Coding Assignment 6

Coding Assignment 6 starts with your Coding Assignment 3. Please copy Coding Assignment 3 (CA3) to Coding Assignment 6 (CA3) to start with this assignment. CA3 prompted the user for draw commands and executed those commands and a map of a size the user chose. CA6 will prompt the user for any 3 letters and will draw those 3 letters using the commands read in from a file. The draw commands in the file will be stored in a linked list and each requested letter will be drawn by finding all of the commands associated with each letter that are stored in the linked list.

Step 1 – Alter your makefile.

For this assignment, you will be creating a `ListLib.h` and a `ListLib.c`. This library will contain the function you create to insert nodes into the linked list and the function to search the linked list for a given letter.

Part 2 – File Processing

CA6 will need to open a file and read it. Each record will be tokenized and added to the linked list. The format of each line will be. The filename will be passed into the program as a command line argument. Do not hardcode a file name in your program – you do not know the filename that will be used to test your code. If you are using the variable parameters from the Bonus in Coding Assignment 5, then use DCFILE=

```
Code6_xxxxxxxxxx.e DCFILE=myfileofdrawcommands.txt
```

If you are not using the variable parameters, then you will run your program with

```
Code6_xxxxxxxxxx.e myfileofdrawcommands.txt
```

Be sure to specify how your program runs when you submit it so that the GTA's know how to run it.

```
Letter|Draw Command
```

For example

```
D|V(0,0,10)&
D|H(0,1,2)(
D|H(9,1,2)@
D|V(1,3,8)!
```

Part 3 – Linked List

Each record from the file will contain a letter and its draw command. Each letter will have 1 or more draw commands. Each letter and draw command should be stored as data in the linked list. Create the linked list node such that it can hold this data.

Step 4 – In `main()` in your `Code6.c` file

Your linked list head must be declared local to `main()` and be passed to functions that need it.

Rather than prompt the user for a single draw command, you should prompt for 1-3 letters. We are not going above 3 to ensure they properly fit on the screen. Ensure that at least one letter is entered and that no more than 3 are entered.

Your program should take each letter from the input, search the linked list for all commands associated with that letter and then print the letter. When printing the 2nd and 3rd letters, you will need to take into account that the letters need to shift over. My suggestion is to shift the 2nd letter over by 7 places and the 3rd letter over by 14 places. The draw commands are all created based on being the first letter printed – you need to move them over when they are the second or third letter.

Part 5 - Testing

Create a test file using your original input file submitted with CA3. Modify it to use include the letter and the pipe delimiter. Run your `Code6.e` and confirm that your program can draw any combination of your three letters. Your program will be graded with a file that contains all letters and multiple commands per letter.

Part 6 – Code Submission

Submit a zip fle containing the following files

```
Code6_xxxxxxxxxx.c
ListLib.c
ListLib.h
makefile
```

Coding Hints

Make no assumptions about how many lines will be in the file and about how many commands will be needed per letter. Make no assumptions about the ordering of the commands themselves in the file. The first command to create Z may be in the middle of the file when the second command is first record and the 3rd command is last in the file. The ordering of the commands and the number of commands per letter should not matter to your logic. You should never save multiple linked list elements into an array at any point – that would be making an assumption about how many commands there may be per letter.
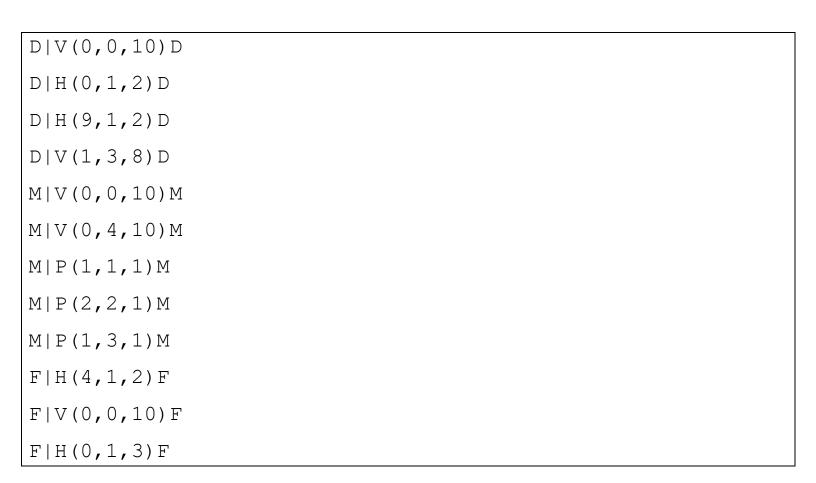
Please remove the prompt for the size of the map in order to make grading easier for the GTAs. Set your map size to 20. You should be using your map size define and not hardcoding a 20.

