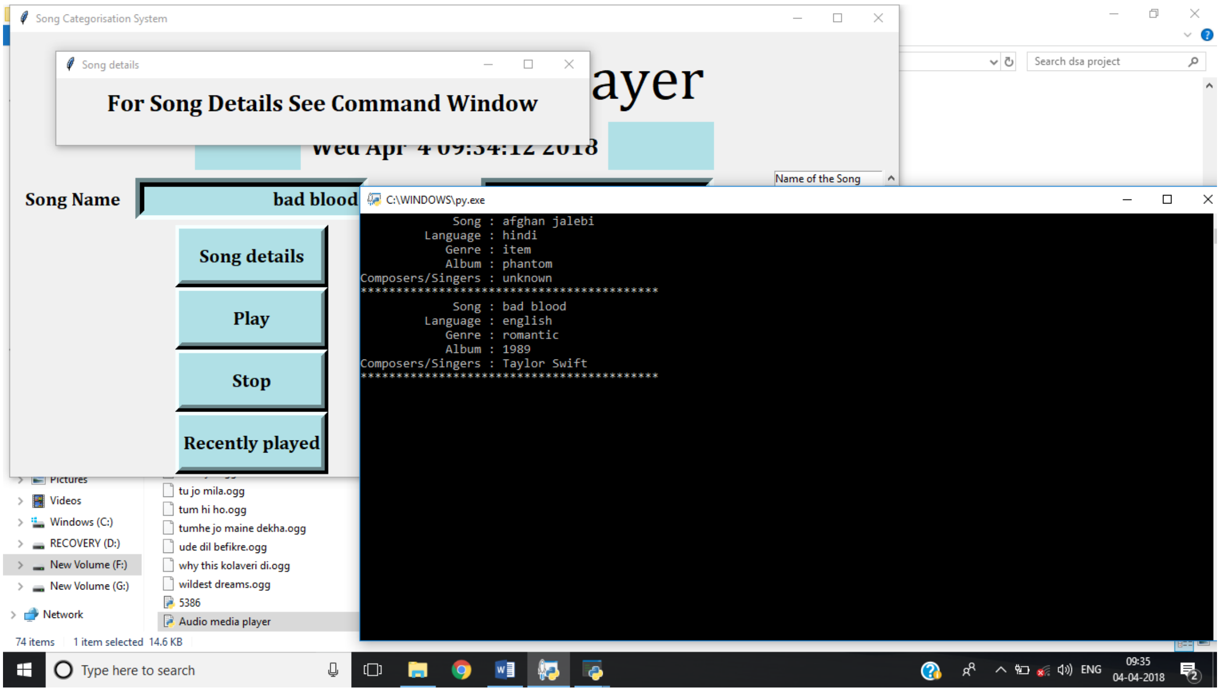
****

OUTPUT:



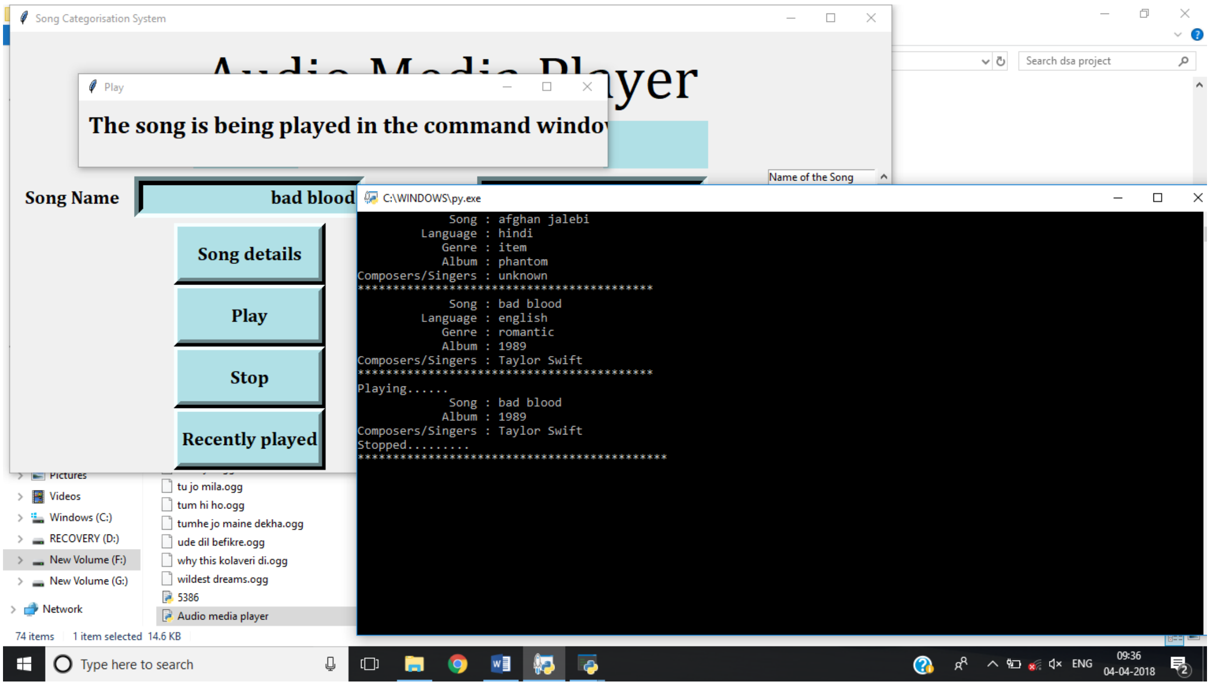
For Song Details See Command Window

```
           Song : afghan jalebi
       Language : hindi
          Genre : item
          Album : phantom
Composers/Singers : unknown
********************************************
```



