



**COURSE NAME:** Data Structures and Algorithms

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**HOMEWORK SUBJECT:** Word Changer Application

## Algorithm:

- 1- The data input method from the user has been taken as input.
- 2- The program is terminated when Q input is received. The program was put into a while loop for inputs 1 and 2.
- 3- In case of input from the keyboard, size, limit and addresses are taken as input respectively from the user
- 4- The addresses were saved in a string larger than the name text\_long and that string was divided into words according to the space between them.
- 5- In case of input from the file, size and limit values are taken as integer from the first line with the get\_numbers function, and the elements in the remaining lines are read one by one according to the spaces between them.
- 6- Address values obtained according to both methods were saved in a temporary string.
- 7- In case the linked list is empty, the newly created linked list element is assigned to the first list value.
- 8- If the linked is not empty, the comparison is made starting from the first element of the linked list with the address value received as input.
- 9- If the address is not in the linked list, as the first element of the linked list new element added with push\_front function.
- 10- If the address is in the linked list, the value of the linked list element has been increased.
- 11- The increased value value has been checked with the size value received as input. If it is greater than the limit value, that element is deleted from the position of the linked list and moved to the top of the linked list.
- 12- As a result of the operations performed, the size of the linked list was checked. If the size of the linked list is greater than size, the last element of the linked list is deleted.
- 13- After all tasks are completed, the linked list is printed.
- 14- After printing the linked list, the input from the user was asked whether the linked list would be deleted or not. If the user enters the 'Y' input, the linked list was deleted with the clear list function and the method value was set to remain in the loop. In this way, input from the user was provided again.
- 15- When the user enters a different input, the method value has been changed to terminate the program by exiting the while loop.

## Screenshots:

### Case1:

#### Keyboard Input

```
Options:
    1-) Enter values with keyboard.
    2-) Read values from a file.
    Q-) Press Q to exit.
Please select an option to proceed: 1
Keyboard input method selected.
Please enter the max size of the linked list: 3
Please enter the put first value of the linked list: 2
Enter all array elements separated with spaces then press Enter:
AB BA CY AB CY XYZ BA XYZ BA
AB,1
BA,1 <-> AB,1
CY,1 <-> BA,1 <-> AB,1
CY,1 <-> BA,1 <-> AB,2
CY,2 <-> BA,1 <-> AB,2
XYZ,1 <-> CY,2 <-> BA,1
XYZ,1 <-> CY,2 <-> BA,2
XYZ,2 <-> CY,2 <-> BA,2
BA,3 <-> XYZ,2 <-> CY,2
```

#### File Input

```
Options:
    1-) Enter values with keyboard.
    2-) Read values from a file.
    Q-) Press Q to exit.
Please select an option to proceed: 2
File input method selected.
Please enter the file name with extension.(Ex: input.txt): input.txt
AB,1
BA,1 <-> AB,1
CY,1 <-> BA,1 <-> AB,1
CY,1 <-> BA,1 <-> AB,2
CY,2 <-> BA,1 <-> AB,2
XYZ,1 <-> CY,2 <-> BA,1
XYZ,1 <-> CY,2 <-> BA,2
XYZ,2 <-> CY,2 <-> BA,2
BA,3 <-> XYZ,2 <-> CY,2
```

### Case2:

#### Keyboard Input

```
Please select an option to proceed: 1
Keyboard input method selected.
Please enter the max size of the linked list: 4
Please enter the put first value of the linked list: 3
Enter all array elements separated with spaces then press Enter:
A B A AA BBB B A AB A B A BB
A,1
B,1 <-> A,1
B,1 <-> A,2
AA,1 <-> B,1 <-> A,2
BBB,1 <-> AA,1 <-> B,1 <-> A,2
BBB,1 <-> AA,1 <-> B,2 <-> A,2
BBB,1 <-> AA,1 <-> B,2 <-> A,3
AB,1 <-> BBB,1 <-> AA,1 <-> B,2
A,1 <-> AB,1 <-> BBB,1 <-> AA,1
B,1 <-> A,1 <-> AB,1 <-> BBB,1
B,1 <-> A,2 <-> AB,1 <-> BBB,1
BB,1 <-> B,1 <-> A,2 <-> AB,1
```

#### File Input

```
Options:
    1-) Enter values with keyboard.
    2-) Read values from a file.
    Q-) Press Q to exit.
Please select an option to proceed: 2
File input method selected.
Please enter the file name with extension.(Ex: input.txt): input-2.txt
A,1
B,1 <-> A,1
B,1 <-> A,2
AA,1 <-> B,1 <-> A,2
BBB,1 <-> AA,1 <-> B,1 <-> A,2
BBB,1 <-> AA,1 <-> B,2 <-> A,2
BBB,1 <-> AA,1 <-> B,2 <-> A,3
AB,1 <-> BBB,1 <-> AA,1 <-> B,2
A,1 <-> AB,1 <-> BBB,1 <-> AA,1
B,1 <-> A,1 <-> AB,1 <-> BBB,1
B,1 <-> A,2 <-> AB,1 <-> BBB,1
BB,1 <-> B,1 <-> A,2 <-> AB,1
```

# Flowchart

