Lab Exercise
CPE 357
Systems Programming

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LAB 1

Exercise:

The text is written in a way to bypass ChatGPT. If anything is unclear, it will be discussed in the lecture.

Write a program. It should read words from the keyboard. If you type “print” it should print all words. However, each word needs to be stored in a linked list depending on their first letter. That means every letter of the alphabet has its own linked list. These list heads are connected as list elements, making a linked list of alphabetic letters. And, as already mentioned, each of these letter-list-elements contain a linked list of the words.
You must use double linked list elements for all lists.
With “print” you print out the words as they are alphabetically. It doesn’t matter if the linked list of each letter is not sorted. I.e. Anna, Alpha is acceptable in this order.
The program ends after printing, but it must delete every single list element (50%) of all points.

Howto:

```
//Use this structure for each word:
struct
{ listelement
*next,*prev;
char text[1000];
};
```

You can also use “class” instead of “struct” and “string” and do it OOP in C++, but that’s up to you.
For reading, you can use scanf or cin;

Submission:

On Canvas.

Any style must do’s?

Use function or not, (I would strongly recommend that!) that’s up to you, but we will check if you did use a double linked list and if you linked it forth and back! You have any ideas to make it nicer (additional text, whatever): Feel free to do so, but don’t deviate from the core idea. Other than that, please only one file! This will not be graded by an automatic submission system, but by hand. Use your creativity. Don’t cheat, we will run MOSS tests.

Hints:

A function which returns the last element of the list would be a great idea!
Then, if you push back a new item, generate this new item and link it to the last element, and the last element to it. Don't forget to set loose ends to "NULL".

Result example:

Hello, Leather, Python, Anna, Laptop, Law, Alpha, print

Anna
Alpha
Hello
Leather
Laptop
Law
Python