



Topic & Application

—

Innovative
Assignment

Data structure
and
Algorithms

Contents

Topic Introduction

01

Concept used

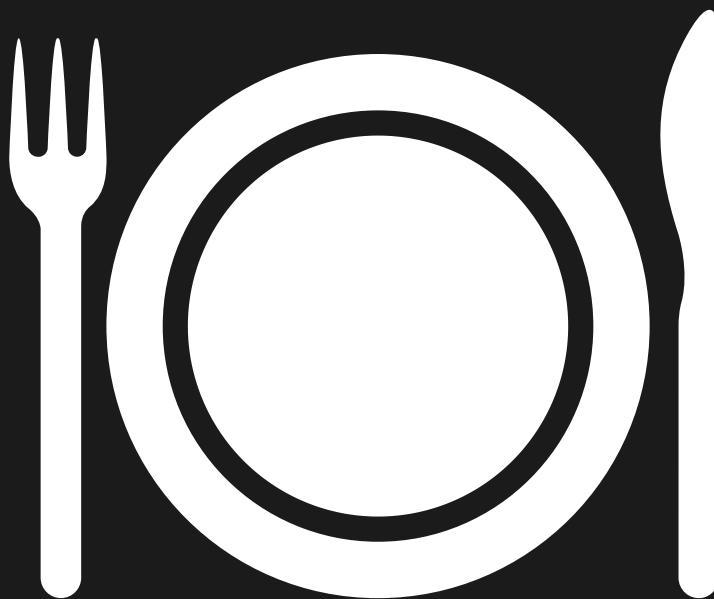
02

Applications

03



Topic
Introduction



Restaurant Management System

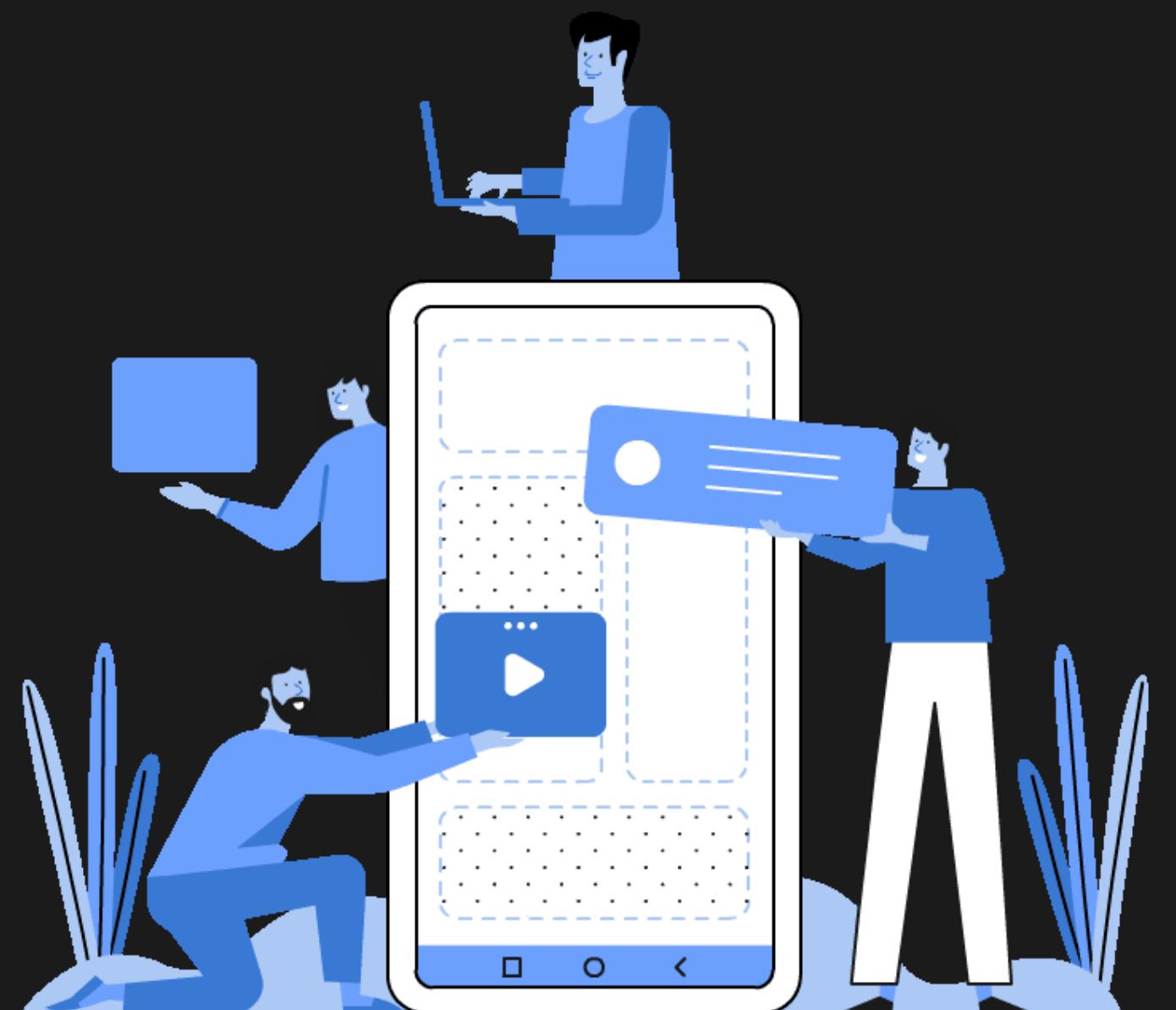
A restaurant management system is a type of point-of-sale (POS) software specifically designed for restaurants, bars, food trucks and others in the food service industry.

