ECE 250 - Project 0
Linear Data Structures and C++
Design Document

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I. Overview of Classes

Class: Playlist

Description:
A class that stores one list of song titles and artists' names using dynamic arrays. Also, provide functions to manipulate the two lists, including inserting, erasing, and playing the songs.

Member variables:
1. songs: a dynamically allocated array storing the name of the songs
2. artists: a dynamically allocated array storing the name of the artist
3. num: the number of songs that are currently stored in the list
4. max: the maximum number of songs that can be stored in the list

Member functions:
1. addS: insert a song and an artist's name to the songs and artists list
2. deleteS: delete a song and an artist's name in the songs and artists list at index n
3. palyS: play the song at index n

II. UML Class Diagram

Playlist
-std::string: songs -std::string: artists -int: num -int: max
+addS(std::string: s, std::string: a): void +deleteS(int: i): void +playS(int: i): void

III. Details On Design Decisions

Class Playlist(Constructor):

The constructor will dynamically allocate two arrays, songs and artists based on how long the list the user requests it to be and stored the maximum value.

Class Playlist(Destructor):
The destructor will deallocate the two arrays so that there will not be memory leaks.

IV. Test Cases
Test 1: Check if the arrays can be creat properly with the size that the user requested.
Test 2: Check if a song can be added properly to the playlist.
Test 3: Check if restricted songs will not be added to the playlist.
Test 4: Check if songs will not be added if the playlist is full.
Test 5: Check if the play song function can play the song at the requested index. Also, check if the delete song function can delete the song at the requested index and moves any songs after the deleted position by 1.

Test File Example 1:

```
m 3
```

Test File Example 2:

```
m 1
i goat;song
```

Test File Example 3:

```
m 1
i goat;song
i test;song
i Muskrat Love;Captain and Tennille
i My Heart Will Go On;Umberto Eco
i Cheese;donkey
```

Test File Example 4:

```
m 4
i goat;song
i test;songy
i other;songs
i super;singer
i Cheese;donkey
```

Test File Example 5:

```
m 30
i song0;artist0
i song1;artist1
i song2;artist2
i song3;artist3
i song4;artist4
i song5;artist5
i song6;artist6
i song7;artist7
i song8;artist8
i song9;artist9
i song10;artist10
e 0
e 6
e 8
i song5;artist5
e 2
e 7
i song7;artist7
p 6
p 7
e 1
p 1
p 4
e 3
e 6
e 1
p 3
p 0
e 0
p 1
```