RAJAGIRI COLLEGE OF SOCIAL SCIENCES, KALAMASSERY

DEPARTMENT OF COMPUTER SCIENCE

DATA STRUCTURES PROJECT

TOPIC: PLAYLIST MANAGER USING LINKEDLIST

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PLAYLIST MANAGER USING LINKED LIST

This is a C program which can be used to create and manage a music playlist. This is implemented using LinkedList. The key features of this program are:

1. Adding Songs: Users can add songs to the playlist by providing the song's title and artist name. The program ensures that duplicate songs are not added.
2. Displaying the Playlist: Users can view the current playlist, including the titles and artist names of each song. The program lists the songs in order, providing a simple way to see what's in the playlist.
3. Saving the Playlist to a File: Users can save the current playlist to a file, allowing them to preserve their playlist for future use. The program also checks whether the file already exists and provides options to overwrite it or choose a new filename.
4. Loading the Playlist from a File: Users can load a playlist from a previously saved file, which makes it easy to recover or share playlists with others.
5. Shuffling the Playlist: Users can shuffle the current playlist to randomize the order of songs, providing a different listening experience.
6. Creating a Random Playlist from a Saved File: Users can create a new random playlist from a saved file. This feature is useful for those who want to experience their music collection in a different order.

CODE

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <sys/stat.h>// for the file status
#include <time.h>// for the randomizer

//so this program is an implemetation of a Playlist Manager using the datastructure Linked List

struct song {
   char title[100];
   char artist[100];
   struct song *next;
};

typedef struct song song;
song *playlist = NULL;

int fileExists(const char *filename) //check if file is already present
{
```

```
    struct stat buffer;
    return (stat(filename, &buffer) == 0);
}
void addSong(const char *title, const char *artist) //add new Song
{
    song *newSong = (song *)malloc(sizeof(song));
    strcpy(newSong->title, title);
    strcpy(newSong->artist, artist);
    newSong->next = NULL;

    if (playlist == NULL) //empty
            {
        playlist = newSong;
    }
            else
            {
        song *current = playlist;
        while (current->next != NULL && (strcmp(current->title, newSong->title) != 0 &&
strcmp(current->artist, newSong->artist) != 0)) {
            current = current->next;
        }
        if ((strcmp(current->title, newSong->title) == 0 && strcmp(current->artist,
newSong->artist) == 0)) //if song already added
                    {
            printf("\nThe song %s by artist %s already exists in the playlist. Not added.\n",
newSong->title, newSong->artist);
            return;
        }
        current->next = newSong;
    }
}

void displayPlaylist()
{
    printf("Playlist:\n");
    int trackNumber = 1;
    if (playlist == NULL) {
        printf("Is Empty!\n");
        return;
    }
    song *current = playlist;
    while (current != NULL) {
        printf("%d. %s - %s\n", trackNumber, current->title, current->artist);
        current = current->next;
        trackNumber++;
    }
}

void savePlaylistToFile(const char *filename)
```

```
{
   int ch;
   if (fileExists(filename)) //if already exist ask the question what to do
         {
      printf("File exists.\nWhat would you like to do:\n1 - Rewrite the existing file.\n2 -
Change the filename.\nEnter your choice: ");
      scanf("%d", &ch);
      if (ch == 1) //Rewrite option
                  {
         goto playsave;
      }
                  else if (ch == 2) //change the given name
                  {
      here:
         printf("Enter another name: ");
         scanf(" %[^\n]", filename);
         savePlaylistToFile(filename);
         return;
      }
                  else
                  {
         printf("Invalid Option!");
         goto here;
      }
   }
         else
         {
   playsave://is the name is fine or the user wish to rewrite the file they will jump to
here
      printf("Saving Playlist\n");
      FILE *file = fopen(filename, "w");
      if (file == NULL) //error
                  {
         perror("Error opening file");
         return;
      }
      song *current = playlist;
      while (current != NULL) {
         fprintf(file, "%s, %s\n", current->title, current->artist);
         current = current->next;
      }
      fclose(file);
   }
}

void loadPlaylistFromFile(const char *filename) //load the playlist from a file
{
   FILE *file = fopen(filename, "r");//load file, 'r' represent read permission
   if (file == NULL) {
```

