

Subject name: Data Structures And Algorithms

Event – 2

Synopsis on: Food order Management system

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Presentation skills	8	
Documentation	8	
Interaction/Viva	4	
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FOOD ORDER MANAGEMENT SYSTEM

ABSTRACT:

Food Order management system is a data structure based systematic software to manage and order the food and payment through software. this food management and order system can be used in offline stores where the order can be received through the software and food items can be continuously added and deleted based on the availability in the store. Here even the payment can also be done through this software. This system also can be used for online food order or other items order system by linking it through the network, this project can be mainly used in the restaurants where manpower is less and also can cut down the cost of extra manpower. It can also be used in the hotels where robots are used to deliver the food.

PROBLEM STATEMENT:

- Almost all small and medium scale hotels use humans to take order and deliver it to the customers this increases the need of more manpower during peak business time and very less manpower during low business time. Having more workers is more expensive to the small and medium scale business because irrespective of the business salary should be given to all workers and having less manpower does have their own disadvantage like increased waiting time for customers and poor service experience. So, to overcome this problem this software-based Food order management can be used so that customers order the food from the menu available at this software and humans and even in future robots can deliver that order where humans are only used to deliver the order, hence decreasing extra expense as well as giving good service experience.
- The normal Card menu used in hotels cannot be updated when product is unavailable and even price cannot be changed regularly this software-based menu and price can be updated any time based on the availability.

INTRODUCTION:

Main theme of this application is to display the food items available and enabling the customers to order through the software and continue till billing process. The Application consists of two interfaces, one being the customer interface and admin panel as the other.

Features provided for the customers:

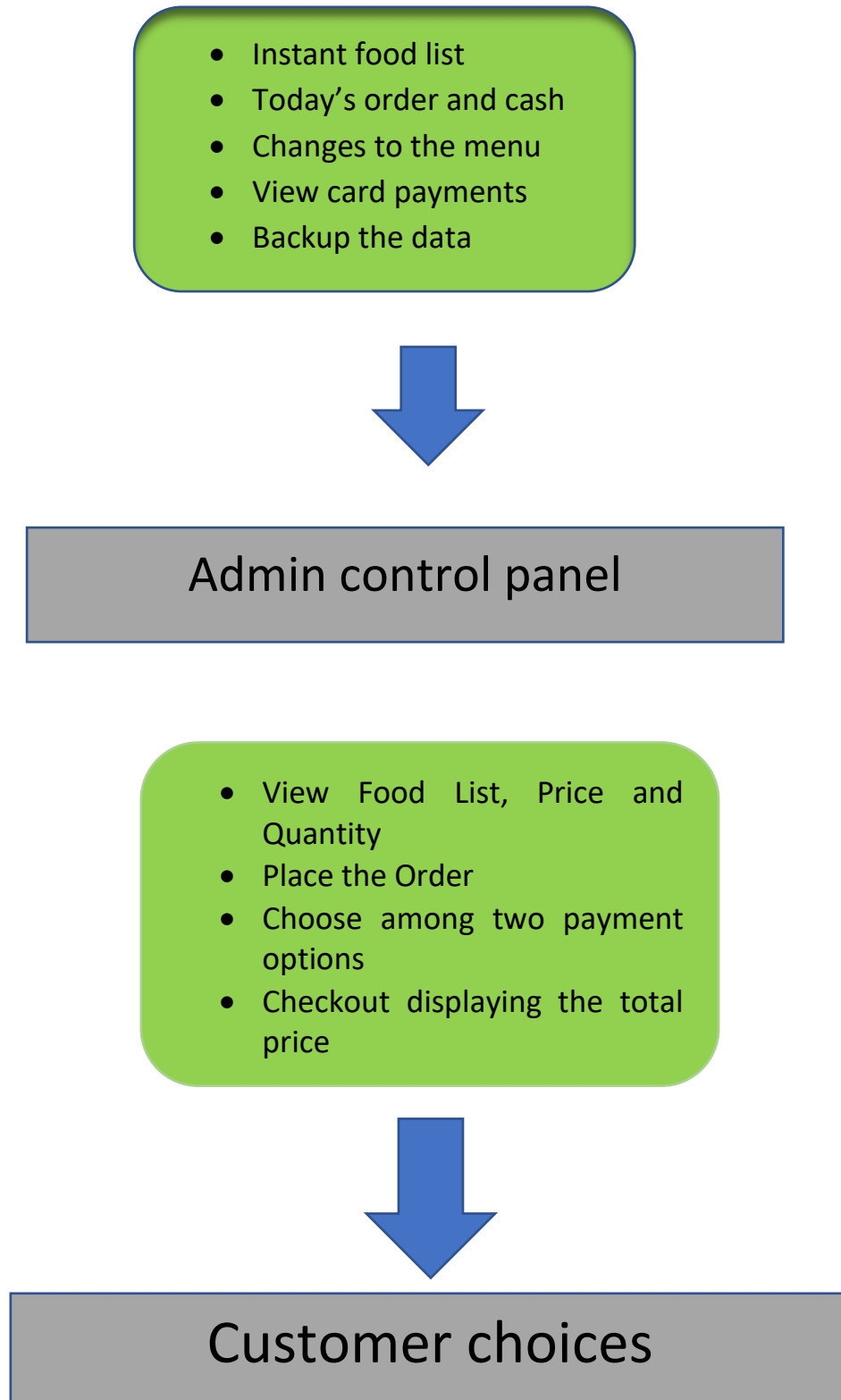
- Displays the food item list along with their price, quantity and the stock available.
- The customer needs to enter the food serial number and the quantity desired thus displaying their total cart price.
- If they wish to order more, they could go back and choose again. Two-way payment options are made available i.e., Cash and Credit. This will take their card number and pin which will not be saved by us.

