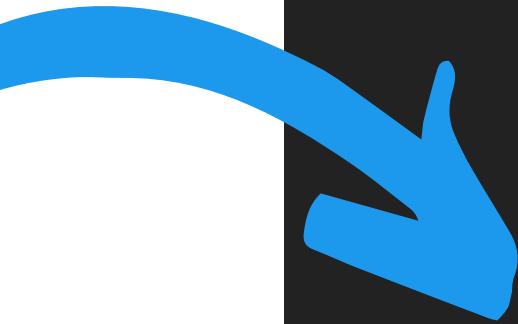


CAFETERIA MANAGEMENT USING DOUBLY
LINKED LIST



DATA STRUCTURE AND
DISCRETE MATHEMATICS



**PROJECT
BASED
LEARNING**

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INTRODUCTION



In this PBL we have tried to build a project using concepts of data structures and discrete mathematics. We have created a 'Cafeteria Management' program that uses doubly linked lists, arrays, pointers in the functions, and binary search trees for some outputs. The complete project is performed using C language on Visual Studio Code.

This is a very primitive idea that will help us to understand the theoretical concepts and implement them practically.

This management system can be altered as per requirements and domain.

REQUIREMENTS

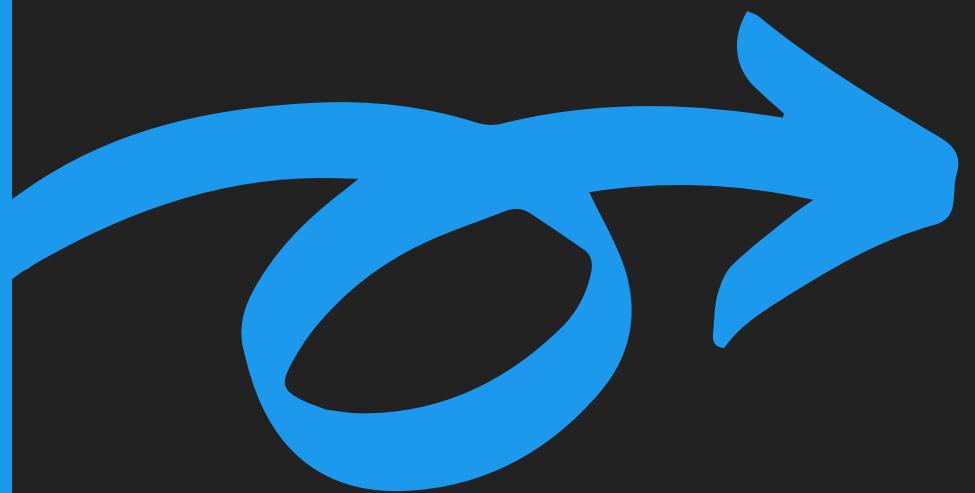
- BASIC KNOWLEDGE OF PROGRAMMING AND MATHEMATICS.
- IN OUR CASE, SOUND IN TECHNICAL LANGUAGE LIKE C/C++.
- UNDERSTANDING OF ARRAYS, FUNCTION CREATION, DLL, POINTERS, AND BINARY SEARCH TREES.
- SOFTWARE LIKE VS CODE OR A GOOD ONLINE COMPILER.



CHALLENGES

- PROPER IDEA TO COMBINE CONCEPTS OF DS & DM.
- DEVELOPMENT OF FEASIBLE CODE WITH MINIMAL ERRORS AND SMART SOLUTIONS.

Cafeteria Management



In this project we can perform the basic tasks required in cafeteria. It includes menu display, place an order, give ratings, check leader board, admin login and much more.

Initially we have 4 options : Food Part , Give Ratings , Admin Panel and Exit .

