PUNE INSTITUTE OF COMPUTER TECHNOLOGY
PUNE - 411043
Department of Electronics & Telecommunication
ASSESMENT YEAR: 2020-2021   CLASS: SE V
SUBJECT: Data Structure and Algorithm
Assg No: 2 (a)   **Roll No:22119**   **Date:9th November, 2020**

Programmer Name: Param Chordiya

Batch: E5

Problem Statement:

Implement database management using array of structures (Use component database) With pointers to arrays 1. Create, 2. Display, 3. Modify, 4. Append, 5. Search 6. Sort.

INPUT CODE:

```c
#include<stdio.h>
#include<stdlib.h>


struct Bank
{

                int AC_NO;
                char* Cust_name;
                int balance;
                char gender;
                int IFSC;

};

struct Bank* CRecord()
{

                struct Bank* dB = (struct Bank*)malloc(sizeof(struct Bank));
                dB -> Cust_name = (char*)malloc(sizeof(char)*30);
                dB->AC_NO = -1;
                dB->Cust_name = "NULL";
                dB->balance = -1;
                dB->gender = '0';
                dB->IFSC = -1;

}

void swap(struct Bank** a,struct Bank** b)
{

                struct Bank temp = **a;
```

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```
                        **a= **b;
                        **b = temp;
}


void display(struct Bank* dB)
{
                        printf("Account Number is %d\n",dB->AC_NO);
                        printf("Customer name is %s\n",dB ->Cust_name);
                        printf("Balance is %d\n", dB-> balance);
                        printf("Gender of customer is %c\n",dB -> gender);
                        printf("IFSC number is %d\n",dB -> IFSC);
}


int search(struct Bank* array[],int AC_NO)
{

                        int i=0;
                        while(array[i]-> AC_NO != -1)
                        {
                           if(array[i] -> AC_NO == AC_NO)
                           {
                                   return i;
                           }
                           i++;
                        }
                        return -1;

}


void Insert(struct Bank* arr[],int size,int index,int AC_NO,char* Cust_name,int balance,char
gender,int IFSC)
{
                        int i;
                        for( i =size;i> index;i--)
                        {
                           arr[i] = arr[i-1];
                        }
```

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```
                            arr[index]->AC_NO = AC_NO;
                            arr[index]->Cust_name = Cust_name;
                            arr[index]->balance = balance;
                            arr[index]->gender = gender;
                            arr[index]->IFSC = IFSC;


}


void sort(struct Bank** array,int size)
{
 int i,j;

 for(i=0;i<size-1;i++){
  for(j=0;j<size-1-i;j++){

    if((array[j]->AC_NO)>(array[j+1]->AC_NO));
    swap(&array[j],&array[j+1]);


    }
   }
  }


void print_array(struct Bank* array[]){
int i=0;
 while(array[i]->AC_NO != -1){
  display(array[i]);
  i++;
  printf("\n");
 }
}
void add(struct Bank* arr[],int size,int index,int AC_NO,char* Cust_name,int balance,char
gender,int IFSC){
 int i;

 arr[index]->AC_NO = AC_NO;
```

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```
 arr[index]->Cust_name = Cust_name;
 arr[index]->balance = balance;
 arr[index]->gender = gender;
 arr[index]->IFSC = IFSC;

}

void delete(struct Bank* arr[],int size,int num){
int i,index;
index = search(arr,num);
for(i=index;i<size-1;i++){
 arr[i]= arr[i+1];
}
arr[i+1] =CRecord();
}

void main(){
                          printf("\n*******************************\nROLL
NO:22119\n*******************************\n");
int d,Account_Number,balance,IFSC,Search,del,flag,new_ac,de,index,new_index; char gender;
 int record =3;
 char* Customer_name = (char*)malloc(sizeof(char)*30);
 struct Bank* array[20];
 int i;
for(i=0;i<20;i++){
 array[i] = CRecord();