Features provided for the admin panel:

- Check the total cash made today and view the details for the card payments.
- Add a food item or delete it from the menu. To ensure that the item is added accordingly, we have an option for the instant food list. Item counter displays the number of food items available.
- Backing up the data and Instant Order Preview displays the food item along with the quantity remaining

DATA LAYOUT:

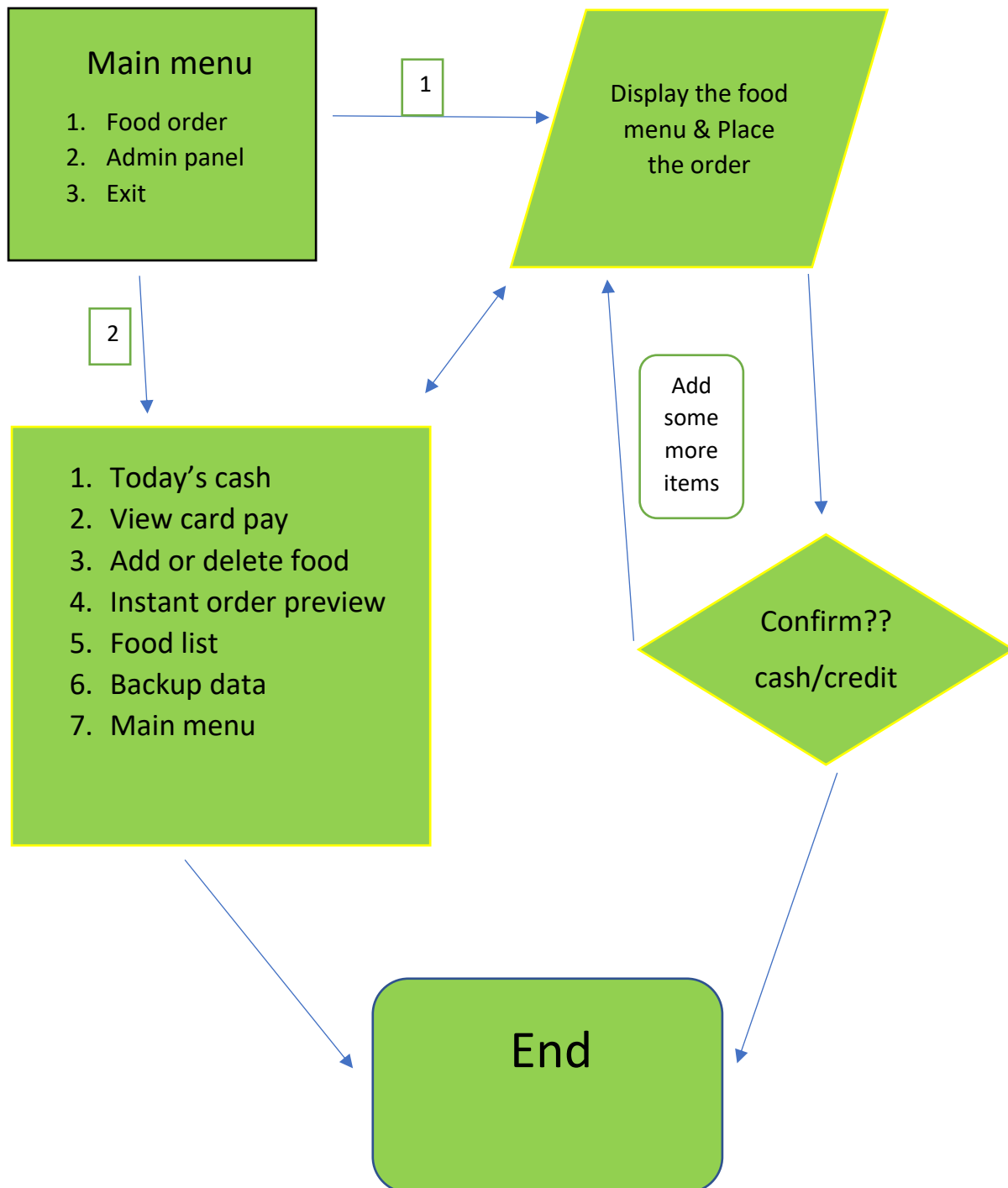
The basic structure of the layout of our program is explained in the below flow chart. It mainly contains Admin control panel and customer choices.



