DATA STRUCTURES
AND
ALGORITHM

(CSE2003)

Topic: - HOSPITAL MNAGEMENT SYSTEM

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Project by:

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ABSTRACT

Recommender Systems apply knowledge discovery techniques to the problem of making personalized recommendations for information, products or services during a live interaction. While convenience impels consumers to purchase items on the web, quality remains a significant factor in deciding where to shop online. The competition is increasing and personalization is considered to be the competitive advantage. Recommender systems are a means of personalizing a site and a solution to the customer's information overload problem.

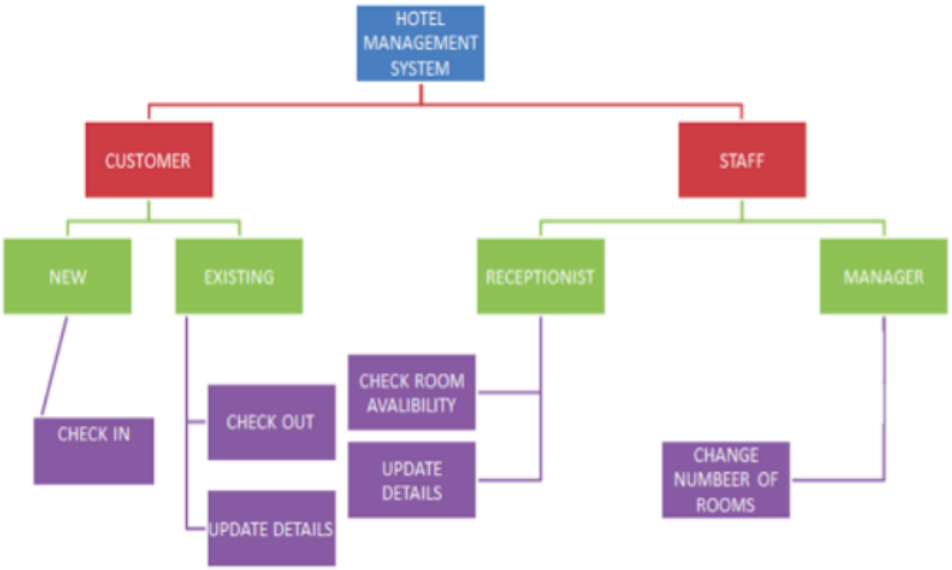
INTRODUCTION

Data Structures are the building blocks of every efficient program. There are several data structures widely used for problem solving, be it array, stack, queue, linked lists, etc. To create the backend working mechanism of the program, we have decided to use linked list. Our project provides a common platform for both customers as well as staff of the hotel. This makes the conduction of hotel management fluid and automated thus reducing manual work. Throughout the implementation of the project we have created every operation using linked list only to understand all the principal operations on linked lists like insertion of nodes at various position, deletion of nodes at different positions, searching elements in the list and updation of elements in the list. Our program serves as a common application to three types of operators: customer, receptionist and manager. We have provided ample amount of operation for each person to operate. The customers can check in, update their details; the receptionist can check room availability and the manager can change the cost and number of available rooms in the hotel. Our program is user-friendly and provides accurate and error free output.

PROBLEM STATEMENT

Before the execution of our project plan, we gained some information which could prove pivotal in the successful completion of our data structures project.

PROPOSED METHODOLOGY AND IMPLEMENTTION



IMPLEMENTATION – 1:

- The user will have two options, either he can operate as a staff member or as a customer.
- If user chooses to be a customer, then he will have choice to be a new customer of existing customer.
- Being a new customer, he can check in by giving his personal details and choosing room type
- Being an existing customer, he can checkout or update his details.

IMPLEMENTATION – 2:

- If the user chooses to be a staff member, then he will have two choices, he can either be receptionist or Manager.
- If the user chooses to be the receptionist, he can check room availability as well as update the details of the customers. He can also see all the list of customers that are currently staying in the hotel.
- We also have a place for a manager who has all the features that receptionist has plus he will possess some extra features like he can increase or decrease the room price or change the residential structure by changing the number and type of rooms.

CONTENTS AND SOFTWARES USED

LINKED LIST:-

• Linked list acts as a pillar in the development of our program. We have used its unique advantages like dynamic size and ease of insertion and deletion to create a highly efficient program.

• Linked list doesn't have pre-defined size and we have used it for our advantage to avoid wastage of memory.

• We have also learnt that insertion and deletion operations in link list are easy and more efficient than arrays and other data structures.