}
add(array,20,0,12504,"Atharv",788280,'M',1234056);
add(array,20,1,12503,"Advait",4579,'M',1466);
add(array,20,2,12502,"Rahul",66000,'M',1466);

printf("Welcome to SBI\n1.Add Record\n2.Display database\n3.Search an account\n4.Modify
account details\n5.Insert a Record\n6.Sort and display database\n7.delete\n0.exit\n");

scanf("%d",&d);
```

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```c
if(d==1){  // for addition of data into database
  printf("Enter Account Number\n");
  scanf("%d",&Account_Number);
  printf("Enter Customer Name\n");
  scanf("%s",Customer_name);
  printf("Enter Gender\n");
  scanf(" %c",&gender);
  printf("Enter Balance\n");
  scanf("%d",&balance);
  printf("Enter IFSC\n");
  scanf("%d",&IFSC);
  add(array,20,record,Account_Number,Customer_name,balance,gender,IFSC);
  display(array[record]);record++;

  }
else if(d==2){ // read array;
print_array(array);
        }

else if(d==3){ // search
printf("Enter the Account Number you want to search\n");
scanf("%d",&Search);
flag = search(array,Search);
if(flag>=0){
  printf("Account is Successfully identified and exists at %dth index and details are\n",flag);
  display(array[flag]);
}
else{printf("Account does not exist\n");}
}


else if(d==4){ // modify
  printf("Enter the Account Number linked with your A/C\n");
  scanf("%d",&new_ac);
 index = search(array,new_ac);

  if(index>=0){
```
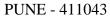
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```
   while(de!=0){
   printf("In order to modify press\n1.Customer_name\n2.balance\n3.IFSC\n0.exit\n\n");
   scanf("%d",&de);
   if(de==1){
     printf("Enter changed Name\n");
     scanf("%s",Customer_name);
     array[index] -> Cust_name = Customer_name;

   }
   else if(de==2){
     printf("Enter changed Balance\n");
     scanf("%d",&balance);
     array[index] -> balance = balance;

   }
   else if(de==3){
     printf("Enter changed IFSC code\n");
     scanf("%d",&IFSC);
     array[index] -> IFSC = IFSC;

   }

   else if(de!=0){printf("wrong choice\n");}
  }
  display(array[index]);
}
}

else if(d==5){//insert
  printf("Enter the index at which you want to insert new record\n");
  scanf("%d",&new_index);
  printf("Enter Account Number\n");
  scanf("%d",&Account_Number);
  printf("Enter Customer Name\n");
  scanf("%s",Customer_name);
  printf("Enter Gender\n");
  scanf(" %c",&gender);
```

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```
 printf("Enter Balance\n");
 scanf("%d",&balance);
 printf("Enter IFSC\n");
 scanf("%d",&IFSC);
 Insert(array,20,new_index,Account_Number,Customer_name,balance,gender,IFSC);
 display(array[new_index]);
}

else if(d==6){ //  sorting
sort(array,record);
print_array(array);

}

else if(d==7){
 printf("Enter the position of record u want to delete\n");
 scanf("%d",&del);
 delete(array,record,del);
 print_array(array);
}
}
```

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OUTPUT:

```
*****************************
ROLL NO:22119
*****************************
Welcome to SBI
1.Add Record
2.Display database
3.Search an account
4.Modify account details
5.Insert a Record
6.Sort and display database
7.delete
0.exit
1
Enter Account Number
7856954
Enter Customer Name
Param
Enter Gender
Male
Enter Balance
Enter IFSC
Account Number is 7856954
Customer name is Param
Balance is 0
Gender of customer is M
IFSC number is 4206409

-------------------------------
Process exited after 17.1 seconds with return value 23
Press any key to continue . . .
```

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```
******************************
ROLL NO:22119
******************************

Welcome to SBI
1.Add Record
2.Display database
3.Search an account
4.Modify account details
5.Insert a Record
6.Sort and display database
7.delete
0.exit
2
Account Number is 12504
Customer name is Atharv
Balance is 788280
Gender of customer is M
IFSC number is 1234056