ESSENTIAL TOOL FOR ANY NEW RESTAURANT

Restaurant
Management
System

Benefits of RMS

- Track sales and orders
- View accurate, real-time financial statements
- Access data easily and faster



Features

EASY HANDLING

Restuarant management system is designed to handle all the primary information required to calculate such as final bills, total sales during the entire day.

INTERACTIVE

The main purpose of the Restaurant Management System is to reach to wider range of customers and to educate them about existing and new items offered by restaurants.

LINKED LIST AS DATABASE

As we will using linked list as database in this restaurant management system, we will have all linked list advantages such as we can grow or shirnk it any time as per our menu as it is a dynamic data structure.

Restaurant Management System

Array vs Linked List



Array



Linked List

BOTH USED TO STORE LINEAR DATA
OF SIMILAR TYPES

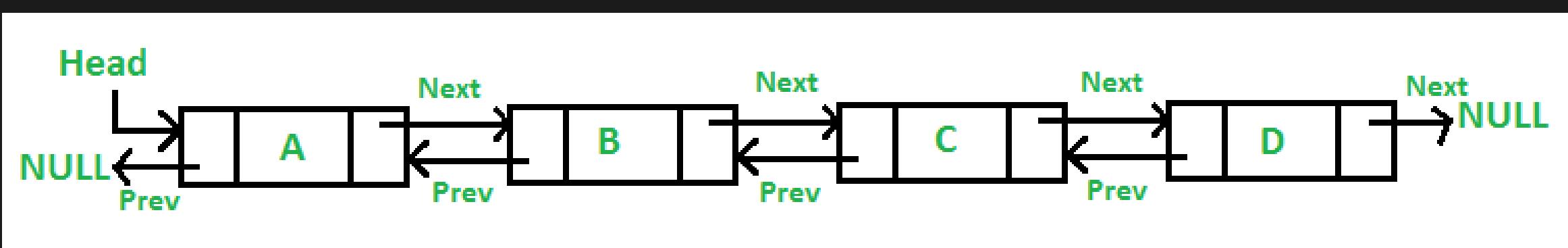
- Primitive - Non-primitive
- Insertion and Deletion
- Fixed size. - Dynamic
- Indexes

Doubly Linked List

CONCEPT

Representation

```
struct Node {  
    int data;  
    struct Node* next;  
    struct Node* prev;  
};
```



TRAVERSAL

A DLL can be traversed in both forward and backward direction.

