Lab 5 - Structures

Lab session – The first hour is scheduled for lab session. There is only 1 question in this lab session to implement the phone management system.

Note: You do not need to submit your code for this lab.

Phonebook Management System

Write a C program that implements the phoebook management system with the following three functions:

1. The function readin() reads a number of persons' names and their corresponding telephone numbers, passes the data to the caller via the parameter p, and returns the number of names that have entered. The character '#' is used to indicate the end of user input.
2. The function printPB() prints the phonebook information on the display. It will print the message "Empty phonebook" if the phonebook list is empty.
3. The function search() finds the telephone number of an input name *target*, and then prints the name and telephone number on the screen. If the input name cannot be found, then it will print an appropriate error message. The prototypes of the two functions are given below:

The prototypes of the three functions are given below:

```
void printPB(PhoneBk *pb, int size);
int readin(PhoneBk *pb);
void search(PhoneBk *pb, int size, char *target);
```

The structure definition for PhoneBk is given below:

```
typedef struct {
  char name[20];     // a string
  int telno;         // an integer with 5 digits
} PhoneBk;
```

A sample program template is given below to test the functions:

```
#include <stdio.h>
#include <string.h>
#define MAX 100
typedef struct {
  char name[20];
  int telno;
} PhoneBk;
void printPB(PhoneBk *pb, int size);
int readin(PhoneBk *pb);
void search(PhoneBk *pb, int size, char *target);
```

```c
int main()
{
  PhoneBk s[MAX];
  char t[20], *p;
  int size=0, choice;
  char dummychar;

  printf("Select one of the following options: \n");
  printf("1: readin()\n");
  printf("2: search()\n");
  printf("3: printPB()\n");
  printf("4: exit()\n");
  do {
    printf("Enter your choice: \n");
    scanf("%d", &choice);
    switch (choice) {
      case 1:
        scanf("%c", &dummychar);
        size = readin(s);
        break;
      case 2:
        scanf("%c", &dummychar);
        printf("Enter search name: \n");
        fgets(t, 20, stdin);
        if (p=strchr(t,'\n')) *p = '\0';
        search(s,size,t);
        break;
      case 3:
        printPB(s, size);
        break;
    }
  } while (choice < 4);
  return 0;
}
void printPB(PhoneBk *pb, int size)
{
   /* Write your code here */
}
int readin(PhoneBk *pb)
{
   /* Write your code here */
}
void search(PhoneBk *pb, int size, char *target)
{
   /* Write your code here */
}
```

Some test input and output sessions are given below:

(1) Test Case 1:

```
Select one of the following options:
1: readin()
2: search()
3: printPB()
4: exit()
Enter your choice:
1
Enter name:
Hui Siu Cheung
Enter tel:
12345
Enter name:
Philip Fu
Enter tel:
23456
Enter name:
Chen Jing
Enter tel:
34567
Enter name:
#
Enter your choice:
3
The phonebook list:
Name: Hui Siu Cheung
Telno: 12345
Name: Philip Fu
Telno: 23456
Name: Chen Jing
Telno: 34567
Enter your choice:
4
```

(2) Test Case 2:

```
<continue from Test Case 1>
Enter your choice:
2
Enter search name:
Philip Fu
Name = Philip Fu, Tel = 23456
Enter your choice:
4
```

(3) Test Case 3:

```
<continue from Test Case 1>
```

Enter your choice:
2
Enter search name:
Tommy Fu
Name not found!
Enter your choice:
4

(4) Test Case 4:
Select one of the following options:
1: readin()
2: search()
3: printPB()
4: exit()
Enter your choice:
1
Enter name:
#
Enter your choice:
3
The phonebook list:
Empty phonebook
Enter your choice:
4