C-LANGUAGE:-

• An important advantage of C++ is its ability to extend itself. A C++ program is basically a collection of functions that are supported by the C library this makes it easier for us to add our own functions to C++ library. Due to the availability of large number of functions, the programming task becomes simple.

• In C++ language, it is easier for us to think of a problem in terms of function modules or blocks. We can use the collection of these modules to make a complete program. This modular structure makes program debugging, testing and maintenance easier

DYNAMIC MEMORY ALLOCATION AND REALLOCATION:-

• We have gained important knowledge about the dynamic memory allocation in C++-programming. In C++-programming, memory can be dynamically allocated using library functions- malloc from a memory called heap.

• In the same way, we can reuse the previously allocated memory by using library function- realloc or free.

• Through the implementation of the program, we have also learnt about structures to create a "user defined data type".

CODE

The code implementation in **CODEBLOCKS.**

SOURCE CODE:

```
//HOTEL MANAGEMENT SYSTEM

#include<stdio.h>

#include<stdlib.h>

#include<conio.h>

#include<string.h>

#include<windows.h>

#include<time.h>

                                ///password 12345

   /// Update & Insert Function

void insertfirst(int data, char itemname[25], int quantity, float price);

void insertend(int data, char itemname[25], int quantity, float price);

void updateitem(int udata, int uquantity);

    /// Display Function

void itemslist();

void main_menu();

void deleteitem(int serial);///

    ///design Function

void cls();

void echo(char print[]);

void br(int line);

void pre(int tab);

void welcome();
```

```
void middle1(void);
void middtab1(void);

        ///START Structure Here

struct Node{

            char itemname[50];
            int quantity;
            float price;
            int data;
            struct Node *next;

};
   ///Global Type
typedef struct Node node ;
node *head, *list;

int main(){

            system("title HOTEL MANAGEMENT SYSTEM -  DSA PROJECT");

            welcome();
            Sleep(300);
            cls();
```

```
int c=0; int any;
int cardno[100];
float cardmoney[100];
float totalmoney = 0;
int total_order[100];
int order_quantity[100];
int order=0;
int uquantity;

head = NULL;
insertfirst(1,"SINGLE     ",6,1200);
insertend(2,"DOUBLE     ",13,1500);
insertend(3,"QUAD       ",10,2000);
insertend(4,"QUEEN      ",10,2500);
insertend(5,"KING       ",4,3200);
insertend(6,"SUITE      ",5,4000);
insertend(7,"DUPLEX     ",9,4800);
insertend(8,"COTTAGE    ",2,8000);

mainmenu:
br(1);
main_menu();
int main_menu_choice;
br(1); pre(4); fflush(stdin); scanf("%d",&main_menu_choice);

if((main_menu_choice >=1 && main_menu_choice <=3)){
```

```
if(main_menu_choice == 1){
    itemslist:
    cls();
    printf("=> 0. RECEPTION ");
    itemslist();
}
else if( main_menu_choice == 2){
    adminpanelchoice:
    int admin_panel_choice;
    cls(); middle1() ;  pre(4);  printf("Press 1 to go to  RECEPTION \n\n\t");
Sleep(300);
    printf("Please Enter Admin Password: : ");
    fflush(stdin);  scanf("%d",&admin_panel_choice);

    if(admin_panel_choice==12345){///admin password
        node *temp;
        temp = list;
        adminchoise:
        cls();  br(5); pre(4); echo("You are on Control Pannel\n\n");
        pre(4);
        printf(" 1. Total Cash Today \n\n");Sleep(250);pre(4);
        printf(" 2. View Card Pay \n\n");Sleep(250);pre(4);
        printf(" 3. Add Rooms \n\n");Sleep(250);pre(4);
        printf(" 4. Delete Rooms \n\n");Sleep(250);pre(4);
        printf(" 0. Reception ");Sleep(250);
        int adminchoise;
```

```
                    fflush(stdin);   scanf("%d",&adminchoise);
                    if(adminchoise==1){
                        cls();   middle1();  pre(4);     printf("Todays Total Cash : %0.2f
\n",totalmoney);
                        Sleep(2000);
                        goto adminchoise;
                    }
                    else if(adminchoise==2){

                        if(c!=0){
                            cls();  br(3); pre(4);
                            printf(" _____\n");pre(4);
                            printf("|   Card Number   |   Money    |\n");pre(4);
                            printf(" ****************************\n");pre(4);

                            for(int z=1; z<=c;z++){

                                printf("|         %d                    |    %0.2f
|\n",cardno[z],cardmoney[z]);pre(4);
                                printf("------------------------------\n");pre(4);
                                Sleep(150);
                            }
                            Sleep(1500);
                        }
                        if(c==0){
                            cls();  middle1(); pre(4);
```

```
        printf("No Card History\n");}
                                        Sleep(1500);
                                        goto adminchoise;
