LAB 2

LNTHÀNH | FIT@HCMUS | DATA STRUCTURES AND ALGORITHMS

Objective

In this lab session, we will experiment with number of search algorithms.

Description

EXERCISE 2-1.

Write program to determine positions of the element in the one-dimensional array of integers with different seach alogrithms:

- (1) Linear search
- (2) Linear search with sentinel
- (3) Binary search

Command line: StudentId_Labx.exe Algorithm x Input.txt Output.txt

For example: 1512345_Lab1.exe 1 3 test1.txt out1.txt

with 1 is linear search algorithm, 3 is search key, test1.txt is input file, out1.txt is output file.

Input format:

- The first line contains a single integer, N, size of the array.
- The next line denotes the array's elements. Each element is separated by a space.
- E.g.:

5

2 8 3 9 1 3

Output format:

- All position of x in array (position count from 0). If the element is not found, output contains -1.
- Note that: does not have any space at the end of line.
- E.g for previous example:

  2 5

EXERCISE 2-2.

Buid WORD structure to store word in language with name and its definition. Applying search algorithms to create dictionary software.

Command line: StudentId_Labx.exe word1 word2 word3 ... out.txt
with word1, word2, so on are words which user want to know definition. The out.txt is output file which contains their defintions. Each word and its definition is diplayed similar with dictionary file.
In the dictionary (file attachment), each line will store one word and its definitions. Word and definition are separated by the colon. The following figure is an example of dictionary.

```
abalones: bao ngu
abandon:bom  tu bo, bo roi, ruong bo
abandoned:bi bo roi, bi ruong bo
abandoner: nguoi rut don
abandoners: nguoi rut don
abandoning:bom  tu bo, bo roi, ruong bo
abandonment:su bo, su tu bo, su bo roi, su ruong bo
abandonments:su bo, su tu bo, su bo roi, su ruong bo
abandons:bom  tu bo, bo roi, ruong bo
abapikal: xa dinh, xa ngon
abarticular: hoc ngoai khop, trat khop
abas:ao aba
abase:lam ha pham gia, lam mat the dien, lam nhuc
abased:lam ha pham gia, lam mat the dien, lam nhuc
abasement:su lam ha pham gia, su lam mat the dien, su lam nhuc
```