```
        perror("Error opening file");
        return;
    }
    char line[200];
    char title[100];
    char artist[100];
    while (fgets(line, sizeof(line), file) != NULL) {
        sscanf(line, "%[^,], %[^\n]", title, artist);
        addSong(title, artist);
    }
    printf("Playlist loaded from %s.\n", filename);
    fclose(file);
}


void shufflePlaylist() // shuffle the current playlist
{
        int i;
    int numSongs = 0;
    song *current = playlist;
        if(playlist==NULL)
        {
                printf("The Current Playlist is Empty, Please add Songs to shuffle
them!\n");
                return;
        }
    while (current != NULL) {
        numSongs++;
        current = current->next;
    }

    song *songArray[numSongs];
    current = playlist;

    for (i = 0; i < numSongs; i++) {
        songArray[i] = current;
        current = current->next;
    }

    srand(time(NULL));//seed the time for randomizing

    for (i = numSongs - 1; i > 0; i--) {
        int j = rand() % (i + 1);
        song *temp = songArray[i];
        songArray[i] = songArray[j];
        songArray[j] = temp;
    }

    playlist = songArray[0];
```

```
   current = playlist;
   for (i = 1; i < numSongs; i++) {
      current->next = songArray[i];
      current = current->next;
   }
   current->next = NULL;
   if(playlist!=NULL)
   {
   printf("Your Shuffled Playlist:\n");
   displayPlaylist();
         }
}


void createRandomPlaylistFromFile(const char *filename) // create a random playlist
from a saved file
{
         //so what happens here is that the function will open the file and appends it to
the current playlist if it exist and shuffle it
   loadPlaylistFromFile(filename);
   shufflePlaylist();
}

int menu() {
   int ch;
   printf("----------------------------\n");
   printf("MENU\n----------------------------\n1 - Add a song\n2 - Display playlist\n3 - Save
playlist to file\n4 - Load playlist from file\n5 - Shuffle playlist\n6 - Create random
playlist\n7 - Quit\n");
   printf("----------------------------\n");
         printf("Enter your choice: ");
   scanf(" %d", &ch);
   return ch;
}

int main() {
   char ch;
   ch = menu();
   while (ch != 7) {
      switch (ch) {
         case 1: {
            char title[100];
            char artist[100];
            printf("Enter song title: ");
            scanf(" %[^\n]", title);
            printf("Enter artist name: ");
            scanf(" %[^\n]", artist);
            addSong(title, artist);
            printf("Song added to the playlist.\n");
```

```
            } break;
            case 2:
               displayPlaylist();
               break;
            case 3: {
               char filename[100];
               printf("Enter the filename to save the playlist: ");
               scanf(" %[^\n]", filename);
               savePlaylistToFile(filename);
               printf("Playlist saved to %s.\n", filename);
            } break;
            case 4: {
               char filename[100];
               printf("Enter the filename to load the playlist from: ");
               scanf(" %[^\n]", filename);
               loadPlaylistFromFile(filename);
            } break;
            case 5:
               shufflePlaylist();
               if(playlist!=NULL)
                        {
                                 printf("Your New Playlist:\n");
                                          displayPlaylist();
                                          printf("Playlist shuffled.\n");
                                 }
               break;
            case 6: {
               char filename[100];
               printf("Enter the filename to create a random playlist from: ");
               scanf(" %[^\n]", filename);
               createRandomPlaylistFromFile(filename);
               printf("Random playlist created from %s.\n", filename);
            } break;
            default:
               printf("Invalid choice. Please try again.\n");
         }
         ch = menu();
      }
      printf("\nExiting....");
      return 0;
   }
```

OUTPUT
ADDSONG and DISPLAY