For Song Details See Command Window

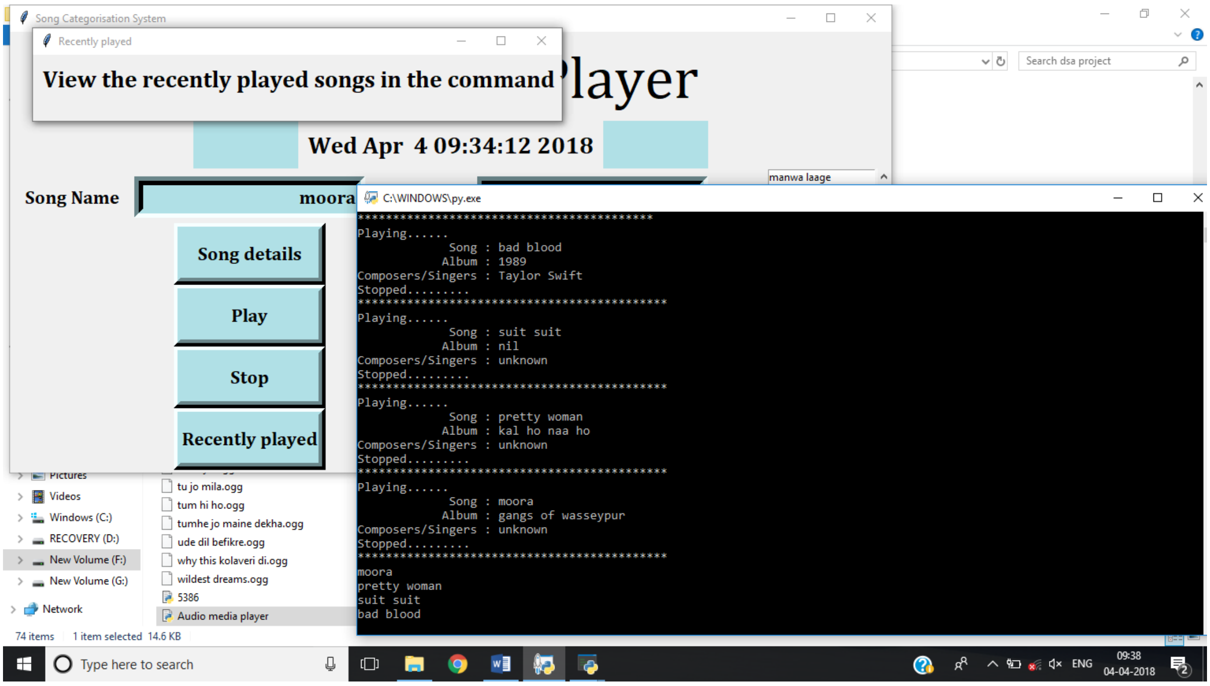
```
           Song : afghan jalebi
       Language : hindi
          Genre : item
          Album : phantom
Composers/Singers : unknown
********************************************
           Song : bad blood
       Language : english
          Genre : romantic
          Album : 1989
Composers/Singers : Taylor Swift
********************************************
```



The song is being played in the command windo

Song Name: bad blood

```
             Song : afghan jalebi
         Language : hindi
            Genre : item
            Album : phantom
Composers/Singers : unknown
*******************************************
             Song : bad blood
         Language : english
            Genre : romantic
            Album : 1989
Composers/Singers : Taylor Swift
*******************************************
Playing......
             Song : bad blood
            Album : 1989
Composers/Singers : Taylor Swift
Stopped.........
*********************************************
```