User shall choose the option which he want to perform and complete the task.

```
-----  
          CONTROL PANEL  
-----  
  
1....FOOD PART  
2....GIVE RATINGS  
3....ADMIN PANEL  
4....EXIT  
Enter your choice : 
```

A screenshot of a terminal window titled "CONTROL PANEL". The window displays a menu with four options: 1....FOOD PART, 2....GIVE RATINGS, 3....ADMIN PANEL, and 4....EXIT. Below the menu, there is a prompt "Enter your choice : " followed by a text input field.

- 1....FOOD LIST
- 2....ORDER
- 3....LEADERBOARD



When we select Food Part the following options appear where you can select the further option.

You can check the menu card along with pricing and place a order.

----- ----- MENU -----				
INDEX	ITEM NAME	PRICE	RATING	
1	BURGER	70.00	9.60	
2	PIZZA	250.00	9.80	
3	HOT CAKE	450.00	5.60	
4	COFFEE	100.00	7.60	
5	ICE-CREAM	50.00	8.40	
6	SANDWICH	60.00	4.60	
7	VEG WRAP	80.00	6.60	
8	BUTTER-BREAD	35.00	3.40	
9	COLD DRINKS	30.00	8.70	

PLEASE ENTER THE FOOD ID NUMBER AND ITS QUANTITY: 6 2

DO YOU WANT ORDER MORE FOOD:

- 1. YES
- 2. NO

...ANSWER : 1

PLEASE ENTER THE FOOD ID NUMBER AND ITS QUANTITY: 4 1

DO YOU WANT ORDER MORE FOOD:

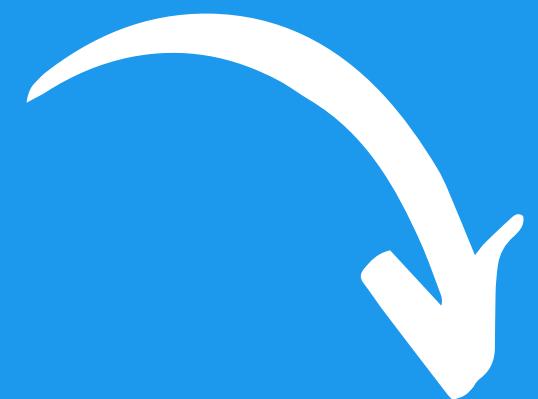
- 1. YES
- 2. NO

...ANSWER : 2

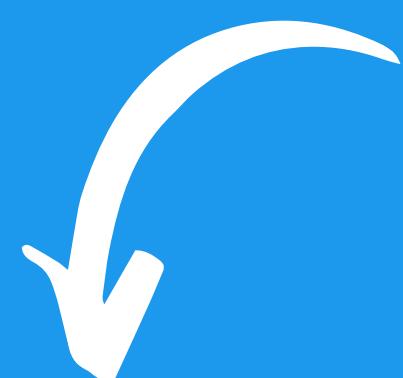
HERE YOU CAN CHECK THE FACILITIES PROVIDED IN ADMIN PANEL WHICH MAKES MANAGEMENT MUCH EASIER AND TRANSPARENT.



```
--  
1. ADD NEW DISH  
2. TODAY'S TOTAL INCOME  
3. TODAY TOTAL NO OF CUSTOMER  
4. ORDER HISTORY  
5. LIST OF ITEM  
  
--  
2  
  
TODAY'S TOTAL INCOME IS:- 220.000000
```



```
--  
1  
Enter the name of Item : Pasta  
Enter the Price of Item : 140  
Enter the Rating of Item : 8  
Enter the food_id_no of Item : 10  
  
--  
NEW DISH IS ADDED SUCESSFULLY.....
```



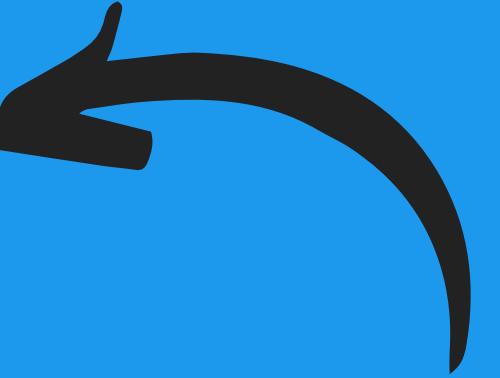
-----ORDER HISTORY-----		
SR_NO	DATE	TOTAL AMOUNT
1	05/12/21	220.000000