                                }

else if(adminchoise==3){
    //printf("\n\n\t\t\t\tUNDER CONSTRUCTION...\n");
    //Sleep(2000);
                                        foodadd:
                                        cls();
                                        char ffoodname[25];
                                        int fquantity;
                                        int fdata;
                                        float fprice;
                                        int fposi;
                                        br(3);pre(4);      printf(" Enter Room Type :  ");
                                        fflush(stdin);     scanf("%[^\n]s",ffoodname);
                                        fquantity:
                                        fflush(stdin);
                                        br(2);pre(4);  printf(" Enter Room Availability :  ");
                                        scanf("%d",&fquantity); fflush(stdin);
    foodserial:
                                        br(2);pre(4);  printf(" Enter Room Code :  ");
      scanf("%d",&fdata);
            node *exist;
            exist = list;
```

```
                while(exist->data!=fdata){
                    if(exist->next==NULL){
                        break;
                    }
                  exist=exist->next;
                }
                if(exist->data==fdata){
                 cls(); br(5);pre(3);  printf(" Room Code Already Exist, Please Re-Enter  "); Sleep(2000);
                 goto foodserial;
                }
               fprice:
               fflush(stdin);
                                        br(2);pre(4);  printf(" Enter Room price per night :  ");fflush(stdin);
                                        scanf("%f",&fprice);
                                        br(2);pre(4);          printf("Submitting      your      data");for(int
cs=0;cs<4;cs++){printf(" .");Sleep(500);}
                                        insertend(fdata,ffoodname,fquantity,fprice);
                                        br(2);pre(4);     printf("Adding Room Successful....\n");
                                        Sleep(2000);
                                        goto adminchoise;

                                    }
                                    else if(adminchoise==4){
                                       //printf("\n\n\t\t\t\tUNDER CONSTRUCTION...\n");
                                       //Sleep(2000);
                                            cls();
```

```
                middle1();pre(2);
                printf("Enter Room Code To Delete : ");
                fdelete:
                int fdelete;
                fflush(stdin); scanf("%d",&fdelete);
                node *temp;
                temp=list;
                while(temp->data != fdelete){
                        temp = temp->next;
                }
                if(temp->data==fdelete){
                        deleteitem(fdelete);
                }
                else{
                        br(2); pre(2); printf("Please Enter Correct Code :  ");
Sleep(500);
                        goto fdelete;
                }
                goto adminchoise;
        }

        else if(adminchoise==0){

                goto mainmenu;
        }
        else{
```

```
                                br(2); pre(4); printf("Please Select From List :  "); Sleep(500);
                                goto adminchoise;
                        }
                }
                else if(admin_panel_choice==1){
                        goto mainmenu;
                }
                else{
                        br(2); pre(4);  printf("Please Enter Correct Choice");
                        goto adminpanelchoice;
                }
        }
        else if(main_menu_choice==3){
                cls();
                middle1(); pre(3); printf("Thank You For your stay in our HOTEL, hope to see you AGAIN \n\n\n\n\n\n\t\t\t\tCreated by - SUKARN PAHUJA\n\t\t\t\tRegistration Number:18BML0048\n\n\n");
                Sleep(1000);
    exit(1);
        }
    }
    else{
        br(2); pre(4); printf("Please Enter Correct Choice"); Sleep(300);
        goto mainmenu;
    }
    int get_item_choice;
```

```
	br(2);	pre(3);fflush(stdin);	printf("ENTER	YOUR	ROOM	TYPE(enter	item	no.):	")	;
scanf("%d",&get_item_choice);
	if(get_item_choice==0){
		goto mainmenu;
	}
	node *temp;
	temp = list ;
	while(temp->data != get_item_choice){
		temp = temp->next;
		if(temp==NULL){
			br(2); pre(4);  echo("Please Choose From List "); br(2); Sleep(1000);
			goto itemslist;
		}
	}
	if(get_item_choice == temp->data){
		fcquantity:
		br(2); pre(4); printf("Enter Room Quantity : ");
		int fcquantity;
		fflush(stdin); scanf("%d",&fcquantity); cls();
		if(fcquantity==0){
			cls(); middle1();pre(3); printf("Quantity Can not be Zero "); Sleep(2000);
			cls();
			goto itemslist;
		}
		else if(fcquantity>temp->quantity){
			cls(); middle1();pre(3); printf("Sorry!, All the rooms are reserved!"); Sleep(2000);