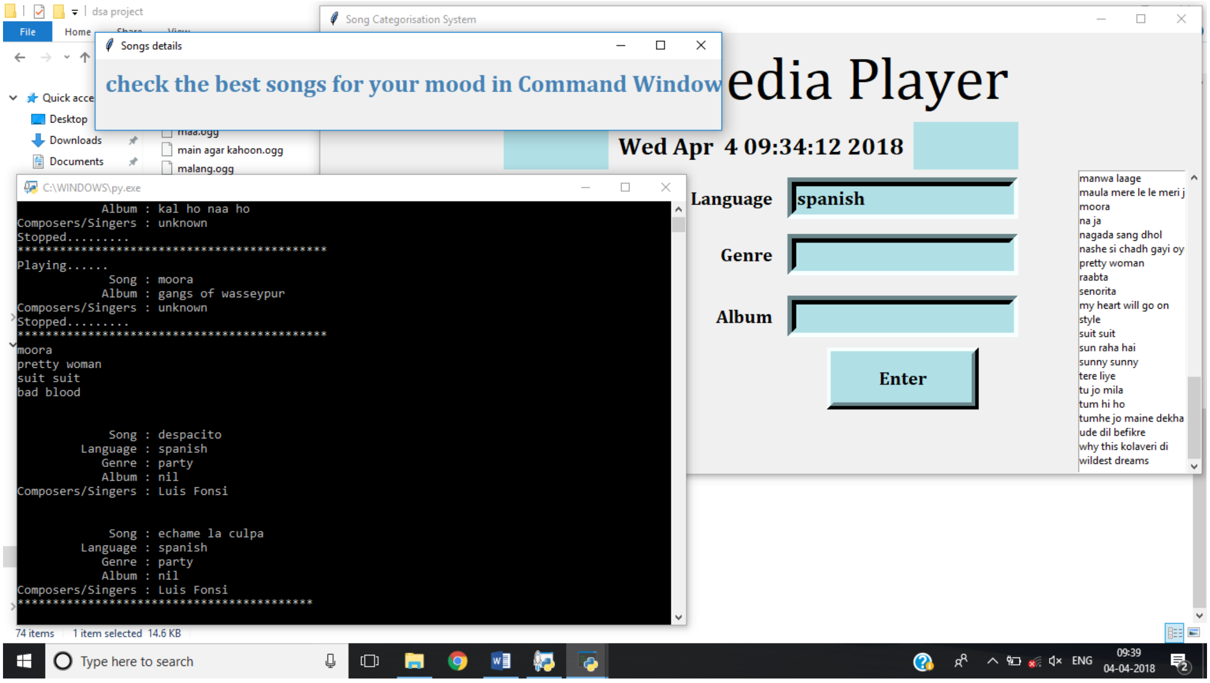


View the recently played songs in the command

Wed Apr 4 09:34:12 2018

Song Name: moora

```
*******************************************
Playing......
             Song : bad blood
            Album : 1989
Composers/Singers : Taylor Swift
Stopped.........
*********************************************
Playing......
             Song : suit suit
            Album : nil
Composers/Singers : unknown
Stopped.........
*********************************************
Playing......
             Song : pretty woman
            Album : kal ho naa ho
Composers/Singers : unknown
Stopped.........
*********************************************
Playing......
             Song : moora
            Album : gangs of wasseypur
Composers/Singers : unknown
Stopped.........
*********************************************
moora
pretty woman
suit suit
bad blood
```



Songs details

check the best songs for your mood in Command Window

Song Categorisation System

edia Player

Wed Apr 4 09:34:12 2018

Language: spanish

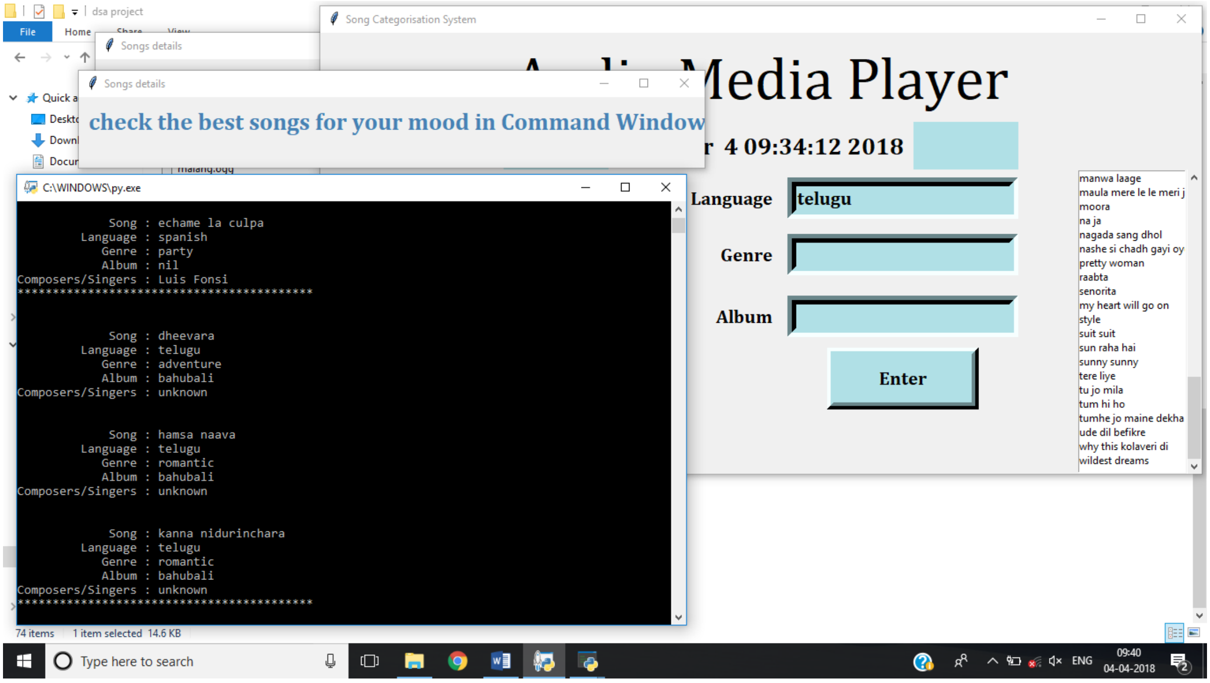
Genre:

Album:

manwa laage
maula mere le le meri j
moora
na ja
nagada sang dhol
nashe si chadh gayi oy
pretty woman
raabta
senorita
my heart will go on
style
suit suit
sun raha hai
sunny sunny
tere liye
tu jo mila
tum hi ho
tumhe jo maine dekha
ude dil befikre
why this kolaveri di
wildest dreams

C:\WINDOWS\py.exe

```
            Album : kal ho naa ho
Composers/Singers : unknown
Stopped.........
********************************************
Playing......
             Song : moora
            Album : gangs of wasseypur
Composers/Singers : unknown
Stopped.........
********************************************
moora
pretty woman
suit suit
bad blood


             Song : despacito
         Language : spanish
            Genre : party
            Album : nil
Composers/Singers : Luis Fonsi


             Song : echame la culpa
         Language : spanish
            Genre : party
            Album : nil
Composers/Singers : Luis Fonsi
******************************************
```



Songs details

check the best songs for your mood in Command Window

Song Categorisation System

Media Player

4 09:34:12 2018

Language: telugu

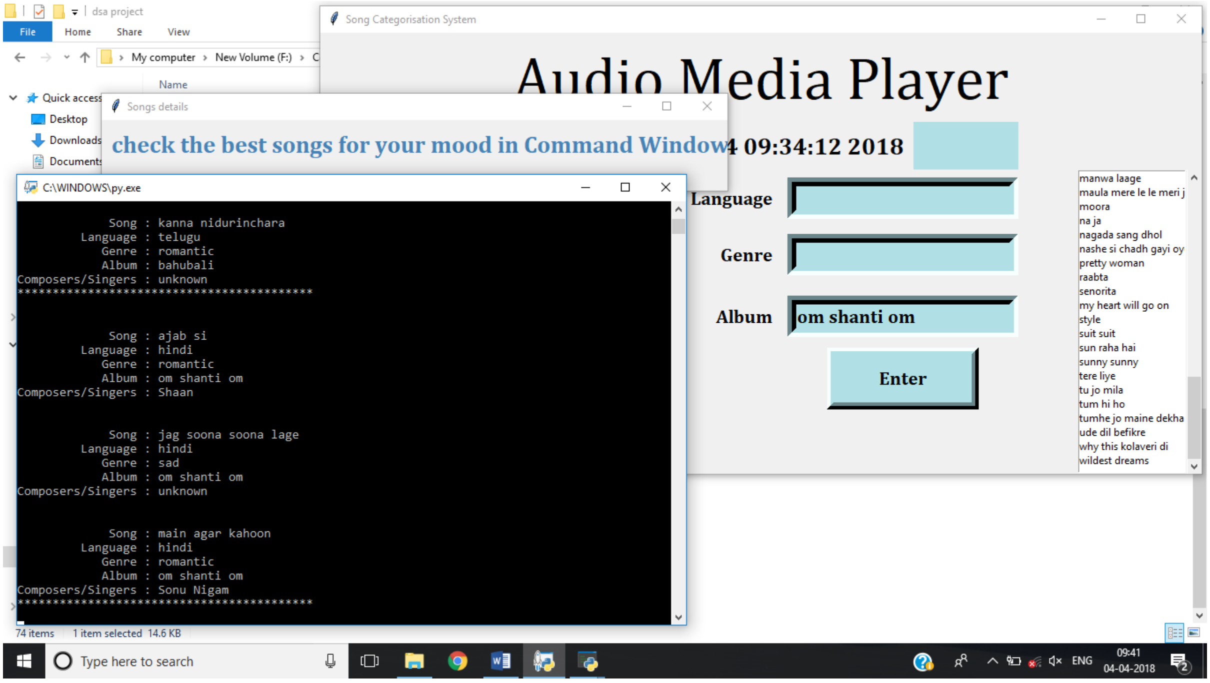
Genre:

Album:

manwa laage
maula mere le le meri j
moora
na ja
nagada sang dhol
nashe si chadh gayi oy
pretty woman
raabta
senorita
my heart will go on
style
suit suit
sun raha hai
sunny sunny
tere liye
tu jo mila
tum hi ho
tumhe jo maine dekha
ude dil befikre
why this kolaveri di
wildest dreams

C:\WINDOWS\py.exe

```
             Song : echame la culpa
         Language : spanish
            Genre : party
            Album : nil
Composers/Singers : Luis Fonsi
******************************************


             Song : dheevara
         Language : telugu
            Genre : adventure
            Album : bahubali
Composers/Singers : unknown


             Song : hamsa naava
         Language : telugu
            Genre : romantic
            Album : bahubali
Composers/Singers : unknown


             Song : kanna nidurinchara
         Language : telugu
            Genre : romantic
            Album : bahubali
Composers/Singers : unknown
******************************************
```