ENTER YOUR NAME : Samarth
ENTER TODAY'S DATE : 05/12/21

BILL

NAME :-Samarth
DATE :-05/12/21

6	SANDWICH	2	120.000000
4	COFFEE	1	100.000000
Total Payable amount is:-			220.000000

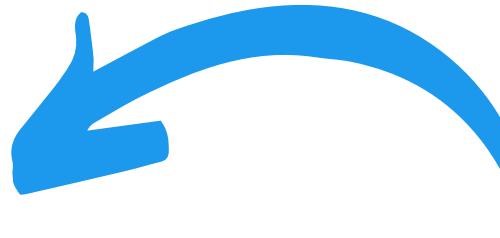


**THE FINAL BILL IS
DISPLAYED FOR THE
SAKE OF CUSTOMER
CONVENIENCE**

1....FOOD PART
2....GIVE RATINGS
3....ADMIN PANEL
4....EXIT
Enter your choice : 4

Thank You, Visit Again!

CONTROL PANEL



**BY PRESSING 4
YOU EXIT FROM
THE SYSTEM
SAFELY**

Theory used in our project...

A DOUBLY LINKED LIST IS A LINKED DATA STRUCTURE THAT CONSISTS OF A SET OF SEQUENTIALLY LINKED RECORDS CALLED NODES.

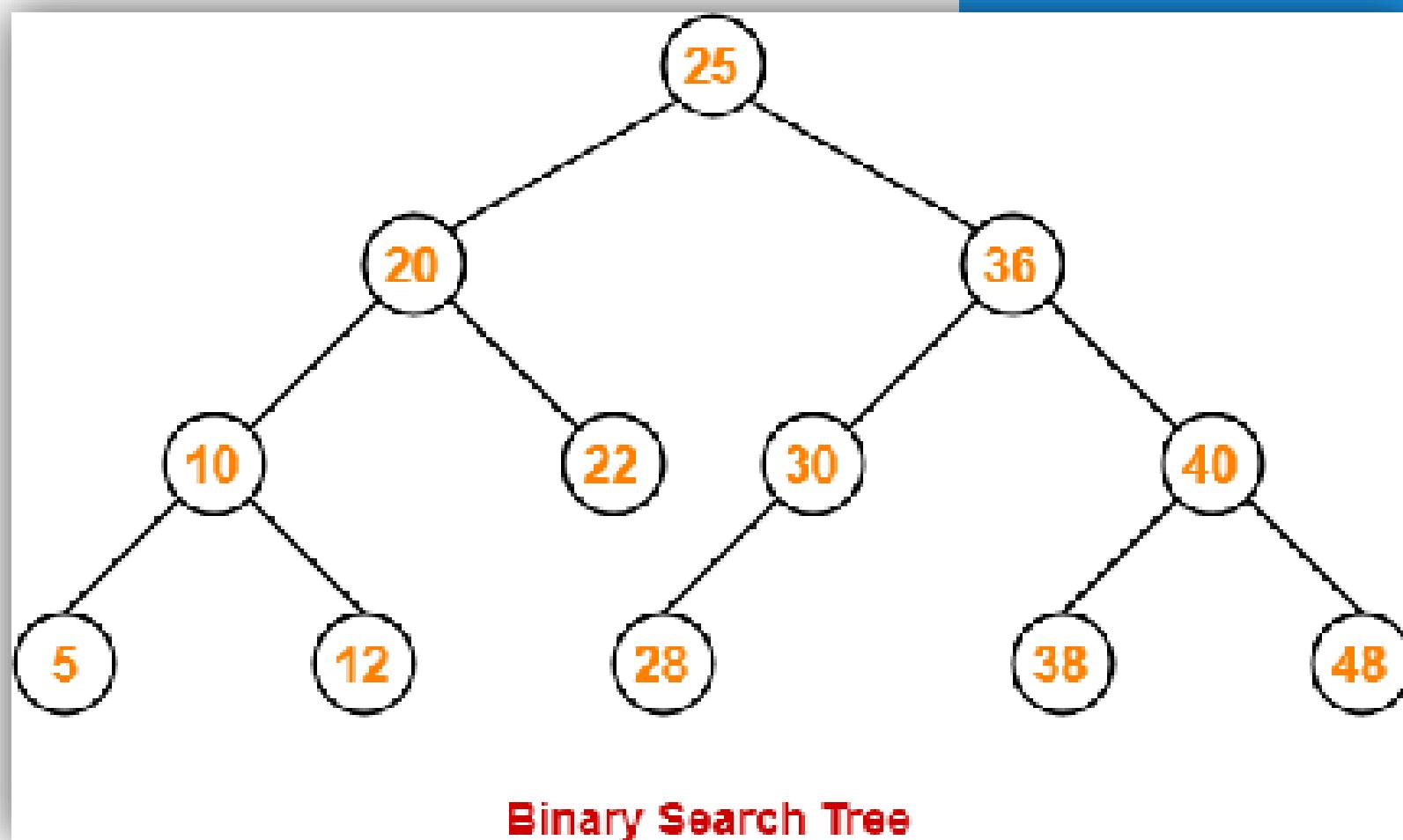
EACH NODE CONTAINS THREE FIELDS: TWO LINK FIELDS (REFERENCES TO THE PREVIOUS AND TO NEXT NODE IN THE SEQUENCE OF NODES) AND ONE DATA FIELD.

