Lab 2: Office Directory

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1. Overview

Design a user interface for an office directory.

The user will input a name (either the first name or the last name). Your program are expected to output the corresponding full-names and office room numbers, based on the information stored in the directory.

For example, assume that Prof. Jiang's office is Room 520. When a user inputs "Jiang" or "Xiaohong", your program should print "Jiang Xiaohong 520".

2. Your Task

After your program begins, it should run following these steps:

- Prompt the user to type a name. Print the string "Type a name and press Enter: " on the computer screen. Then wait for the user to input a string and press the <**Enter**> key.
- Search for the full-names and room numbers in the directory. For each faculty whose first name or last name is as same as the input one, print his or her full name and room number in one row. If

there is no such faculty, print "No Entry".
- Halt.

3. The Directory

The Directory is a linked-list. Each node in a linked-list contains a pointer, which points to the next node, except the last node. The pointer of the last node points to NULL (x0000).

Each nodes in the directory consists of four elements in the following order, from smaller address to larger address:

- The pointer for the next node or NULL.
- A pointer to an ASCII string representing the room number.
- A pointer to an ASCII string representing the first name.
- A pointer to an ASCII string representing the last name.

Recall that a string consists of ASCII code stored in consecutive memory locations, with one character per location. The end of a string is signified by a NULL character (x0000).

The content of the directory will be provided. Your program should only search the directory, but NOT modify it.

4. Requirements && Notes

- Write your program in LC-3 assembly language.
- Your program must start at location x3000.
- The ***address*** of the first node of the directory has been stored in 'x4000' already. All the nodes are stored between 'x4001' and 'xEFFF'. But make no other assumptions about the locations and the number of nodes.
- The ASCII code of <**Enter**> key may be ***different*** on the different operation system.
- The directory doesn't contain two nodes with the same full-name.
- For the input name, the first character is upper-case. And the rest characters are lower-case.
- The input is typed without using <**Backspace**> and <**Delete**>. The length of the input is between 1 and 15 characters.

5. I/O sample

```
Type a name and press Enter: Jiang
Jiang Xiaohong 520

----- Halting the processor -----
Type a name and press Enter: Xiaohong
Jiang Xiaohong 520

----- Halting the processor -----
Type a name and press Enter: Shi
Shi Qingsong 512
Cai Shi 301

----- Halting the processor -----
Type a name and press Enter: Manqing
No Entry

----- Halting the processor -----
```

Notice: The output first name, last name and room number should be separated by space. And different pairs of full-name and room number should be printed in the different lines.

6. Grading Policy

- Check = 60%, due July 13th
- Lab Report = 40%, submit to the course website. The requirement for report is not changed.
- The algorithm you choose and the length of your program will ***not*** affect your score.