Audio Media Player

check the best songs for your mood in Command Window

4 09:34:12 2018

Language

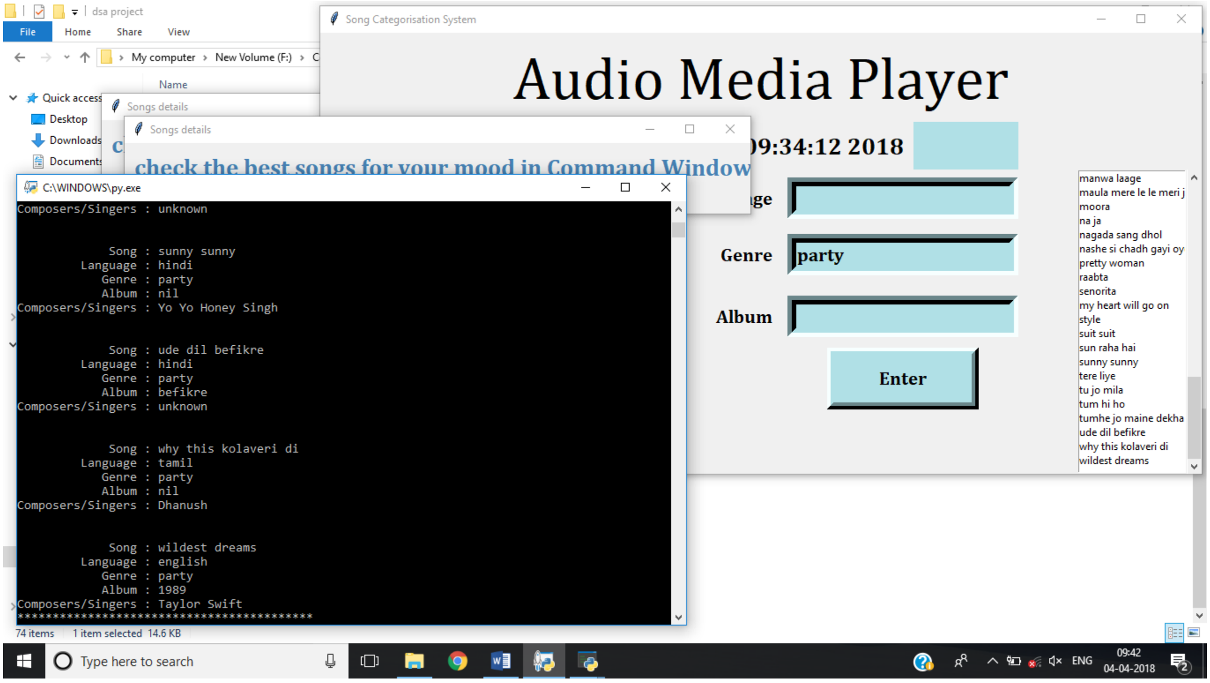
Genre

Album om shanti om

Enter

manwa laage
maula mere le le meri j
moora
na ja
nagada sang dhol
nashe si chadh gayi oy
pretty woman
raabta
senorita
my heart will go on
style
suit suit
sun raha hai
sunny sunny
tere liye
tu jo mila
tum hi ho
tumhe jo maine dekha
ude dil befikre
why this kolaveri di
wildest dreams

```
             Song : kanna nidurinchara
         Language : telugu
            Genre : romantic
            Album : bahubali
Composers/Singers : unknown
******************************************


             Song : ajab si
         Language : hindi
            Genre : romantic
            Album : om shanti om
Composers/Singers : Shaan


             Song : jag soona soona lage
         Language : hindi
            Genre : sad
            Album : om shanti om
Composers/Singers : unknown


             Song : main agar kahoon
         Language : hindi
            Genre : romantic
            Album : om shanti om
Composers/Singers : Sonu Nigam
******************************************
```