Flowchart representing the structure of the program

DESIGN OF THE APPLICATION:

The complete structure of the working of the program can be seen in the below flowchart. Depending on the options selected the output is shown.



THEORY:

To program this software, we make use of famous linked list. Where in each node's information such as food name, quantity available, price and many more details of the food is added, and we also make use of stacks and queue to update the cart price once the item is purchased and for further billing process. For visual effects we make use of visual studio and dos functions.

Linked lists:

A linked list is a linear collection of data elements whose order is not given by their physical placement in memory. Instead, each element points to the next. It is a data structure consisting of a collection of nodes which together represent a sequence. In its most basic form, each node contains: data, and a reference (in other words, a link) to the next node in the sequence. This structure allows for efficient insertion or removal of elements from any position in the sequence during iteration. More complex variants add additional links, allowing more efficient insertion or removal of nodes at arbitrary positions. A drawback of linked lists is that access time is linear (and difficult to pipeline). Faster access, such as random access, is not feasible. Arrays have better cache locality compared to linked lists.

Types of Linked List:

- **Singly Linked List:** It is the simplest type of linked list in which every node contains some data and a pointer to the next node of the same data type. The node contains a pointer to the next node means that the node stores the address of the next node in the sequence. A single linked list allows traversal of data only in one way.

Singly Linked List

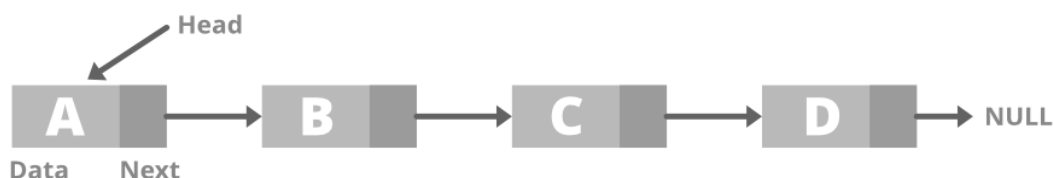


Fig1. Structure of singly linked list

- **Doubly Linked List:** A doubly linked list or a two-way linked list is a more complex type of linked list which contains a pointer to the next as well as the previous node in sequence, Therefore, it contains three parts are data, a pointer to the next node, and a pointer to the previous node. This would enable us to traverse the list in the backward direction as well. Below is the image for the same

