CS2323 Assignment 1: Linked Lists, Stacks and Queues:

Implement the following functionalities of a music playlist using linked lists, stacks and queues.

- **Store** all songs in a linked list. The struct would contain the name of the song.
- **Create** a playlist from the library of songs created above, as a queue. To add a song to the playlist
    - Search in the linked list. If it is there, print “Inserting into the play list”
    - Enqueue the song. If not found, print “Sorry, song not found”.
- **Play**
    - Play Next: Dequeue and print “Playing <name of the song>”, then push into a “Recent songs” stack.
    - Play Previous (k):
        - For (i =1 to k)
            - Pop a song from “Recent songs” stack, print “Playing <name of the song>”
            - Enqueue into “Temporary Queue”
            - If you run out of songs in the playlist, print “Sorry, there weren’t k recent songs”
        - Empty the Temporary Queue by dequeuing one by one and pushing into “Recent songs” stack.

Input (Messages from the program are shown here in bold for clarity; your program doesn’t need to print it in bold)

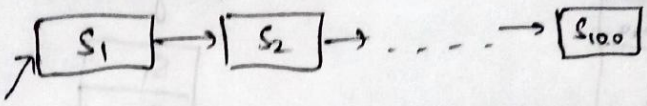
"Enter all songs (as strings), End with "-1" "
S1
S2
S3
S4
-1
"All songs entered!"
"Create Playlist, end with "-1" "
S5
"Not Found in the song library"
S1
"Found, Enqueued"
S3
"Found, Enqueued"
S4
"Found, Enqueued"
-1
"Playlist Ready!"
"Play next song, previous songs or end? n/p:k/e"

n
Playing S1
"Play next song, previous songs or end? n/p:k/e"
n
Playing S3
"Play next song, previous songs or end? n/p:k/e"
p:3
Playing S3
Playing S1
“There aren’t 3 previous songs”
"Play next song, previous songs or end? n/p:k/e"
n
Playing S4
"Play next song, previous songs or end? n/p:k/e"
“Bye”

More examples in the image that follows in the next page.

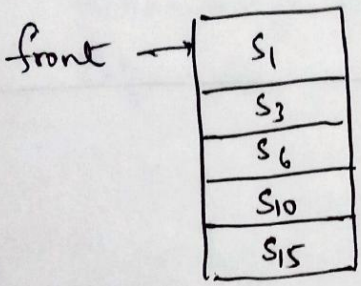
① 100 songs $S_1, S_2, \ldots, S_{100}$ given to store

Linked list



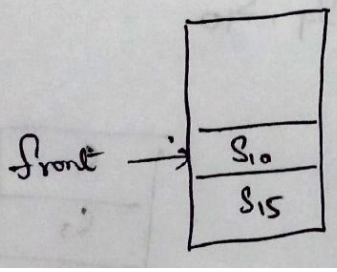
② Create playlist with songs $S_1, S_3, S_6, S_{10}, S_{15}$.

Playlist Queue

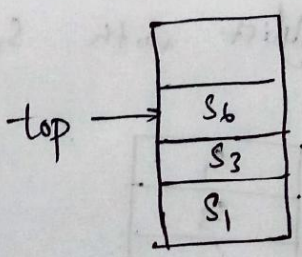
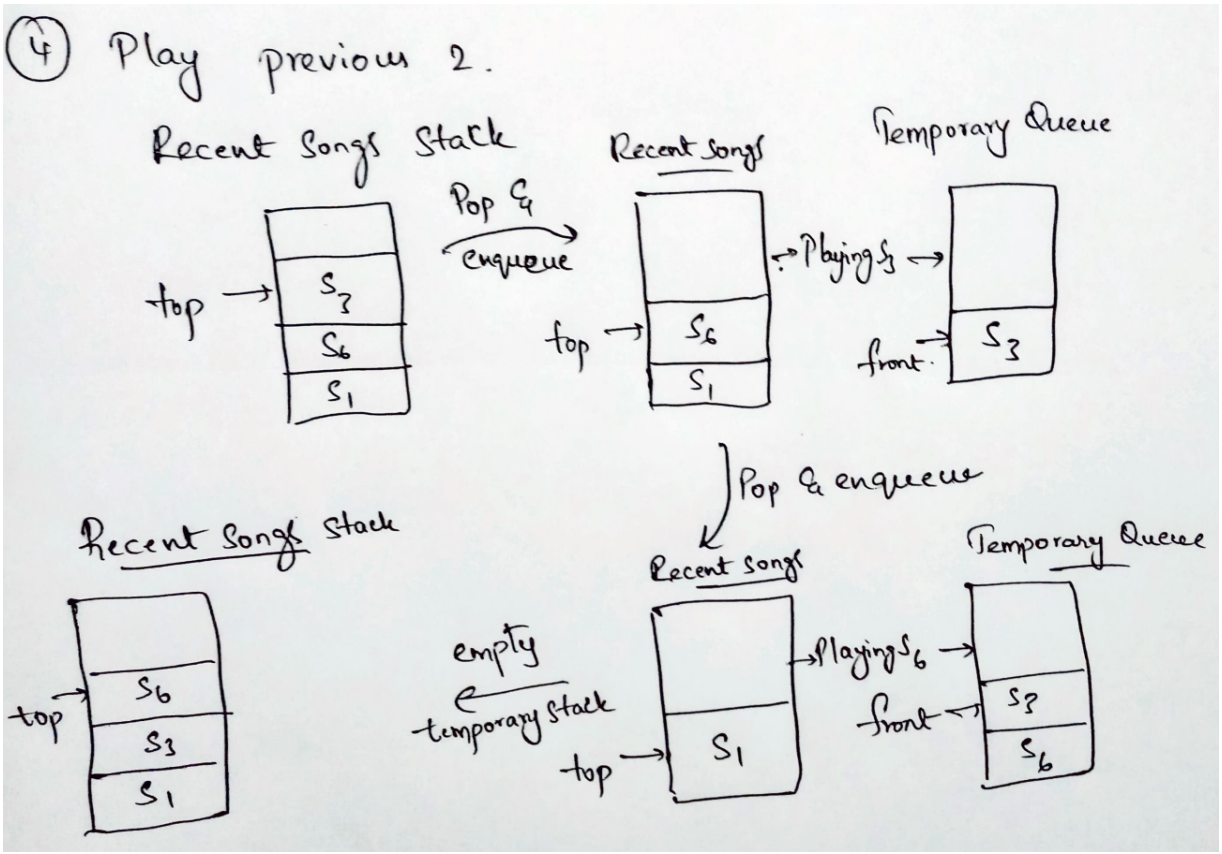


③ Play next 3 times

Playlist Queue



Recent Songs Stack



(4) Play previous 2.