Audio Media Player

check the best songs for your mood in Command Window

09:34:12 2018

ge

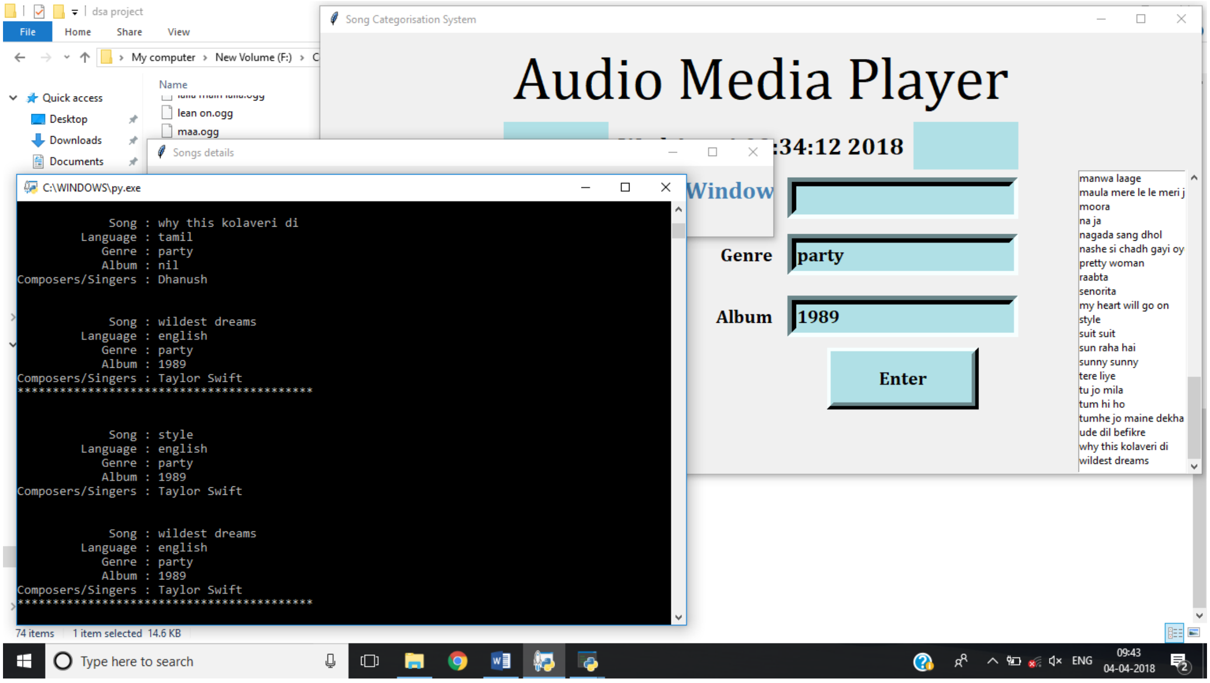
Genre party

Album

Enter

manwa laage
maula mere le le meri j
moora
na ja
nagada sang dhol
nashe si chadh gayi oy
pretty woman
raabta
senorita
my heart will go on
style
suit suit
sun raha hai
sunny sunny
tere liye
tu jo mila
tum hi ho
tumhe jo maine dekha
ude dil befikre
why this kolaveri di
wildest dreams

```
Composers/Singers : unknown


             Song : sunny sunny
         Language : hindi
            Genre : party
            Album : nil
Composers/Singers : Yo Yo Honey Singh


             Song : ude dil befikre
         Language : hindi
            Genre : party
            Album : befikre
Composers/Singers : unknown


             Song : why this kolaveri di
         Language : tamil
            Genre : party
            Album : nil
Composers/Singers : Dhanush


             Song : wildest dreams
         Language : english
            Genre : party
            Album : 1989
Composers/Singers : Taylor Swift
******************************************
```



Song Categorisation System

Audio Media Player

:34:12 2018

Window

Genre party

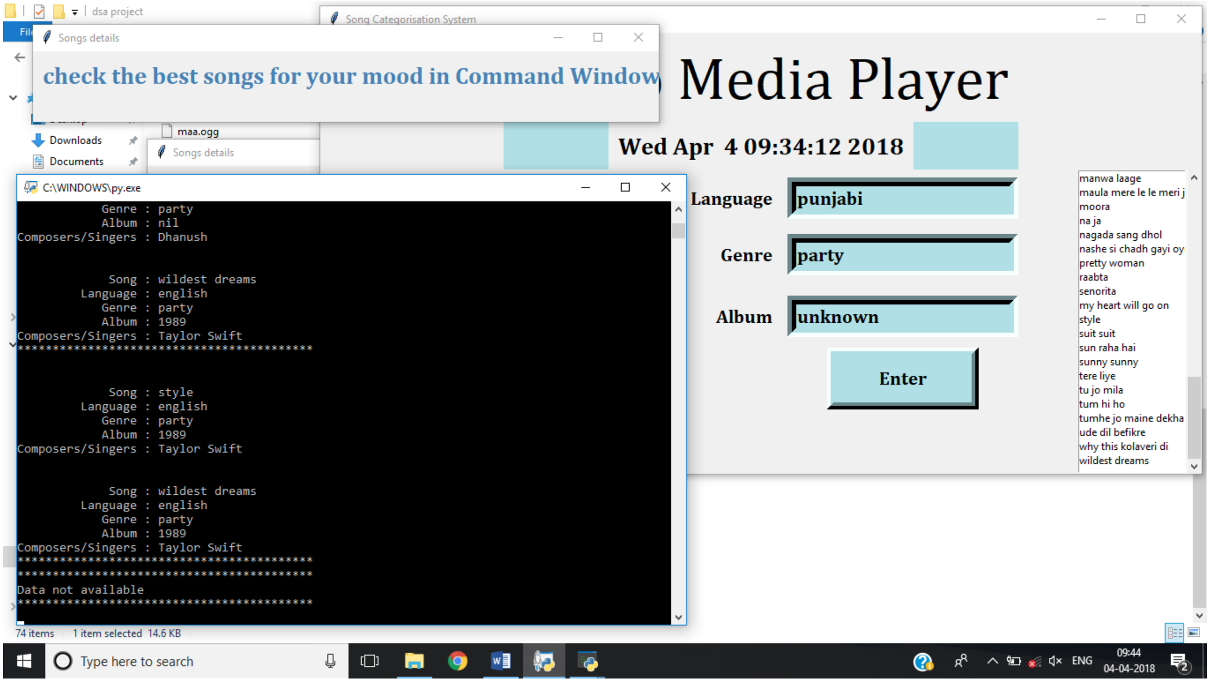
Album 1989

Enter

manwa laage
maula mere le le meri j
moora
na ja
nagada sang dhol
nashe si chadh gayi oy
pretty woman
raabta
senorita
my heart will go on
style
suit suit
sun raha hai
sunny sunny
tere liye
tu jo mila
tum hi ho
tumhe jo maine dekha
ude dil befikre
why this kolaveri di
wildest dreams