Doubly Linked List

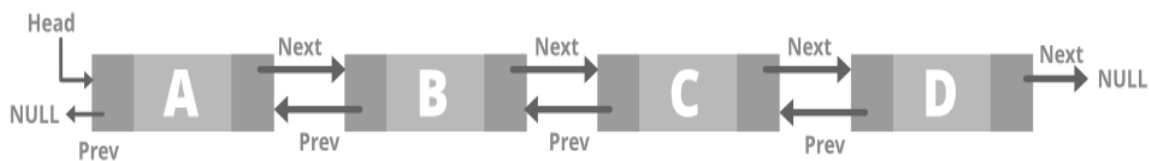


Fig2. Structure of doubly linked list

- **Circular Linked List:** A circular linked list is that in which the last node contains the pointer to the first node of the list. While traversing a circular linked list, we can begin at any node and traverse the list in any direction forward and backward until we reach the same node we started. Thus, a circular linked list has no beginning and no end. Below is the image

Circular Linked List



Fig3. Structure of circular linked list

- **Doubly Circular linked list:** A Doubly Circular linked list or a circular two-way linked list is a more complex type of linked-list that contains a pointer to the next as well as the previous node in the sequence. The difference between the doubly linked and circular doubly list is the same as that between a singly linked list and a circular linked list. The circular doubly linked list does not contain null in the previous field of the first node. Below is the image for the same

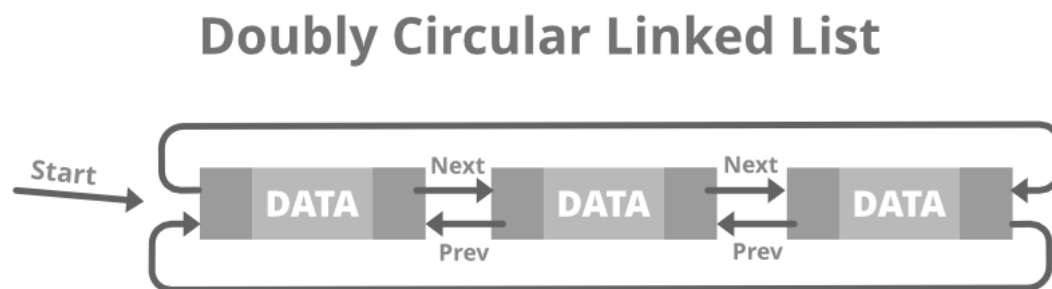


Fig4. Structure of doubly circular linked list

Queue:

A Queue is a linear structure which follows a particular order in which the operations are performed. The order is First in First Out (FIFO). A good example of a queue is any queue of consumers for a resource where the consumer that came first is served first. The difference between stacks and queues is in removing. In a stack we remove the item the most recently added; in a queue, we remove the item the least recently added.

