**XXX Experiment Report**

班级：计科201 实验日期：10.24

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1. **Experimental purpose**

1、Use the basic operations to implement the specific operations for the linear table;

2、Master the application of file operations;

3、Improve the understanding of the data structure of linked storage structure, and gradually cultivate the programming ability to solve practical problems.

1. **Experimental environment**

A computer with Visual C ++ 6.0 / CFree.

1. **Experimental content**

Design a classmate's address list, requested as follows:

* Each student in the address list contains the following information: student id、name、telephone number. If you need more fields, please add them yourself.
* The program has a main menu containing the following functions:

1. Add a record: Add a student record from the input.
2. Delete a record: Delete a student record according to the student id from the input.
3. Output all records: Display all the records in the address list.
4. Search by name: Input the student name and then output the whole information of the student.
5. Save records: Save all the records in the address list to a certain file.
6. Clear records: Delete all the records in the address list and then delete the file.
7. Quit

**hint：**

* When the program starts, it should be determined whether there is a record file. If the file exists, read each record from it to the list.
* After the user selects and completes a function of the main menu, the program should return to the main menu.
* When a record is added, it should be inserted into the tail of the list.
* If a record does not exist when performing delete or and search operation, the program should output some information to the user.
* You do not need to write files when adding records or deleting records.
* When you want to save a record you’d better overwrite the file. (Or delete the original file first, and then save all the records)
* Each module is written in the form of a function, called by the main function.

**optional：**

* Add a sorting function in the main menu, the sorting result should be in an ascending order according to the student number. Sorting methods can be done by bubble sort or insert sort.

1. **Important data structures**

typedef struct Node \*PtrToNode;

typedef PtrToNode Position;

typedef PtrToNode List;

struct Node

{

string Id;

string Name;

string Tel;

Position Next;

};

void Add(List L,const string Id,const string Name,const string Tel)

{

Position TmpCell, P; //定义临时指针;

TmpCell = (PtrToNode)malloc(sizeof(Node)); //Creat a storage for TmpCell;

TmpCell->Id = Id;

TmpCell->Name = Name;

TmpCell->Tel = Tel;

TmpCell->Next = NULL;

P = L->Next;

if (P) //判断第一个结点是否存在;

{

while (P->Next)

P = P->Next;

P->Next = TmpCell;

}

else

L->Next = TmpCell;

}

1. **Implementation analysis**

使用链式存储每个结点的学号，姓名和电话号码，按照添加记录，删除记录，输出记录，查找记录，保存记录，情况记录等要求写出对应的函数，再在主函数中使用switch函数达到目的。

1. **Debugging problem analysis**

**使用线性表来编写学生信息管理系统，录入的学生信息无法按照学号来依次排序，同时也是运行界面太过繁杂，**

**解决：编写排序和用文件输入与输出的函数，同时添加一些辅助函数**

1. **Summary**

通过本实验，掌握线性表链式存储结构的基本原理和基本运算以及在实际问题中的应用。

1. **Crew Division**

|  |  |  |
| --- | --- | --- |
| **Group division** | | |
| **Member name** | **Work done** | **Completion situation** |
| **郑永坤** | **结点定义以及查找和删除函数** | **完成** |
| **翟聪** | **部分的功能函数** | **完成** |
| **张子晗** | **部分功能函数和主函数** | **完成** |