

## <Advanced C Programming and Lab> Project

### Contact Management Program: 2nd Stage

Implement a contact management program. In 2nd stage, the program performs the same functions but uses differing structures (structure pointer arrays). Details are available below.

#### © Contact information

Name, phone number, and birth date are stored (same as 1st stage). Here, we take a different approach to store and maintain the information. Use structure pointer arrays to store multiple people's information. Use the following code:

<1st stage>

```
struct STRUCTURENAME {
    char NAME[21];
    char PHONENUMBER[16];
    char BIRTHDATE[9];
};
struct STRUCTURENAME STRUCTUREVARNAME [100];
```

< 2nd stage>

```
struct STRUCTURENAME {
    char *NAME;
    char *PHONENUMBER;
    char *BIRTHDATE;
};
struct STRUCTURENAME **STRUCTUREVARNAME ;
```

As starting the program, receive how many people's information the program will receive and allocate memory space for structure pointer variables using dynamic memory allocation. For structure members, allocate the minimal amount of memory space to store name, phone number, and birthdate (maximum 100 bytes except null character). Use the code below (refer Ch 12. practice 3 and 4).

```
printf("Max_num:"); // Do not change
scanf("%d", &max_num);

//max_num is to allocate memory space for structure pointer arrays
//As receiving new information, allocate space for structure variable(s)
//For structure members, need one extra space
//In "delete", free structure members and structure variables
```

**As receiving new information, allocate memory space for structures and structure members. Must free the allocated space when deleting the information.**

© Functions

Perform the same functions (as 1st stage) using structure pointer arrays.

© User Interface

Same as 1st stage. **Note, need to receive the maximum number of contact information to store and maintain first. (Use the code below)**

```
printf("Max_num:");
...
```

## Input Format

Use standard input (stdin). For the starting menu options, receive a number (1, 2, 3, 4, 5). Receive one string for a name, phone number, and birth date. Assume that all inputs are correct.

## Output Format

Use standard output(stdout). Use the code above to display the starting menu options and contact information. (Do not display any additional numbers/characters/spaces/etc, can be considered as wrong answers)

© Test Dataset : Include the following 2 examples

### Input and output example 1

Underlined parts are inputs.

```
Max_num:3
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:1
Name:Hong
Phone_number:01111112222
Birth:20000101
<<1>>
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:1
Name:KimEunJoo
Phone_number:222111333
Birth:19960303
<<2>>
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:1
Name:HanGeul
Phone_number:010222333
Birth:19980101
<<3>>
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:1
OVERFLOW
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:5
```

### Input and output example 2

Underlined parts are inputs.

```
Max_num:5
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:1
Name:KimEunJoo
Phone_number:0001112222
Birth:2001010
<<1>>
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:1
Name:Park
Phone_number:+820010101013211221321321
Birth:19900101
<<2>>
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:1
Name:LeeEunJoo_MS
Phone_number:3401222
Birth:19950101
<<3>>
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:2
KimEunJoo 0001112222 2001010
LeeEunJoo_MS 3401222 19950101
Park +820010101013211221321321 19900101
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:3
Name:LeeEunJoo_MS
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:2
KimEunJoo 0001112222 2001010
Park +820010101013211221321321 19900101
*****Menu*****
<1.Registration><2.ShowAll><3.Delete><4.FindByBirth><5.Exit>
Enter_the_menu_number:5
```