**UE20CS207 - DATA STRUCTURES AND ITS APPLICATIONS LABORATORY**

**Due on 29 Sept 2021**

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**Garage Assignment:**

#include<stdio.h>

#include<stdlib.h>

#include<string.h>

typedef struct car

{

char lp[50];

char status;

int count;

}car;

typedef struct stack

{

car q[8];

int top;

}stack;

void init(stack \*ps);

int push\_arrive(stack \*ps, char \*lp, char s,int c);

int departure(stack \*ps, stack \*stktemp,char \*lp);

int pop(stack \*ps);

int main()

{

stack s,s2;

init(&s);

init(&s2);

char lp[50];

char st;

int wish;

do

{

int c=0;

printf("License Plate Number: ");

scanf("%s",lp);

fflush(stdin);

printf("Arrival/Departure(A/D): ");

scanf("%c",&st);

switch(st)

{

case 'A':

if(push\_arrive(&s,lp,st,c))

printf("Space is available. The car of number %s has entered the garage.\n",lp);

else

printf("Garage is Full.Sorry.\n");

break;

case 'D':

departure(&s,&s2,lp);

break;

default:

printf("Invalid choice \n");

break;

}

printf("-------------------------------------------------------------------------\n");

printf("Choose 1 to continue and 0 to exit: ");

scanf("%d",&wish);

}while(wish);

}

void init(stack \*ps)

{

ps->top=-1;

}

int push\_arrive(stack \*ps, char \*lp, char s,int c)

{

if(ps->top==7)

{

return 0;

}

car \*temp = (car\*)malloc(sizeof(car));

temp->count=c;

strcpy(temp->lp,lp);

temp->status=s;

ps->top++;

ps->q[ps->top]=\*temp;

return 1;

}

int departure(stack \*ps, stack \*stktemp,char \*lp)

{

if(ps->top==-1)

{

printf("No cars in the garage \n\r");

printf("Empty.\n");

}

else

{

int p = ps->top;

while(p!=-1)

{

if(strcmp(ps->q[p].lp,lp)==0)

{

break;

}

p--;

}

if(p==-1)

{

printf ("Sorry.License plate %s not found \n\r",ps->q[p].lp);

return 0;

}

if(p==ps->top)

{

pop(ps);

return 1;

}

for(ps->top; ps->top>p; (ps->top)--)

{

push\_arrive(stktemp,ps->q[ps->top].lp,ps->q[ps->top].status,ps->q[ps->top].count++);

}

pop(ps);

for(int i=(stktemp->top); i>-1; i--)

{

push\_arrive(ps,stktemp->q[i].lp,stktemp->q[i].status,++(stktemp->q[i].count));

}

init(stktemp);

return 0;

}

return 0;

}

int pop(stack \*ps)

{

printf("License plate : %s\n",ps->q[ps->top].lp);

printf("Number of times car number %s has moved out of garage: %d\n",ps->q[ps->top].lp,ps->q[ps->top].count);

(ps->top)--;

return 1;

}

**Output:**

**Text

Description automatically generated**