```

```
                goto itemslist;
            }

            middle1();pre(4);  printf("Choice of ROOM : %s  ; its price per NIGHT is %0.2f \n\n",temp->itemname,temp->price*fcquantity);pre(4);
            printf("1. Confirm to BUY \n\n");pre(4);
            printf("2. Back To Room List  \n\t\t\t\t");
            confirm:
            int confirm;
            fflush(stdin); scanf("%d",&confirm);
            if(confirm == 1 ){
                br(2);pre(4);    printf(" 1. Cash ");
                br(2);pre(4);    printf(" 2. Credit/Debit Card\n\t\t\t\t");
                payment:
                int payment;
                fflush(stdin);  scanf("%d",&payment);
                if(payment==1){
                    totalmoney += temp->price*fcquantity;
                    order++;
                    total_order[order]=get_item_choice;
                    order_quantity[order]=fcquantity;
                    uquantity = temp->quantity - fcquantity;
                    updateitem(get_item_choice,uquantity);
                    cls();middle1();pre(4);  printf("*******THANK YOU*******");
                    br(2);pre(4);  printf("Room Booking  Successful!! ...");
                    br(2);pre(4);  printf("1. Wanna Book Another Room? ");
```

```
            br(2);pre(4);  printf("2. Back to Reception \n\t\t\t\t");
            psmenu:
            int ps_menu;
            fflush(stdin);  scanf("%d",&ps_menu);
            if(ps_menu==1){goto itemslist;}
            else if(ps_menu==2){goto mainmenu;}
            else{br(2);pre(4);printf("Please Choose from list : "); goto psmenu;}

}
///Credit Card Option
else if(payment==2){
            int card_number[100];
            c++;
            cls();middle1();pre(4); printf("Enter Your Card No : ");
            fflush(stdin);   scanf("%d",&card_number[c]);
            cardno[c] = card_number[c];
            int pin;
            br(2);pre(2);  printf("Enter Your Card Pin [we never save your pin]  : ");
            fflush(stdin);     scanf("%d",&pin);
            cardmoney[c] = temp->price*fcquantity;
            totalmoney += temp->price*fcquantity;
            order++;
            total_order[order]=get_item_choice;
            order_quantity[order]=fcquantity;
            uquantity = temp->quantity - fcquantity;
            updateitem(get_item_choice,uquantity);
```

```
                    br(2);pre(4);  printf("Payment Success...");
                    br(2);pre(4);    printf("1. Wanna Book Another Room? ");
                    br(2);pre(4);    printf("2. Reception ");
                    psmenu2:
                    int ps_menu2;
                    scanf("%d",&ps_menu2);
                    if(ps_menu2==1){goto itemslist;}
                    else if(ps_menu2==2){goto mainmenu;}
                    else{br(2);pre(4);printf("Please Choose from list : "); goto psmenu2;}
                }
                else{
                    br(2);pre(4);   printf("Please Choose from List : ");
                    goto payment;
                }
            }    ///END Confirm Y/y
            else if(confirm == 2){
                goto itemslist;
            }
            else{
                br(2);pre(4);    printf("Please Choose from List : ");
                goto confirm;
            }  ///end confirm;
        }  ///end get food choice if line

        else{
            br(2);pre(4);  echo("Please Choose From List "); br(2); Sleep(300);
```

```
                goto itemslist;
        }  ///end get food choice
}

void cls(){
        system("cls");
}

void echo(char print[]){
        printf("%s",print);
}

void br(int line){
        for(int i=0; i<line;i++){
                printf("\n");
        }
}

void pre(int tab){
        for(int i=0; i<tab;i++){
                printf("\t");
        }
}

void main_menu(){
        cls();
```

```
	br(5); pre(3); echo("===> 1. ROOMS LIST");
	br(2); pre(3); echo("===> 2. MANAGER PANEL");
	br(2); pre(3); echo("===> 3. EXIT");
	br(1);
}

void insertend(int data, char itemname[25], int quantity, float price){
	node *temp;
	temp=(node *)malloc(sizeof(node));
	temp->data = data;
	temp->price = price;
	temp-> quantity = quantity;
	strcpy(temp->itemname,itemname);
	temp->next = NULL;
	if(head==NULL){
		head = temp;
		list = head;
	}
	else{
		while(head->next != NULL){
			head = head->next;
		}
		head->next = temp;
	}
}
```

```
void insertfirst(int data, char itemname[25], int quantity, float price){
        node *temp;
        temp=(node *)malloc(sizeof(node));
        temp->data = data ;
        temp->price = price;
        strcpy(temp->itemname,itemname);
        temp-> quantity = quantity;
        temp->next = head;
        head = temp;
        list = head ;
}
void deleteitem(int serial){

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

        temp = list;



        if(temp->data != serial){

                while(temp->next->data != serial){
                        temp = temp->next;
                }

                if(temp->next->data == serial){
```