C:\WINDOWS\py.exe

```
             Song : why this kolaveri di
         Language : tamil
            Genre : party
            Album : nil
Composers/Singers : Dhanush


             Song : wildest dreams
         Language : english
            Genre : party
            Album : 1989
Composers/Singers : Taylor Swift
******************************************


             Song : style
         Language : english
            Genre : party
            Album : 1989
Composers/Singers : Taylor Swift


             Song : wildest dreams
         Language : english
            Genre : party
            Album : 1989
Composers/Singers : Taylor Swift
******************************************
```



Songs details

check the best songs for your mood in Command Window

Song Categorisation System

Media Player

Wed Apr 4 09:34:12 2018

Language punjabi

Genre party

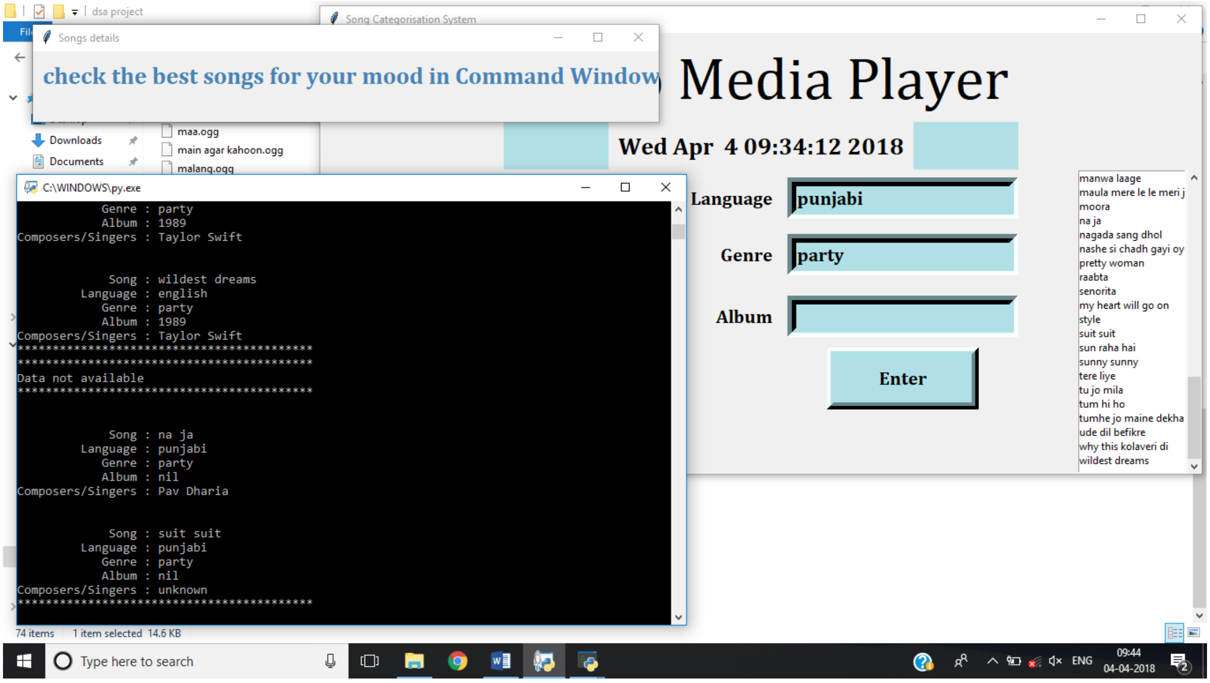
Album unknown

Enter

manwa laage
maula mere le le meri j
moora
na ja
nagada sang dhol
nashe si chadh gayi oy
pretty woman
raabta
senorita
my heart will go on
style
suit suit
sun raha hai
sunny sunny
tere liye
tu jo mila
tum hi ho
tumhe jo maine dekha
ude dil befikre
why this kolaveri di
wildest dreams

C:\WINDOWS\py.exe

```
            Genre : party
            Album : nil
Composers/Singers : Dhanush


             Song : wildest dreams
         Language : english
            Genre : party
            Album : 1989
Composers/Singers : Taylor Swift
******************************************


             Song : style
         Language : english
            Genre : party
            Album : 1989
Composers/Singers : Taylor Swift


             Song : wildest dreams
         Language : english
            Genre : party
            Album : 1989
Composers/Singers : Taylor Swift
******************************************
******************************************

Data not available
******************************************
```



