**-PROJECT REPORT**

**Name:**  Aniket Ambekar

Akhil Shanbhag

**Title:** Music Player

**Course Name:** Data Structures & Algorithms

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**-PROBLEM STATEMENT**

To make a basic music player using the knowledge of various Data structures learnt as part of course CSE2003

Data structures used include a doubly linked list, stacks and queues.

File handling to read and write songs has also been used.

**-SOFTWARE REQUIREMENT**

CODE BLOCKS 13.12

or

DEV C++ 5.11

**-FUNCTIONS**

1. tofile() –

Function to work on playslist.txt.

2. add\_node() –

Function that adds songs to the list using a linked list.

3. add\_node\_file() –

Function that adds songs to the playlist to linked list from the data passed in addplaylist() function.

4. delete\_file() –

Function to delete song from text file playlist.txt.

5. del\_node() –

Function that deletes the last song from the input linked list.

6. printlist() –

Function that displays the input songs of the playlist.

7. count\_nodes() –

Function that tracks the number of inputs in the linked list.

8. del\_pos() –

Function that deletes songs from the linked list using the position of that song.

9. search1() –

Function that takes song input and linearly searches through the linked list and finds matching case.

10. push() –

Function that pushes the last played track of play() function into a stack to store and create a recently played list.

11. display() -

Function to display the stack generated in push() function.

12. play() -

Function to search input song and show if it can be played. It then passes the song to push() function to be added to recently played list.

13. recent() -

Function that calls display() function.

14. topelement() –

Function that displays the last played song.

15. addplaylist() –

Function that opens text file playlist.txt and passes data to add\_node\_file() function.

16. del\_search() –

Function to search input song and delete it from the list.

17. deletemenu() –

Function to invoke del\_search() or del\_pos() functions depending on user input.

18. main() –

Function that invokes all other functions of the project based on user defined input.

**-LIST OF ERRORS**

**-KEY OR CHALLENGING LOGIC**

The major part of the challenge included making a doubly linked list that would accept string data and store it efficiently. Involving the usage of file handling was another challenge. To retrieve songs from a pre-made list and add it to the linked list. It also required us to be able to write the new input songs to the file. All changes in the program required to be reflected on the text file.

**-PREQUISITES**

To use the File handling part of the program a text file of name

“playlist.txt” with certain data elements is required.

Sample data elements-

Animals

Spaceman

Apollo

Care

Fragile

Melody

**-PROJECT CODE**

#include<iostream>

#include<string.h>

#include<stdlib.h>

#include<stdio.h>

#include<fstream>

using namespace std;

struct node

{

char song[100];

struct node \*next;

struct node \*prev;

}\*top,\*temp,\*top1;

void tofile(char a[])

{

fstream f1;

f1.open("playlist.txt",ios::out|ios::app);

f1<<a<<endl;

f1.close();

}

void add\_node(struct node \*first)

{

char a[100];

while(first->next!=NULL)

{

first=first->next;

}

first->next=(struct node\*)malloc(sizeof(struct node));

first->prev=first;

first=first->next;

cout<<"\n\a\a\a\aEnter Song name- ";

scanf("%s",&a);

strcpy(first->song,a);

tofile(a);

first->next=NULL;

}

void add\_node\_file(struct node \*first,string a)

{

while(first->next!=NULL)

{

first=first->next;

}

first->next=(struct node\*)malloc(sizeof(struct node));

first->prev=first;

first=first->next;

strcpy(first->song,a.c\_str());

first->next=NULL;

}

void delete\_file(char a[])

{

fstream f1,f2;

string line;

int x=0;

f1.open("playlist.txt",ios::in|ios::out);

f2.open("temp.txt",ios::in|ios::out);

while(!f1.eof())

{

getline(f1,line);

if(strcmp(a,line.c\_str())!=0)

f2<<line<<endl;

else if (strcmp(a,line.c\_str())==0)

x=1;

}

f1.close();

f2.close();

remove("playlist.txt");

rename("temp.txt","playlist.txt");

if(x==0)

{

cout << "#Song not found." << endl;

}

else

{

cout << "=>Song has been deleted." << endl;

}

}

void del\_node(struct node \*first)

{

while((first->next)->next!=NULL)

{

first=first->next;

}

struct node \*temp;

temp=(first->next)->next;

first->next=NULL;

free(temp);

cout<<"Deleted"<<endl;

}

void printlist(struct node \*first)

{

cout<<"\nPlaylist Name- ";

while(first->next!=NULL)

{

cout<<first->song<<endl;

first=first->next;

}

cout<<first->song<<endl;

}

void count\_nodes(struct node \*first)

{

int i=0;

while (first->next!=NULL)

{

first=first->next;

i++;

}

i++;

cout<<"\nTotal songs- "<<i-1<<endl;

}

struct node \*del\_pos(struct node \*pointer, int pos)

{

struct node \*n1,\*prev1,\*temp;

prev1= ( struct node \*)malloc(sizeof(node));

temp= (struct node \*)malloc(sizeof(node));

int i=0;

if(pos==1)

{

temp=pointer;

delete\_file(temp->song);

pointer=pointer->next;

pointer->prev = NULL;

free(temp);

printf("\n=>The list has been updated\n++Use the display function to check\n");

return pointer;