```
----------------------------
MENU
----------------------------
1 - Add a song
2 - Display playlist
3 - Save playlist to file
4 - Load playlist from file
5 - Shuffle playlist
6 - Create random playlist
7 - Quit
----------------------------
Enter your choice: 1
Enter song title: Abhi Mujhmein
Enter artist name: Sonu Nigam
Song added to the playlist.
----------------------------
MENU
----------------------------
1 - Add a song
2 - Display playlist
3 - Save playlist to file
4 - Load playlist from file
5 - Shuffle playlist
6 - Create random playlist
7 - Quit
----------------------------
Enter your choice: 1
Enter song title: Kalapakkara
Enter artist name: Shreya
Song added to the playlist.
----------------------------
MENU
----------------------------
1 - Add a song
2 - Display playlist
3 - Save playlist to file
4 - Load playlist from file
5 - Shuffle playlist
6 - Create random playlist
7 - Quit
----------------------------
Enter your choice: 2
Playlist:
1. Abhi Mujhmein - Sonu Nigam
2. Kalapakkara - Shreya
```

SAVE TO FILE

```
----------------------------
MENU
----------------------------
1 - Add a song
2 - Display playlist
3 - Save playlist to file
4 - Load playlist from file
5 - Shuffle playlist
6 - Create random playlist
7 - Quit
----------------------------
Enter your choice: 3
Enter the filename to save the playlist: Play1
File exists.
What would you like to do:
1 - Rewrite the existing file.
2 - Change the filename.
Enter your choice: 2
Enter another name: Play2
Saving Playlist
Playlist saved to Play2.
```

LOAD FROM FILE

```
----------------------------
MENU
----------------------------
1 - Add a song
2 - Display playlist
3 - Save playlist to file
4 - Load playlist from file
5 - Shuffle playlist
6 - Create random playlist
7 - Quit
----------------------------
Enter your choice: 4
Enter the filename to load the playlist from: Play1
Playlist loaded from Play1.
----------------------------
MENU
----------------------------
1 - Add a song
2 - Display playlist
3 - Save playlist to file
4 - Load playlist from file
5 - Shuffle playlist
6 - Create random playlist
7 - Quit
----------------------------
Enter your choice: 2
Playlist:
1. Abhi Mujhmein - Sonu Nigam
2. Kalapakkara - Shreya
3. Chandrachooda - Anoop Shankar
4. Alaipayude - Hari
5. Ajitha Hare - Gowri Lakshmi
6. Punchiri Thanjum - Shankar Mahadevan
7. Pottukuthedi - Sreeraama Chandra
8. Thaaram Padipicha - Deepak
```

SHUFFLE

```
----------------------------
MENU
----------------------------
1 - Add a song
2 - Display playlist
3 - Save playlist to file
4 - Load playlist from file
5 - Shuffle playlist
6 - Create random playlist
7 - Quit
----------------------------
Enter your choice: 5
Your Shuffled Playlist:
Playlist:
1. Punchiri Thanjum - Shankar Mahadevan
2. Abhi Mujhmein - Sonu Nigam
3. Ajitha Hare - Gowri Lakshmi
4. Chandrachooda - Anoop Shankar
5. Pottukuthedi - Sreeraama Chandra
6. Alaipayude - Hari
7. Thaaram Padipicha - Deepak
8. Kalapakkara - Shreya
Playlist shuffled.
```

CREATE A RANDOM PLAYLIST

```
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MENU
----------------------------
1 - Add a song
2 - Display playlist
3 - Save playlist to file
4 - Load playlist from file
5 - Shuffle playlist
6 - Create random playlist
7 - Quit
----------------------------
Enter your choice: 6
Enter the filename to create a random playlist from: shott
Playlist loaded from shott.
Your New Playlist:
Playlist:
1. Punchiri Thanjum - Shankar Mahadevan
2. Kalapakkara - Shreya
3. Abhi Mujhmein - Sonu Nigam
4. Alaipayude - Hari
5. Bad Economy - SA
6. Pottukuthedi - Sreeraama Chandra
7. Ajitha Hare - Gowri Lakshmi
8. Thaaram Padipicha - Deepak
9. Chandrachooda - Anoop Shankar
10. Megham - Asif
Random playlist created from shott.
```