INSERTION

We can quickly insert a new node before a given node.

DELETION

The delete operation in DLL is more efficient if pointer to the node to be deleted is given.

Advantages over singly LL

Disadvantage over singly LL

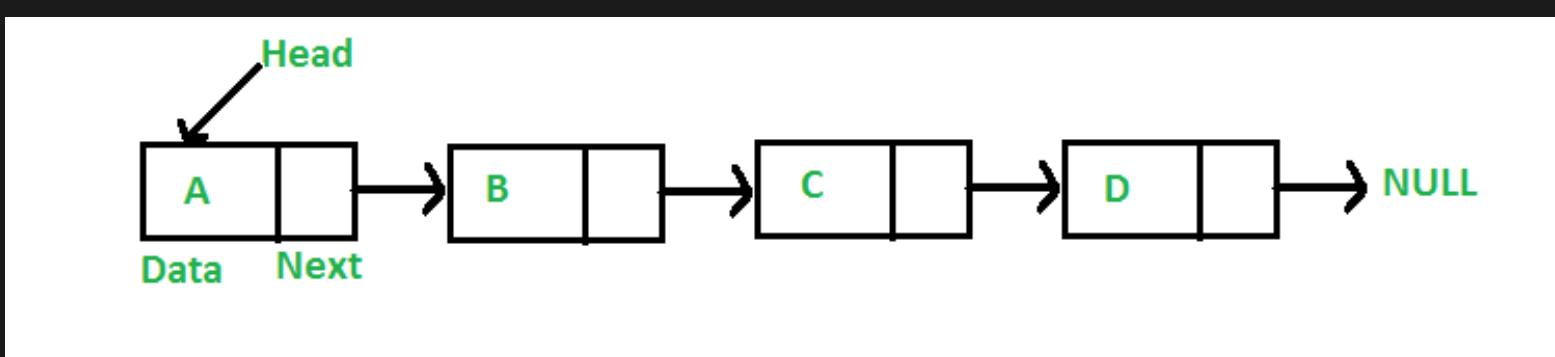
Extra space

FOR PREVIOUS POINTER

- Every node of DLL Require extra space for an previous pointer. It is possible to implement DLL with single pointer though.
- All operations require an extra pointer previous to be maintained.



Applications of Linked List



A LINEAR DATA STRUCTURE

A linked list is a linear data structure, in which the elements are not stored at contiguous memory locations. The elements in a linked list are linked using pointers as shown in the given image

