**Lab 2**

**1*.*** *Write a Menu Driven Program to Read List of Student names and perform the following operations using array of character pointers.*

***(A)*** *To insert a Student name*

***(B)*** *To delete a name*

***(C)*** *To print the names*

#include<stdio.h>

char \*A[10];

int top=-1;

void push(char \*x)

{

if(top==9)

{

printf("stack is full");

return;

}

top=top+1;

A[top]=x;

}

void display()

{

int i;

for(i=0;i<=top;i++)

puts(A[i]);

}

void pop()

{

if(top==-1)

{

printf("stack is empty");

return;

}

top--;

}

void main()

{

char ch,y[10][10];

int c,z=0;

while(1)

{

z++;

printf("press \n1)Insert\n2)Delete\n3)Display\n");

scanf("%d",&c);

switch(c)

{

case 1:printf("Enter the string\n");

fflush(stdin);

gets(y[z]);

push(y[z]);

break;

case 2:pop();

break;

case 3:display();

break;

default:printf("Wrong choice");

}

printf("\nDo you want to do more\n");

scanf(" %c",&ch);

if(ch=='y'||ch=='Y')

continue;

else

break;

}

}

**2.** *Write a function that returns the minimum and the maximum value in an array of integers. Inputs to the function are the array of integers, an integer variable containing the length of the array and pointers to integer variables that will contain the minimum and the maximum values. The function prototype is:*

***void minmax( int array[], int length, int \* min, int \* max);***

#include<stdio.h>

#include<malloc.h>

void minmax(int a[],int l,int \*min,int \*max)

{

int i;

for(i=0;i<l;i++)

{

if(a[i]<\*min)

\*min=a[i];

if(a[i]>\*max)

\*max=a[i];

}

}

void main()

{

int n,min,max=0,i;

scanf("%d",&n);

int \*a=(int \*)malloc(n\*sizeof(int));

for(i=0;i<n;i++)

scanf("%d",&a[i]);

min=a[0];

minmax(a,n,&min,&max);

printf("%d\n%d",min,max);

free(a);

getch();

}

**3*.*** *Create a structure to specify data on students given below:*

***Roll number, Name, Department, Year of joining***

*Assume that there are not more than 30 students in the collage. There are only 3 Departments each of max intake 4 students. Max student in one year can be 10.*

*(a) Write a function to input details of all students who joined in a particular year Department wise.*

*(b) Write a function to print names of all students who joined in a particular year.*

*(c) Write a function to print the data of a student whose roll number is given.*

#include<stdio.h>

#include<conio.h>

#include<string.h>

#include<malloc.h>

#include<stdlib.h>

int a=1,b=1,c=1,d=1,i=1;

typedef struct name

{

char nm[30];

int rno;

char dep[10];

int year;

struct name \*next;

}node;

node \*head=NULL,\*temp,\*temp1;

void insert\_nm()

{

int n=1;

temp=malloc(sizeof(node));

while(n)

{

if(head==NULL)

{

head=temp;

temp->next=NULL;

printf("Enter name\n");

fflush(stdin);

gets(temp->nm);

printf("Enter roll no.\n");

scanf("%d",&temp->rno);

printf("Enter Department\n");

fflush(stdin);

gets(temp->dep);

printf("Enter Year.\n");

scanf("%d",&temp->year);

printf("1-Continue 0-End\n");

scanf("%d",&n);

}

else

{

temp=head;

temp1=malloc(sizeof(node));

while(temp->next!=NULL)

temp=temp->next;

temp->next=temp1;

temp1->next=NULL;

printf("Enter name\n");

fflush(stdin);

gets(temp1->nm);

printf("Enter roll no.\n");

scanf("%d",&temp->rno);

printf("\nEnter Department\n");

fflush(stdin);

gets(temp->dep);

if(strcmp(temp->dep,"A")==0)

{

if(a<5)

{a++;

}

else

{

while(i)

{

printf("Department Full Enter again\n");

gets(temp->dep);

if(strcmp(temp->dep,"A")==0)

{}

else

i=0;

}

}

}

if(strcmp(temp->dep,"B")==0)

{

if(b<5)

{

b++;}

else

{

while(i)

{

printf("Department Full Enter again\n");

gets(temp->dep);

if(strcmp(temp->dep,"B")==0)

{}

else

i=0;

}

}

}

if(strcmp(temp->dep,"C")==0)

{

if(c<5)