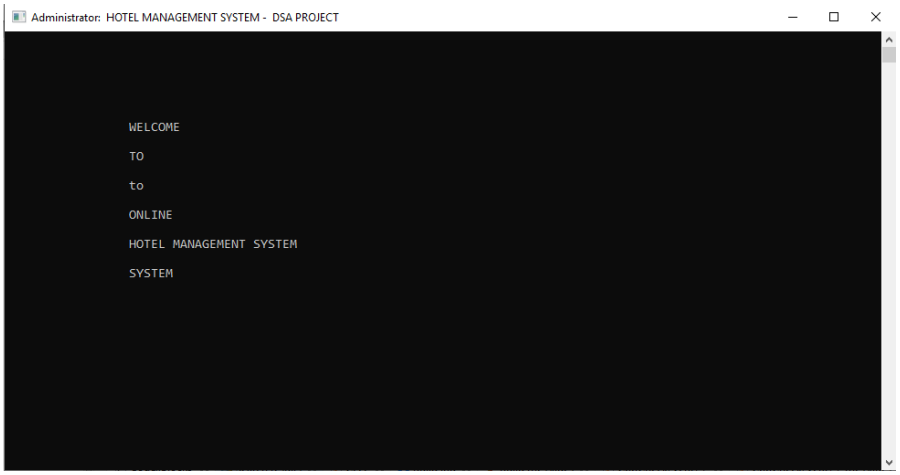
```
                temp->next = temp->next->next;
                cls();
                printf("\n\n\n\n\t\t\tDeleting Room %d ",serial);for(int cs=0;cs<4;cs++){printf("
.");Sleep(400);}

                printf("\n\n\n\n\t\t\tDeleted Successfully \n"); Sleep(500);

            }
            else{
                printf("\n\n\n\n\t\t\t Room Not Found\n"); Sleep(500);
            }

            head = temp ;

        }
        else{

            temp = temp->next;
            cls();
            printf("\n\n\n\n\t\t\tDeleting Room %d ",serial);for(int cs=0;cs<4;cs++){printf("
.");Sleep(400);}

            printf("\n\n\n\n\t\t\tDeleted Successfully \n"); Sleep(500);

            head = temp ;
```

