

An-Najah National University
College of Engineering & Information Technology
Department of Computer Science
Programming Principles II
Homework - Classes

Define a class that represents a word list (list of words).

The class contains the following member data:

- a. a string that stores the language of the words (Ex: English, French, Spanish.....).
- b. an integer (size) that keeps track of how many words are in the list.
- c. An integer (Max_Words) that contains the maximum number of words the list can hold. Max_Words is entered by the user once the list is created.
- d. an array of size (MAX_WORDS) that can store 50-character strings to hold the words.

Define the following member functions in the class (WordList):

- a. A constructor: Takes an integer as a parameter and sets the Max_Words to the value of that integer. Also, the constructor allocates the necessary memory for the words and sets the size to zero.
- b. Default constructor: sets MAX_Words to 10 and allocates the necessary memory for a list of 10 words. Do not forget to set the size to zero.
- c. Load_Word_List: takes as parameter the name of an input text file and fills the list from the file. The file contains the language of the words on the first line and the words themselves on the rest of the lines.
First, the function counts the words in the file, if the number of words in the file is greater than MAX_WORDS then the function displays the message "Cannot load list, the number of words in the file exceeds the maximum words in the list". Otherwise, it stores the list of words and its information in the word list.
- d. Add_Word: takes a word as a parameter. If the wordlist is already full, it displays the message "List full, word not added". If the word is already in the list, it leaves the list unchanged (it calls the function contains to check if it is in the list). Otherwise, it adds the word to the list and updates the number of words in the list. Do not bother keeping the list in order.

- e. Contains: takes a word as a parameter. If the word matches one of the wordList entries (words), the function returns true, otherwise it returns false.
 - f. Equal_List: takes a wordlist as a parameter and returns true if the lists are in the same language, have the same number of elements, and every element of one list is found in the other. (You must call the function Contains (part c) repeatedly.)
If the lists are different it returns false.
 - g. Sort_Word_List: This function sorts the words in a certain list in alphabetical order.
 - h. Display_Word_List: displays all the words in the list in five columns.
 - f. Copy constructor
 - g. Overload the = operator so that you can assign one list to another in your program.
 - h. Overload the [] operator so that you can directly get a word at index (i) from the word list.
 - j. Destructor: Returns the dynamically allocated memory in a list.
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In your main function, do the following to test your functions above:

1. Create a new list of words

Your program creates a new object, asks the user to enter the maximum number of words in the list (MAX_WORDS) and the name of a file and calls function (a).

2. Add a new word to the list (call the function in part (d)).

3. Search for a word.

Enter a word from keyboard and call the function (Contains) to check whether the word exists in the list or not.

4. Create a second list, input file name and Max_Words from the user, fill it with words from the same or another file and see if it is equal to the list created in part 1 (call the function equal_lists).

5. Create a third list using the copy constructor (make it a copy of the first list).

6. Create a fourth list and after it is created, make it equal to the second list created (this tests your overloaded =).

7. Enter an index (i) from the keyboard, display the ith word in all of the four lists on screen using the [] operator (this tests your []).
8. Sort the words in the first list. Call the function in part (g).
9. Neatly, display the words in all of the four lists on screen. Call the function in part (h).