Applications in real world

- Image viewer
- Previous and next page in web browser
- Music Player

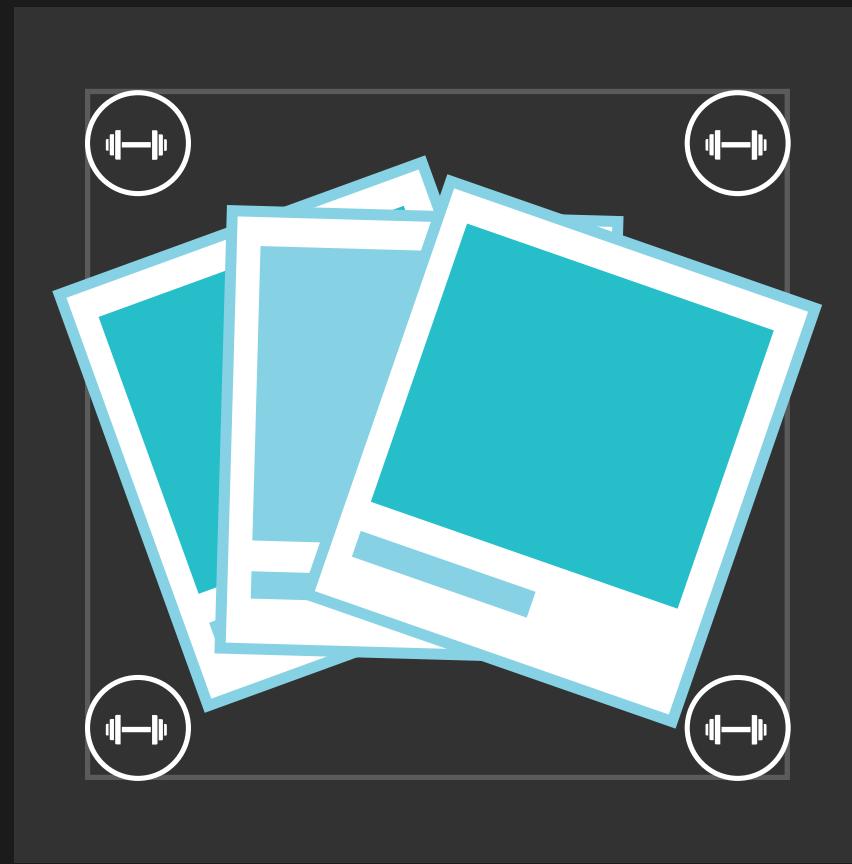
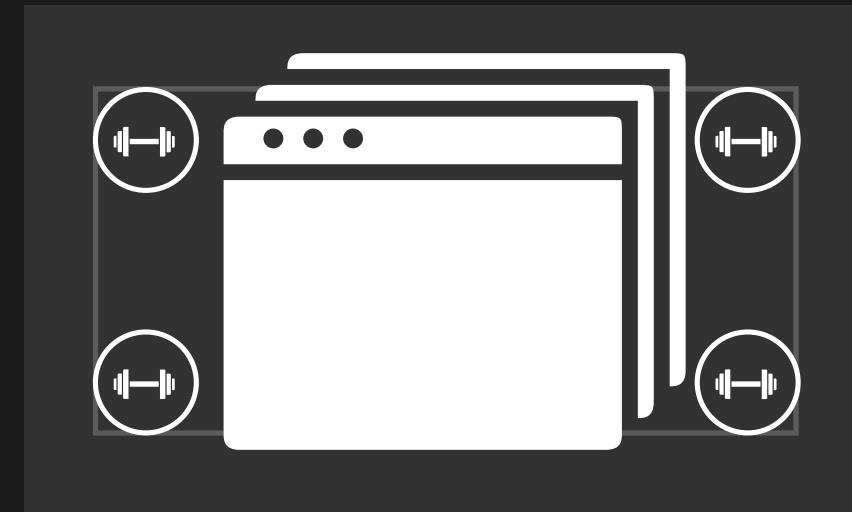
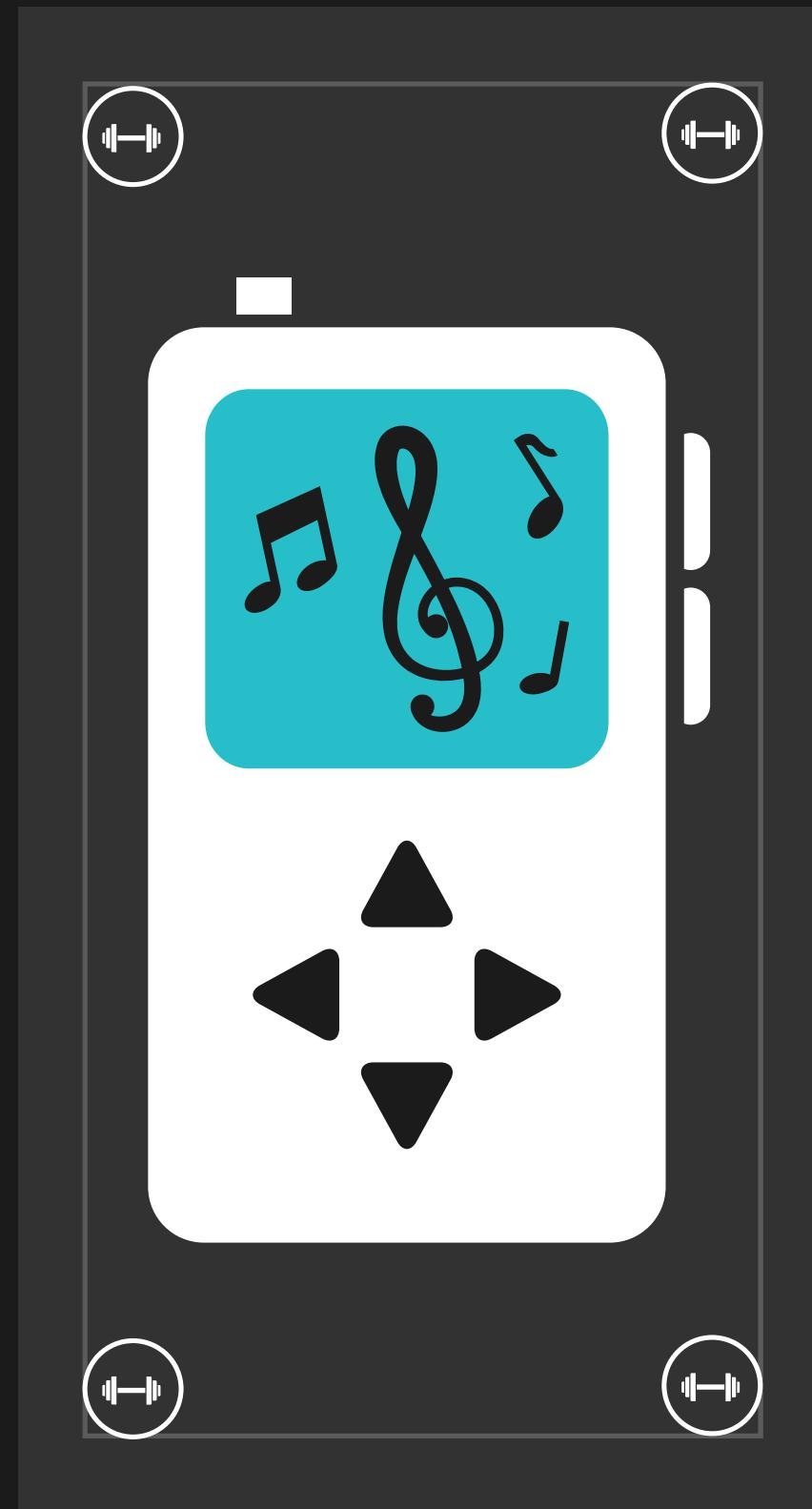