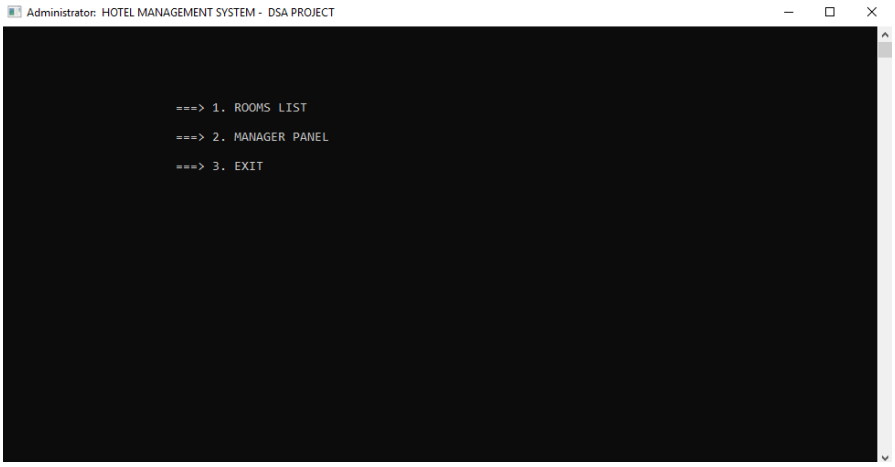
```
                list=head;
        }
}
void updateitem(int udata, int uquantity){
        node *temp;
        temp = list;
        while(temp->data!=udata){
                temp = temp->next;
        }
        if(temp->data == udata){
                temp->quantity = uquantity;
        }
}

void itemslist(){
        printf("\n\t\t");
        printf("_____________________________________________________________________");
        printf("\n\t\t");
        printf("|  Item No.  |  Room Type       |  Price    |   Availability   |");
        printf("\n\t\t");
        printf("-----------------------------------------------------------");
        node *temp;
        temp = list;
        while(temp != NULL){
                printf("\n\t\t");
```