Your program should be altered to no longer accept drawing commands – your program will only accept 1-3 letters and print them using the draw commands from the input file.

Input and Output

I took my input file from Coding Assignment 3 and altered it to make an input file for this assignment. You can do the same for testing. A different file will be used for grading.

Input File

```
D|V(0,0,10)D
D|H(0,1,2)D
D|H(9,1,2)D
D|V(1,3,8)D
M|V(0,0,10)M
M|V(0,4,10)M
M|P(1,1,1)M
M|P(2,2,1)M
M|P(1,3,1)M
F|H(4,1,2)F
F|V(0,0,10)F
F|H(0,1,3)F
```

```
[frenchdm@omega CA6]$ Code6_1000074079.e FILENAME=input.txt
What is the background character? .
Please enter 1-3 letters mmm



M   .   .   .   M   .   .   M   .   .   .   M   .   .   M   .   .   .   M   .

M   M   .   M   M   .   .   M   M   .   M   M   .   .   M   M   .   M   M   .

M   .   M   .   M   .   .   M   .   M   .   M   .   .   M   .   M   .   M   .

M   .   .   .   M   .   .   M   .   .   .   M   .   .   M   .   .   .   M   .

M   .   .   .   M   .   .   M   .   .   .   M   .   .   M   .   .   .   M   .

M   .   .   .   M   .   .   M   .   .   .   M   .   .   M   .   .   .   M   .

M   .   .   .   M   .   .   M   .   .   .   M   .   .   M   .   .   .   M   .

M   .   .   .   M   .   .   M   .   .   .   M   .   .   M   .   .   .   M   .

M   .   .   .   M   .   .   M   .   .   .   M   .   .   M   .   .   .   M   .

M   .   .   .   M   .   .   M   .   .   .   M   .   .   M   .   .   .   M   .

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```

```
[frenchdm@omega CA6]$ Code6_1000074079.e FILENAME=input.txt
What is the background character? *
Please enter 1-3 letters fmd



F  F  F  F  *  *  *  M  *  *  *  M  *  *  D  D  D  *  *  *

F  *  *  *  *  *  *  M  M  *  M  M  *  *  D  *  *  D  *  *

F  *  *  *  *  *  *  M  *  M  *  M  *  *  D  *  *  D  *  *

F  *  *  *  *  *  *  M  *  *  *  M  *  *  D  *  *  D  *  *

F  F  F  *  *  *  *  M  *  *  *  M  *  *  D  *  *  D  *  *

F  *  *  *  *  *  *  M  *  *  *  M  *  *  D  *  *  D  *  *

F  *  *  *  *  *  *  M  *  *  *  M  *  *  D  *  *  D  *  *

F  *  *  *  *  *  *  M  *  *  *  M  *  *  D  *  *  D  *  *

F  *  *  *  *  *  *  M  *  *  *  M  *  *  D  *  *  D  *  *

F  *  *  *  *  *  *  M  *  *  *  M  *  *  D  D  D  *  *  *

*  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

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*  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
```

d

```
[frenchdm@omega CA6]$ Code6_1000074079.e FILENAME=input.txt
What is the background character? !
Please enter 1-3 letters fmf



F   F   F   F   !   !   !   M   !   !   !   M   !   !   F   F   F   F   !   !

F   !   !   !   !   !   !   M   M   !   M   M   !   !   F   !   !   !   !   !

F   !   !   !   !   !   !   M   !   M   !   M   !   !   F   !   !   !   !   !

F   !   !   !   !   !   !   M   !   !   !   M   !   !   F   !   !   !   !   !

F   F   F   !   !   !   !   M   !   !   !   M   !   !   F   F   F   !   !   !

F   !   !   !   !   !   !   M   !   !   !   M   !   !   F   !   !   !   !   !

F   !   !   !   !   !   !   M   !   !   !   M   !   !   F   !   !   !   !   !

F   !   !   !   !   !   !   M   !   !   !   M   !   !   F   !   !   !   !   !

F   !   !   !   !   !   !   M   !   !   !   M   !   !   F   !   !   !   !   !

F   !   !   !   !   !   !   M   !   !   !   M   !   !   F   !   !   !   !   !

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```