{c++;}

else

{

while(i)

{

printf("Department Full Enter again\n");

gets(temp->dep);

if(strcmp(temp->dep,"C")==0)

{}

else

i=0; }

} }

if(strcmp(temp->dep,"D")==0)

{

if(d<5)

{d++;}

else

{

while(i)

{

printf("Department Full Enter again\n");

gets(temp->dep);

if(strcmp(temp->dep,"D")==0)

{}

else

i=0;

} } } }

printf("Enter Year.\n");

scanf("%d",&temp->year);

printf("1-Continue 0-End\n");

scanf("%d",&n);

}

}

int display\_yr()

{

temp=malloc(sizeof(node));

temp=head;

printf("Enter year\n");

int yer;

scanf("%d",&yer);

printf("\nStudents are :\n");

while(temp!=NULL)

{

if(temp->year==yer)

printf("%d %s %s %d\n",temp->rno,temp->nm,temp->dep,temp->year);

temp=temp->next;

}

return 0;

}

int display\_det()

{

int rrno;

printf("\nEnter student's Roll no.\n");

//fflush(stdin);

scanf("%d",&rrno);

temp=malloc(sizeof(node));

temp=head;

while(temp!=NULL)

{

if(temp->rno==rrno)

printf("Details of Roll no. %d are\n");

printf("%d %s %s %d\n",temp->rno,temp->nm,temp->dep,temp->year);

temp=temp->next;

}

return 0;

}

void main()

{

printf("1-Enter Student details");

printf("\n2-Display by Year");

printf("\n3-Display Detail\n");

insert\_nm();

display\_yr();

display\_det();

getch();

}

**4*.*** *Write a program that compares two given dates. To store date use structure say date that contains three members namely date, month and year. If the dates are equal then display message as "Equal" otherwise "Unequal".*

#include<stdio.h>

struct date{

int dt,mth,yr;

};

void main()

{

struct date d1,d2;

scanf("%d/%d/%d%d/%d/%d",&d1.dt,&d1.mth,&d1.yr,&d2.dt,&d2.mth,&d2.yr);

if(d1.dt==d2.dt&&d1.mth==d2.mth&&d1.yr==d2.yr)

printf("Equal");

else

printf("Unequal");

getch();

}

**5*.*** *An automobile company has serial number for engine parts starting from AA0 to FF9. The other characteristics of parts to be specified in a structure are: Year of manufacture, material and quantity manufactured.*

*(a) Specify a structure to store information corresponding to a part.*

*(b) Write a program to retrieve information on parts with serial numbers between BB1 and CC6.*

#include<stdio.h>

#include<malloc.h>

#include<string.h>

typedef struct node{

char mn[3],qlty[10];

int qnty,yr;

struct node \*next;

}node;

node \*head=NULL,\*temp,\*temp1;

int n=1;

void entry()

{

while(n)

{

if(head==NULL)

{

temp=malloc(sizeof(node));

head=temp;

printf("Enter Engine's serial no. :-\n");

gets(temp->mn);

printf("Enter year ,Quantity and Quality respectively :-\n");

scanf("%d%d",&temp->yr,&temp->qnty);

fflush(stdin);

gets(temp->qlty);

temp->next=NULL;

printf("Enter 1 for more and 0 to end :\n");

scanf("%d",&n);

}

else

{

temp=head;

while(temp->next!=NULL)

temp=temp->next;

temp1=malloc(sizeof(node));

fflush(stdin);

printf("Enter Engine's serial no. :-\n");

gets(temp1->mn);

printf("Enter year ,Quantity and Quality respectively :-\n");

scanf("%d%d",&temp1->yr,&temp1->qnty);

fflush(stdin);

gets(temp1->qlty);

temp1->next=NULL;

temp->next=temp1;

printf("Enter 1 for more and 0 to end :\n");

scanf("%d",&n);

}

}

}

void info()

{

temp=malloc(sizeof(node));

temp=head;

char a,b;

while(temp!=NULL)

{

a=temp->mn[0];

b=temp->mn[1];

if((temp->mn[0]=='C'||temp->mn[0]=='B')&&(temp->mn[1]='B'||temp->mn[1]=='C'))

{

printf("Model Name:");

puts(temp->mn);

printf("\n Year: %d\nQuality: %s\nQuantity: %d\n\n",temp->yr,temp->qlty,temp->qnty);

}

else{}

temp=temp->next;

}

}

void main()

{

entry();

info();

}