Dynamic memory allocation

- Write a program to load a specific portion of the address book data from the file (for example, “3rd data to 6th data” or “2nd data to 3rd data”), modify something on the data, and finally save the data to the file again.
- But, you must allocate necessary minimum memory (the necessary size for “3rd data to 6th data” is four, while two for “1st data to 2nd data”) to save the data by the malloc( ) function.

Solution

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

enum {SUCCESS, FAIL, MAX_ELEMENT = 20};

// the phone book structure
typedef struct phoneaddress {
        char name[20];
        char tel[11];
        char email[25];
}phoneaddress;

int main(void)
{
    FILE *fp;
    phoneaddress *phonearr;


    int i,n, irc; // return code
    int reval = SUCCESS;
    printf("Read from 2sd data to 3rd data \n");
```

Solution

```
if ((fp = fopen("phonebook.dat","r+b")) == NULL){
    printf("Can not open %s.\n", "phonebook.dat");
    reval = FAIL;
}

 // Memory allocation
phonearr =
(phoneaddress *)malloc(2 * sizeof(phoneaddress));
if (phonearr == NULL)
{
     printf("Memory allocation failed!\n");
     return FAIL;
}

if (fseek(fp,1*sizeof(phoneaddress),SEEK_SET) != 0)
{
     printf("Fseek failed!\n");
     return FAIL;
}
irc = fread(phonearr, sizeof(phoneaddress), 2, fp);
```

Solution

```
    for (i=0; i<2; i++){
      printf("%s-",phonearr[i].name);
      printf("%s-",phonearr[i].tel);
      printf("%s\n",phonearr[i].email);
    }

    // Modifying some data
    strcpy(phonearr[1].name,"Lan Hoa");
    strcpy(phonearr[1].tel,"0923456");
    strcpy(phonearr[1].email,"lovelybuffalo@hut.edu.vn");


    fseek(fp,1*sizeof(phoneaddress),SEEK_SET);
    irc = fwrite(phonearr, sizeof(phoneaddress), 2, fp);
    printf(" fwrite return code = %d\n", irc);
    fclose(fp); free(phonearr);

    return reval;
}
```