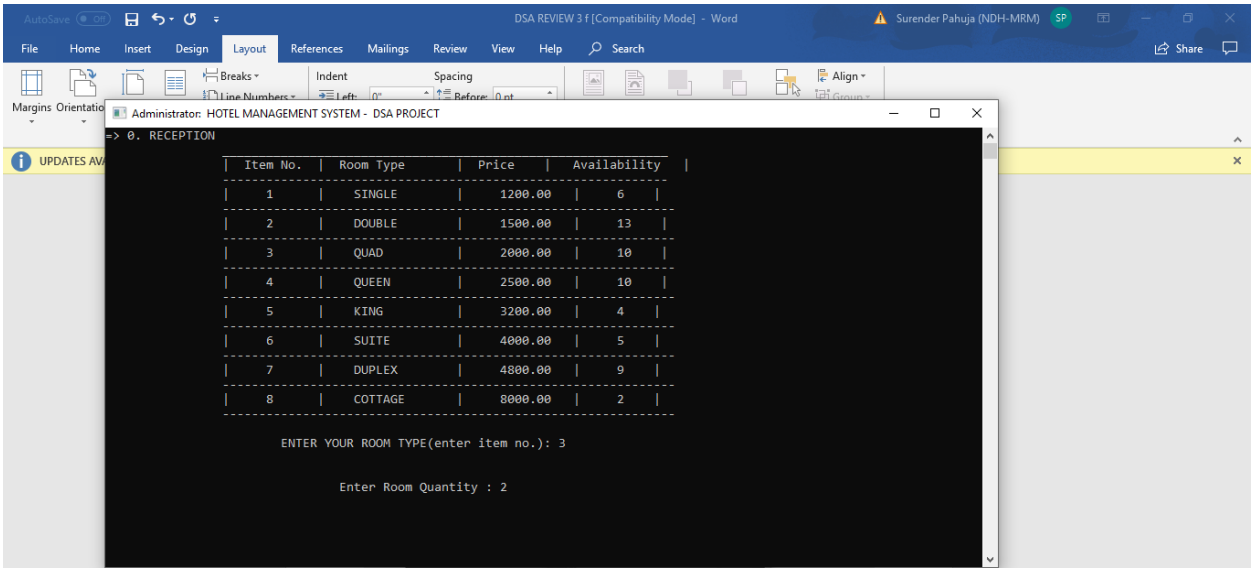
```
                printf("|    %d    |    %s    |    %0.2f    |    %d    |",temp->data,temp->itemname, temp->price, temp->quantity);
                printf("\n\t\t");
                printf("----------------------------------------------------------------");
                temp = temp->next ;
        }
        //  free(temp);
}

void welcome(){
        printf("\n\n\n\n\n\n\n");
        printf("\t\t WELCOME \n\n\t\t TO\n\n\t\t to \n\n\t\t ONLINE\n\n\t\t HOTEL MANAGEMENT SYSTEM \n\n\t\t SYSTEM\n");
        Sleep(1000);
}
void middle1(void){
        printf("\n\n\n\n\n\n\n\n");///screen ke bich me line aaega
}
void middtab1(void){
        printf("\t\t\t\t\t\t");///
}
```

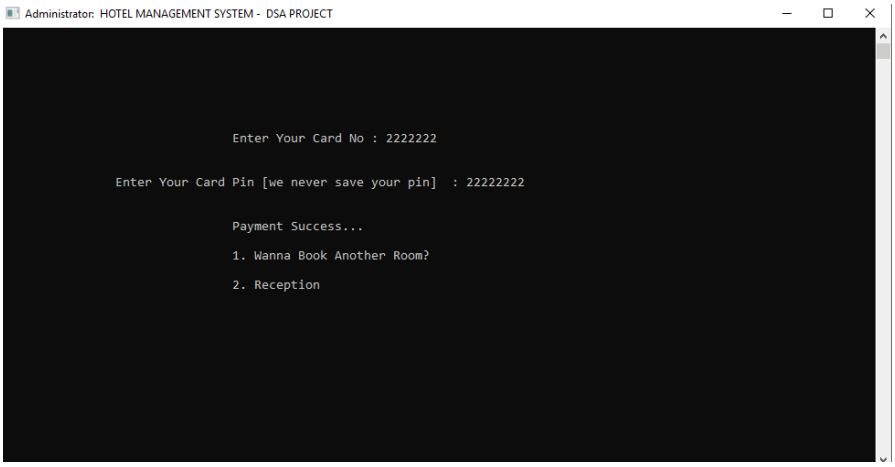
RESULTS

CUSTOMER PORTAL:

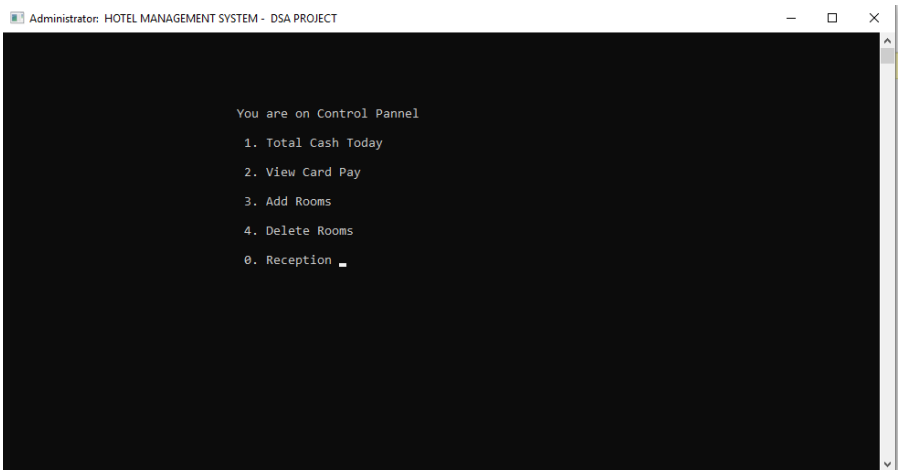


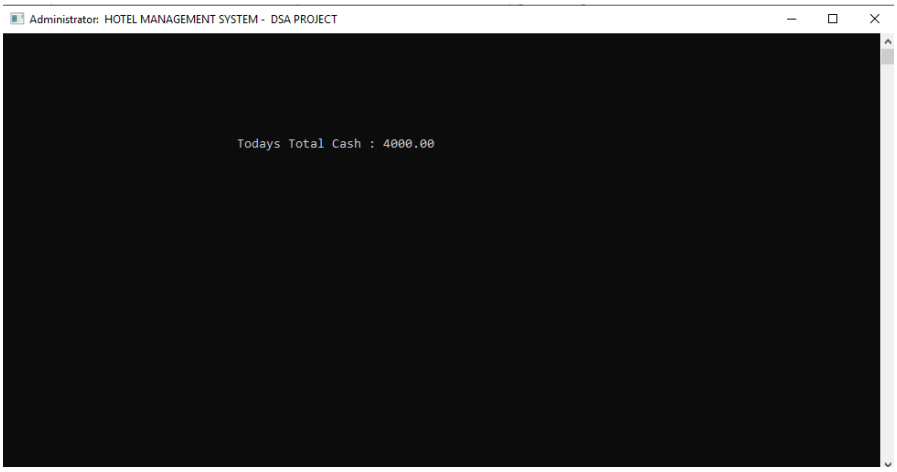


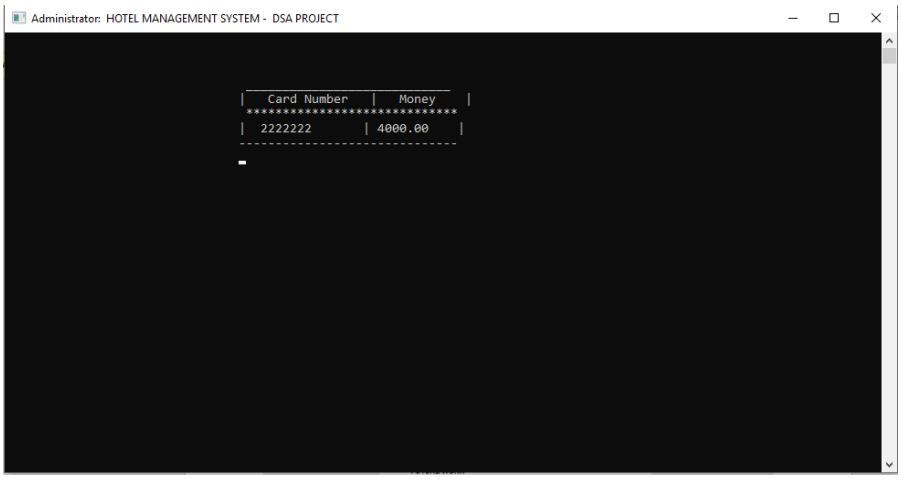


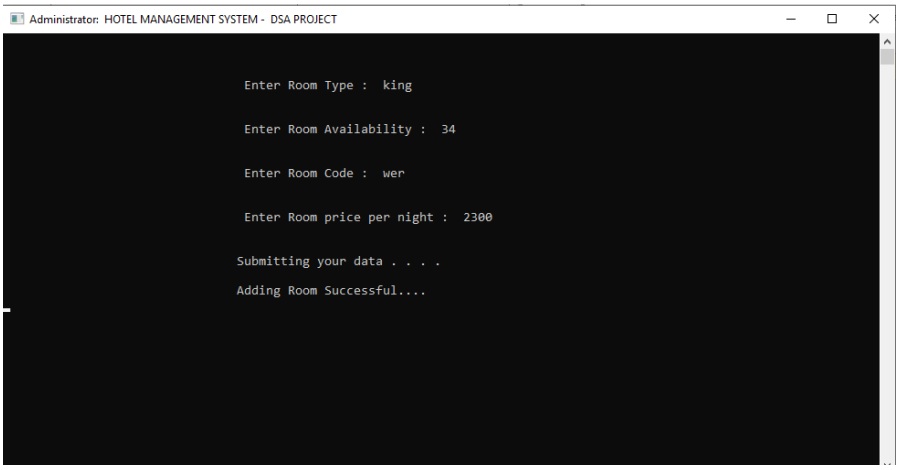


MANAGER PORTAL:

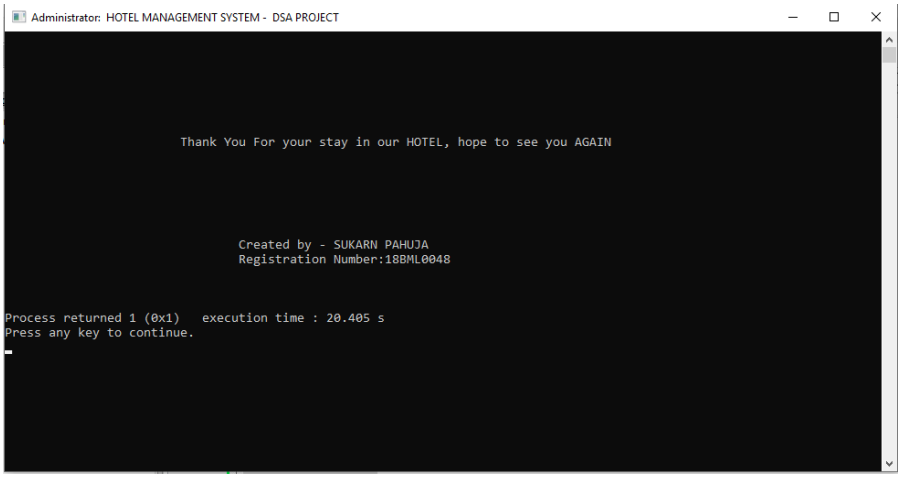

Administrator: HOTEL MANAGEMENT SYSTEM - DSA PROJECT
You are on Control Pannel
1. Total Cash Today
2. View Card Pay
3. Add Rooms
4. Delete Rooms
0. Reception


Administrator: HOTEL MANAGEMENT SYSTEM - DSA PROJECT
Todays Total Cash : 4000.00


Administrator: HOTEL MANAGEMENT SYSTEM - DSA PROJECT
| Card Number | Money |
| 2222222 | 4000.00 |



EXIT:



FUTURE WORK

This system can be implemented to any HOTEL in the locality or to multinational brandS having retail outlet chains. The system recommends a facility to accept the orders 24*7 and a home delivery system which can make customers happy. If HOTLELS are providing an online portal where their customers can enjoy easy booking from anywhere, the hotels won't be losing any more customers Since the application is available in the Smartphone it is easily accessible and always available.

CONCLUSION

Computer software or just software is a general term used to describe a collection of computer programs, procedures and documentation that perform some tasks on a computer system. Software and applications are designed to enhance of our life. The basic purpose of shifting from a manual system to a computerised software system is to decrease manual labour, increase accuracy and to implement better security. Keeping these in mind we have, worked towards developing software or a program which enhances the functioning of a Hotel by supplementing software help. Our program will provide clarity, user-friendliness and accuracy to the users of this program.

Hence, our aim was not just to make a program as a part of our learning process but to also create something for the benefit of society as a whole and to do our part as much as we can.

REFRENCES

1. www.wikipedia.org
2. www.google.com
3. www.tutorialspoint.com
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