}

while(i<pos-1)

{

prev1=pointer;

pointer=pointer->next;

i++;

}

if(pointer->next==NULL)

{

temp=pointer;

delete\_file(temp->song);

prev1->next->prev=NULL;

prev1->next=NULL;

free(temp);

printf("\n=>The list has been updated\n++Use the display function to check\n");

}

else

{

temp=pointer;

delete\_file(temp->song);

prev1->next=temp->next;

temp->next->prev=prev1;

free(temp);

printf("\n=>The list has been updated\n++Use the display function to check\n");

}

}

void search1(struct node \*first)

{

char song[100];

cout<<"\n\a\a\a\aEnter song To be Searched- ";

scanf("%s",&song);

int flag=0;

while(first!=NULL)

{

if(strcmp(first->song,song)==0)

{

cout<<"\n\a\a\a\a#Song Found"<<endl;

flag++;

break;

}

else

{

first=first->next;

}

}

if(flag==0)

{

cout<<"\n\a\a\a\a#Song Not found"<<endl;

}

}

void create()

{

top = NULL;

}

void push(char data[])

{

if (top == NULL)

{

top =(struct node \*)malloc(sizeof(struct node));

top->next = NULL;

strcpy(top->song,data);

}

else if (strcmp(top->song,data)!=0)

{

temp =(struct node \*)malloc(sizeof(struct node));

temp->next = top;

strcpy(temp->song,data);

top = temp;

}

}

void display()

{

top1 = top;

if (top1 == NULL)

{

printf("\n\a\a\a\a=>NO recently played tracks.\n");

return;

}

printf("\n\a\a\a\a#Recently played tracks-\n");

while (top1 != NULL)

{

printf("%s", top1->song);

printf("\n");

top1 = top1->next;

}

}

void play(struct node \*first)

{

char song[100];

printlist(first);

cout<<"\n\a\a\a\aChoose song you wish to play- ";

scanf("%s",song);

int flag=0;

while(first!=NULL)

{

if(strcmp(first->song,song)==0)

{

cout<<"\n\a\a\a\a=>Now Playing......"<<song<<endl;

flag++;

push (song);

break;

}

else

{

first=first->next;

}

}

if(flag==0)

{

cout<<"\n\a\a\a\a#Song Not found"<<endl;

}

}

void recent()

{

display();

}

void topelement()

{

top1=top;

if(top1==NULL)

{

printf("\n\a\a\a\a#NO last played tracks.\n");

return;

}

cout<<"\n=>Last Played Song - "<<top->song<<endl;

}

void addplaylist(struct node \*start)

{

fstream f1;

string line;

f1.open("playlist.txt",ios::in);

while(!f1.eof())

{

getline(f1,line);

add\_node\_file(start,line);

}

cout<<"=>Playlist Added"<<endl;

f1.close();

}

void del\_search(struct node \*start)

{

char song[100];

printlist(start);

cout<<"\n\a\a\a\aChoose song you wish to delete- ";

scanf("%s",song);

int flag=0;

while(start!=NULL)

{

if(strcmp(start->song,song)==0)

{

cout<<"\n\a\a\a\a#Song Found"<<endl;

struct node \*temp;

temp= (struct node \*)malloc(sizeof(node));

temp=start;

delete\_file(temp->song);

temp->prev->next=temp->next;

temp->next->prev=temp->prev;

free(temp);

flag++;

break;

}

else

{

start=start->next;

}

}

if(flag==0)

{

cout<<"\n\a\a\a\a#Song Not found"<<endl;

}

}

void deletemenu(struct node \*start)

{

int c;

cout<<"Delete song?\n1.By Search\n2.By Position"<<endl;

cout<<"\a\a\a\aEnter your choice-";

cin>>c;

switch(c)

{

case 1:del\_search(start);

break;

case 2:int pos;

printf("\n\a\a\a\aEnter the song position : ");

scanf("%d",&pos);

del\_pos(start,pos-1);

break;

}

}

main()

{

int choice,loc;

char song[100];

struct node \*start,\*hold;

start=(struct node \*) malloc(sizeof(struct node));

cout<<"\t\t\t\a\a\a\a\*\*WELCOME\*\*"<<endl;

cout<<"\n\*\*please use '\_' for space."<<endl;

cout<<"\n\n\a\a\a\aEnter your playlist name- ";

cin.getline(start->song,100);

start->next=NULL;

hold=start;

create();

do{

cout<<"\n1.Add New Song\n2.Delete Song\n3.Display Entered Playlist\n4.Total Songs\n5.Search Song\n6.Play Song\n7.Recently Played List\n8.Last Played\n9. Add From File\n10.Exit"<<endl;

cout<<("\n\a\a\a\aEnter your choice- ");

cin>>choice;

switch(choice)

{

case 1:add\_node(start);

break;

case 2:deletemenu(start);

break;

case 3:printlist(start);

break;

case 4:count\_nodes(hold);

break;

case 5:search1(start);

break;

case 6:play(start);

break;

case 7:recent();

break;

case 8:topelement();

break;

case 9:addplaylist(start);

break;

case 10:exit(0);

}

}while(choice!=11);

}

**-SAMPLE INPUT AND OUTPUT**