IMAGE VIEWER



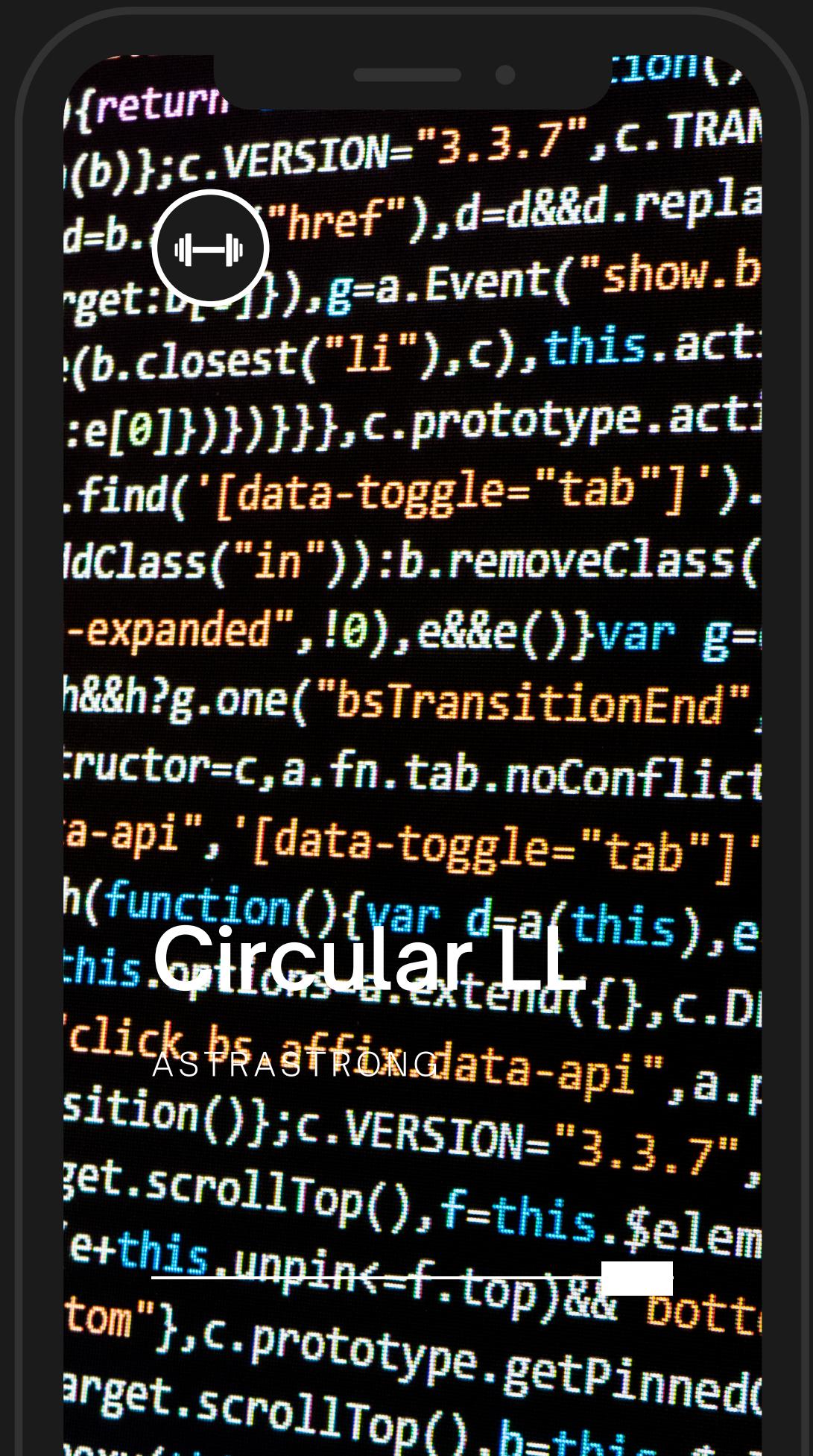
WEB BROWSER



MUSIC PLAYER

Applications of Circular LL

- implementation of queue
- multiple applications are running on a PC
- advanced data structures



Applications in computer science

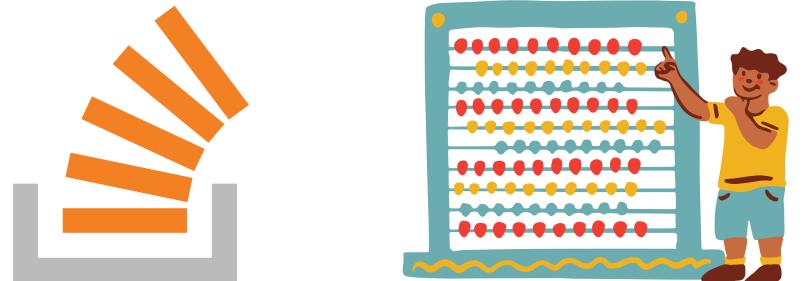
- Implementation of stacks and queues
- Implementation of graphs : Adjacency list representation of graphs is most popular which uses linked list to store adjacent vertices.
- Dynamic memory allocation : We use linked list of free blocks.
- Maintaining directory of names
- Performing arithmetic operations on long integers
- Manipulation of polynomials by storing constants in the node of linked list
- Representing sparse matrices