check the best songs for your mood in Command Window

Media Player

Wed Apr 4 09:34:12 2018

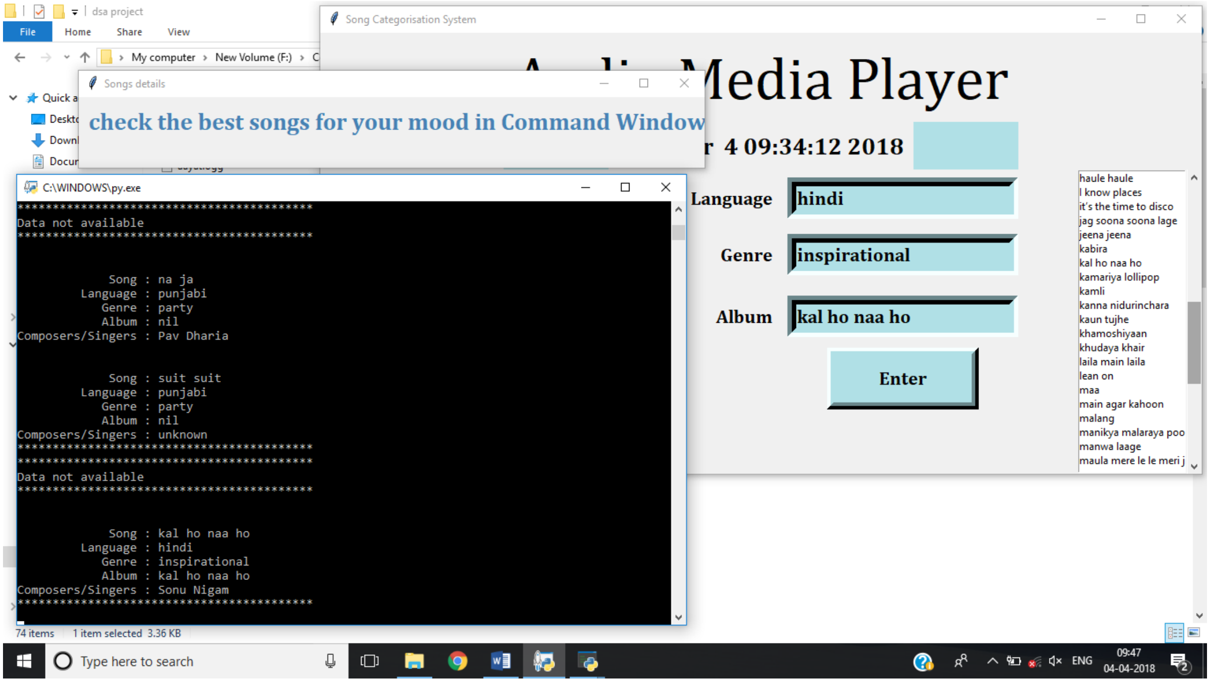
Language: punjabi

Genre: party

Album:

```
         Genre : party
         Album : 1989
Composers/Singers : Taylor Swift


          Song : wildest dreams
      Language : english
         Genre : party
         Album : 1989
Composers/Singers : Taylor Swift
******************************************
******************************************
Data not available
******************************************



          Song : na ja
      Language : punjabi
         Genre : party
         Album : nil
Composers/Singers : Pav Dharia


          Song : suit suit
      Language : punjabi
         Genre : party
         Album : nil
Composers/Singers : unknown
******************************************
```

manwa laage
maula mere le le meri j
moora
na ja
nagada sang dhol
nashe si chadh gayi oy
pretty woman
raabta
senorita
my heart will go on
style
suit suit
sun raha hai
sunny sunny
tere liye
tu jo mila
tum hi ho
tumhe jo maine dekha
ude dil befikre
why this kolaveri di
wildest dreams



check the best songs for your mood in Command Window

A   li Media Player

r 4 09:34:12 2018

Language: hindi

Genre: inspirational

Album: kal ho naa ho

```
******************************************
Data not available
******************************************



          Song : na ja
      Language : punjabi
         Genre : party
         Album : nil
Composers/Singers : Pav Dharia


          Song : suit suit
      Language : punjabi
         Genre : party
         Album : nil
Composers/Singers : unknown
******************************************
******************************************
Data not available
******************************************



          Song : kal ho naa ho
      Language : hindi
         Genre : inspirational
         Album : kal ho naa ho
Composers/Singers : Sonu Nigam
******************************************
```

haule haule
I know places
it's the time to disco
jag soona soona lage
jeena jeena
kabira
kal ho naa ho
kamariya lollipop
kamli
kanna nidurinchara
kaun tujhe
khamoshiyaan
khudaya khair
laila main laila
lean on
maa
main agar kahoon
malang
manikya malaraya poo
manwa laage
maula mere le le meri j

LEARNING OUTCOME:

The learning outcomes of this project are as follows:

- Thorough understanding the core of the subject.
- Extensive use of data structures and algorithms and their significance in improving the quality of digital applications.
- Introduction to a new concept of GUI by using python and its implementation.
- Also learning a new way, how to play a media file using python.
- Implementing file handling concept for storing and accessing the song details.

FURTHER DEVELOPMENT:

- An idea has been generated through this project, which is, to create a more efficient music player application which is better than the existing ones.
- This can be done by connecting the code with different websites on the internet. Then, the user can search any song irrespective of its presence in the database.
- The cloud computing concept can be used in a way to access any song, which will further eliminate the need of having a database.
- Custom genres for the songs can also be implemented.
- The same application can be built for other media such as movies, TV shows and much more.