OPEN ENDED PROJECT - 2022

4th semester -'c' division

TEAM DETAILS

1. Vaishnavi Shridhar Bhat ( roll.no- 354 )

2. Disha Kemble ( roll.no-359 )

**TITLE-- Railway reservation**

DESCRIPTION:-

If the reservation is full, prompt reservation full!! Put them in waiting list (queue) and give a waiting list number.

If a passenger wishes to cancel his ticket, he may cancel. Then the passenger in waiting list is booked automatically.

Display all the contents of reserved passengers.

**CODE**

#include<stdio.h>

#include<stdlib.h>

#include<malloc.h>

#include<string.h>

#define size 5

# define MAX\_SIZE 20

typedef struct NODE

{

int reg\_no;

int age;

char name[MAX\_SIZE];

struct NODE \*next;

} node;

node\* deq();

void create();

int reserve();

int cancel(int);

void enq(node\*);

void display();

node \*start;

node \*front;

node \*rear;

int count=0;

int num=0;

void create()

{

start=(node \*)malloc(sizeof(node));

start->reg\_no = 1;

printf("Name: ");

scanf("%s",start->name);

printf("Age : ");

scanf("%d", &start->age);

start->next=NULL;

num++;

}

int reserve()

{

if(start == NULL)

{

create();

return 1;

}

else

{

node \*temp, \*new\_node, \*prev;

new\_node=(node \*)malloc(sizeof(node));

printf("Name: ");

scanf("%s",new\_node->name);

printf("Age : ");

scanf("%d", &(new\_node->age));

new\_node->next=NULL;

temp=start;

int i=1;

if(temp->reg\_no == 0)

{

temp->reg\_no = 1;

strcpy(temp->name,new\_node->name);

temp->age = new\_node->age;

num++;

return 1;

}

while(temp->next != NULL)

{

if(temp->reg\_no != i++)

break;

prev = temp;

temp=temp->next;

}

if(num<size)

{

num++;

i++;

if(temp->reg\_no == (prev->reg\_no+1) || i == 2) // If all gaps were filled

{

new\_node->reg\_no = i;

temp->next = new\_node;

return i;

}

else // Filling the gaps

{

new\_node->next = temp;

prev->next = new\_node;

new\_node->reg\_no = (temp->reg\_no) - 1;

printf("reg = %d\n",new\_node->reg\_no);

return new\_node->reg\_no;

}

}

else

{

enq(new\_node);

return 0;

}

}

}

int cancel(int reg)

{

node \*ptr, \*preptr, \*new;

ptr=start;

preptr=NULL;

if(start==NULL)

return -1;

if(ptr->next==NULL && ptr->reg\_no==reg) // If only 1 person in reservation

{

start=NULL;

num--;

free(ptr);

return 1;

}

else

{ if(reg == 1)

{

ptr->reg\_no = 0;

new=deq(reg);

if(new != NULL)

{

ptr->reg\_no = 1;

strcpy(ptr->name,new->name);

ptr->age = new->age;

num++;

return 1;

}

}

else

{

while(ptr->reg\_no != reg && ptr->next!=NULL)

{

preptr=ptr;

ptr=ptr->next;

}

if(ptr->next == NULL && ptr->reg\_no != reg)

return -1;

else

preptr->next = ptr->next;

free(ptr);

new=deq(reg);

num--;

if(new != NULL)

{

node \*waiting = start;

while(waiting->reg\_no != (new->reg\_no - 1))

waiting = waiting->next;

new->next = waiting->next;

waiting->next = new;

num++;

}

return 1;

}

}

}

void enq(node \*new\_node)

{

if(rear==NULL)

{

rear=new\_node;

rear->next=NULL;

front=rear;

}

else

{

node \*temp;

temp=new\_node;

rear->next=temp;

temp->next=NULL;

rear=temp;

}

count++;

}

node\* deq(int reg)

{

node \*front1;

front1 = front;

if(front==NULL)

return NULL;

else

{

count-- ;

if(front->next != NULL)

{

front=front->next;

front1->next=NULL;

front1->reg\_no = reg;

return front1;

}

else

{

front=NULL;

rear=NULL;

front1->reg\_no = reg;

return front1;

}

}

}

void display()

{

node \*temp;

temp = start;

while(temp!=NULL)

{

if(temp->reg\_no != 0)

{

printf("\nRegistration Number: %d\n", temp->reg\_no);

printf("Name : %s\n", temp->name);

printf("Age : %d\n\n",temp->age);

}

temp=temp->next;

}

}

int main()

{

int choice, status=0,canc=0, reg=0;

start=NULL;

rear=NULL;

front=NULL;

printf("\t\t\t\*\*RAILWAY RESERVATION\*\*\t\t\t\t\n");

int ch =0;

while(ch!=4)

{

printf("\n\nDo you want to - \n 1. Reserve a ticket? \n 2. Cancel Booking \n 3. Display passenger details \n 4. exit\n\n");

scanf("%d", &choice);

switch(choice)

{

case 1 : status = reserve();

if(status==0)

printf("\nBooking Full!! \nYou are added to waiting list. Waiting list number %d", count);

else

printf("\nBooking Successful!!! Enjoy your journey! Your Reg No. is %d\n", status);

break;

case 2: printf("\nGive the Registration number to be cancelled : ");

scanf("%d", &reg);

if(reg>num)

printf("Registration number invalid !!");

else

{

canc=cancel(reg);

if(canc==-1)

printf("Registration number invalid !!");

else

printf("Registration cancelled successfully");

}

break;

case 3: display();

break;

case 4: exit(0);

break;

default: printf("\nWrong choice!\n");

}

}

}