Account Number is 12503
Customer name is Advait
Balance is 4579
Gender of customer is M
IFSC number is 1466

Account Number is 12502
Customer name is Rahul
Balance is 66000
Gender of customer is M
IFSC number is 1466


--------------------------------
Process exited after 3.065 seconds with return value 4294967295
Press any key to continue . . .
```

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```
*******************************
ROLL NO:22119
*******************************
Welcome to SBI
1.Add Record
2.Display database
3.Search an account
4.Modify account details
5.Insert a Record
6.Sort and display database
7.delete
0.exit
3
Enter the Account Number you want to search
12503
Account is Successfully identified and exists at 1th index and details are
Account Number is 12503
Customer name is Advait
Balance is 4579
Gender of customer is M
IFSC number is 1466


-------------------------------
Process exited after 3.668 seconds with return value 20
Press any key to continue . . .
```

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```
Welcome to SBI
1.Add Record
2.Display database
3.Search an account
4.Modify account details
5.Insert a Record
6.Sort and display database
7.delete
0.exit
4
Enter the Account Number linked with your A/C
12503
In order to modify press
1.Customer_name
2.balance
3.IFSC
0.exit

1
Enter changed Name
Param
In order to modify press
1.Customer_name
2.balance
3.IFSC
0.exit

2
Enter changed Balance
530000
In order to modify press
1.Customer_name
2.balance
3.IFSC
0.exit
```

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```
3
Enter changed IFSC code
5699325
In order to modify press
1.Customer_name
2.balance
3.IFSC
0.exit

0
Account Number is 12503
Customer name is Param
Balance is 530000
Gender of customer is M
IFSC number is 5699325

--------------------------------
Process exited after 21.19 seconds with return value 23
Press any key to continue . . .
```

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```
******************************
ROLL NO:22119
******************************

Welcome to SBI
1.Add Record
2.Display database
3.Search an account
4.Modify account details
5.Insert a Record
6.Sort and display database
7.delete
0.exit
5
Enter the index at which you want to insert new record
1
Enter Account Number
12504
Enter Customer Name
Atharv
Enter Gender
M
Enter Balance
788280
Enter IFSC
1234056
Account Number is 12504
Customer name is Atharv
Balance is 788280
Gender of customer is M
IFSC number is 1234056


------------------------------
Process exited after 25.72 seconds with return value 23
Press any key to continue . . .
```

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```
*****************************
ROLL NO:22119
*****************************
Welcome to SBI
1.Add Record
2.Display database
3.Search an account
4.Modify account details
5.Insert a Record
6.Sort and display database
7.delete
0.exit
6
Account Number is 12502
Customer name is Rahul
Balance is 66000
Gender of customer is M
IFSC number is 1466

Account Number is 12503
Customer name is Advait
Balance is 4579
Gender of customer is M
IFSC number is 1466

Account Number is 12504
Customer name is Atharv
Balance is 788280
Gender of customer is M
IFSC number is 1234056


--------------------------------
Process exited after 1.639 seconds with return value 4294967295
Press any key to continue . . .
```

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```
*******************************
ROLL NO:22119
*******************************
Welcome to SBI
1.Add Record
2.Display database
3.Search an account
4.Modify account details
5.Insert a Record
6.Sort and display database
7.delete
0.exit
7
Enter the position of record u want to delete
1
Account Number is 12503
Customer name is Advait
Balance is 4579
Gender of customer is M
IFSC number is 1466

Account Number is 12502
Customer name is Rahul
Balance is 66000
Gender of customer is M
IFSC number is 1466

Account Number is 12502
Customer name is Rahul
Balance is 66000
Gender of customer is M
IFSC number is 1466


--------------------------------
Process exited after 3.678 seconds with return value 4294967295
Press any key to continue . . .
```

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