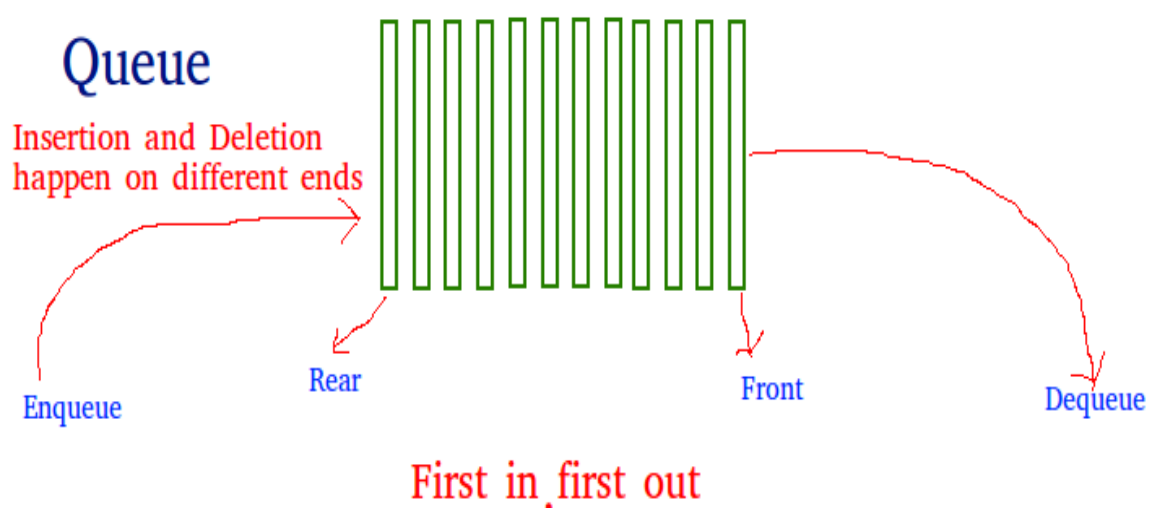


Fig5. Structure of Queue

Stacks:

Stack is a linear data structure which follows a particular order in which the operations are performed. The order may be LIFO (Last in First Out) or FILO (First in Last Out).

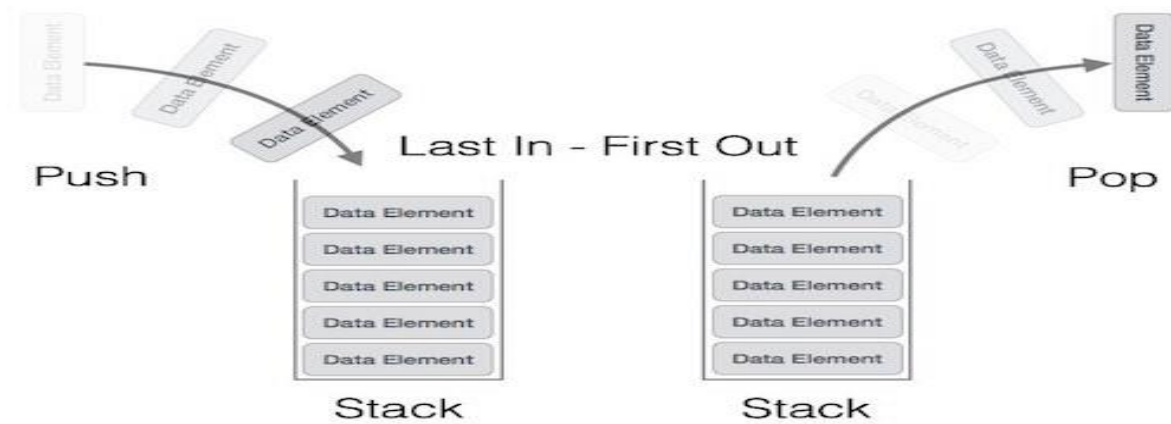


Fig6.Structure of Stack

NECESSITY:

- Food order management allows restaurants to provide takeout orders or delivery to patrons. Because of COVID-19, food order management has become even more important. With dining rooms closed, takeout and delivery services have become lifelines for many restaurants.
- One obvious benefit of a robust food ordering system is that you can get several kinds of reports. Find out which product line generate more sales and which one fared poorly. You can also map your sales seasons and then plan your next marketing programs. Find out your profitable products and find out ways and means to sell more and better. Above all, keep all your reports in one central place.
- Customers are turning more towards online food services options for the convenience its offers. Even on festival days, these online food delivering services are available giving a maximum flexibility for customers.

ADVANTAGES:

- Makes the ordering process easier
- Efficient customer and order management
- Monitor your expenses incurred in real-time
- The convenience of mobile ordering
- Stay ahead of the competition
- Free and cheap marketing

APPLICATION:

- Can be used in even smaller hotels due to simplicity in design
- This software can also be used to keep the accounts clean since each transaction of the day is recorded
- This software can also be used by any person, no need of expertise in handling
- This system also can be used to deliver the order to the home of customer

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3. <https://1000projects.org/food-ordering-management-system-php-mysql-project.html>
4. <https://www.cpp.edu/~ftang/courses/CS240/lectures/slist.htm>
5. <https://www.sanfoundry.com/c-program-create-linked-list-display-elements/>

APPENDIX:

The github link for the project is given below:

<https://github.com/sumukh-moudgalya/Food-order-management-system-using-datastructure-c->