THE BEGINNING AND ENDING NODES , PREVIOUS AND NEXT LINKS RESPECTIVELY, POINT TO SOME KIND OF TERMINATOR, TYPICALLY A SENTINEL NODE OR NULL , TO FACILITATE TRAVERSAL OF THE LIST. IF THERE IS ONLY ONE SENTINEL NODE, THEN THE LIST IS CIRCULARLY LINKED VIA THE SENTINEL NODE.

TREES



- Tree is a discrete structure that represents hierarchical relationships between individual elements or nodes. A tree in which a parent has no more than two children is called a binary tree.
- Binary search trees have the property that the node to the left contains a smaller value than the node pointing to it and the node to the right contains a larger value than the node pointing to it.



TASK DIVISION THROUGHOUT PBL

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Programming and
Innovation.

→ **RAJDEEP
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Programming and Error
handling .

→ **NETAL DAGA**

Programming and
Report .

→ **SAMARTH
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Programming and PPT .

RESULT & CONCLUSION

- A MANAGEMENT SYSTEM IS DEVELOPED WHICH MAKES MANY TASKS EASIER AND PERFORMS VERY SMOOTHLY.
- FEATURES OF ADMIN LOGIN HELP TO MAINTAIN ALL THE RECORDS AND ENSURES TRANSPARENCY IN THE WORKING OF CAFETERIA.
- WE COULD SUCCESSFULLY IMPLEMENT OUR CONCEPTS LEARNED IN DS AND DM.
- CONCLUDINGLY THIS SYSTEM WILL BE BENEFICIAL FOR SMALL CAFETERIAS FOR PROPER MANAGEMENT AND KEEPING RECORD OF ORDERS PLACED IN A DAY.
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FUTURE WORK

- THIS SYSTEM CAN BE IMPROVED BY ADDING MORE FUNCTIONALITIES AND ALSO USE OF GUI WOULD MAKE IT LOOK MUCH BETTER AND USER FRIENDLY.

THANK YOU



FROM THIS PBL WE HAVE LEARNED TO
IMPLEMENT THINGS PRACTICALLY
AND DEVELOP SOLUTIONS
APPLICABLE IN DAILY LIFE.