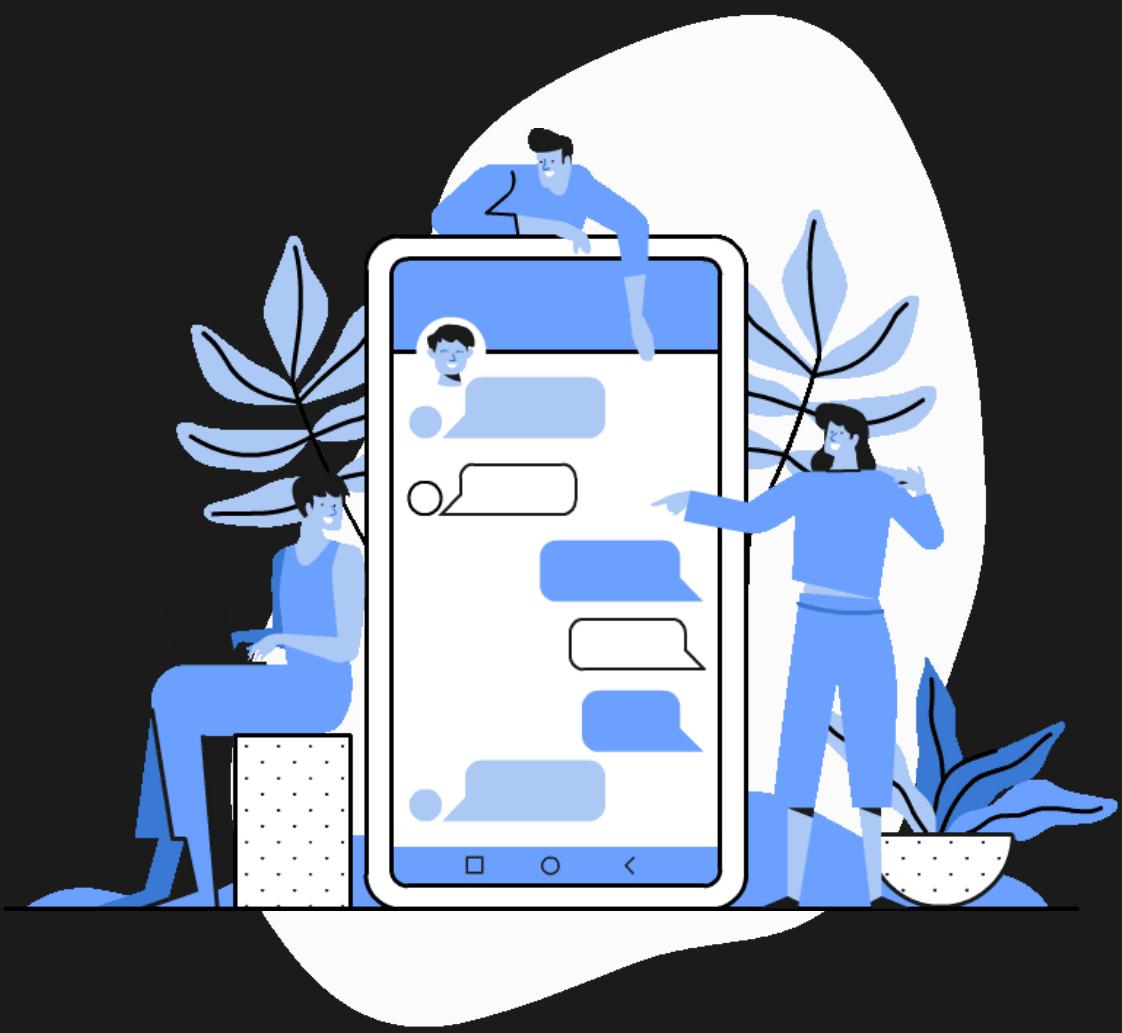
[matrix]

Applications

IN COMPUTER SCIENCE



Restaurant
Management
System



Thank you

SAKSHI SANGHAVI

19BCE237

HARSHIL SANGHVI

19BCE238

AAYUSH SHAH

19BCE245