Department of Computer Science School of Information Technology and Communication Hanoi University of Science and Technology	Final exam 20211 Course: C Programming (Introduction)– IT3220 Duration: 90' (Copy source codes are forbidden) Date: 16/02/2022

QUESTION

A question bank has at most 100 questions. Each question is stored using the following structure:

```
typedef struct {
    long ID;              // Question ID
    int chapter;          // Chapter (from 1 to 20)
    char content[50];     // Question content (containing space)
} Question;
```

Please write a program in menu (2pt) executing the following functions (menu is displayed at the beginning of the program and after executing each function for user to select):

1/ **Read** (3đ): Ask user to enter the number of questions n. N must be integer and 0 < n <= 100. If not satisfied display the message "Must be > 0 and <= 100" and ask user to enter again until satisfied. After that enter each question. User only enters chapter (1 <= chapter <= 20) and content (string with maximum 50 characters and containing space), ID is automatically generated beginning from 1 and increasing 1 for each new question. ***Chapter and content is enter in the same time following format: chapter, following by a space, following by content (See * for suggestion)***. After finishing entering, the program prints out the list of entered questions. The first line contains headers including ID, Chap, and Content. Each next line a question with ID, chapter, and content separated by a tab, content is insided a pair of "". For example:

ID	Chap	Content
1	1	"Cau 1"
2	2	"cau 2"
3	1	"Cau 3"

2/ **Search** (1đ): Ask user to enter an ID and display the quetion with the same ID with the format as in the example in function 1/ Read. If there is no such question, display "ID not found".

3/ **Add** (1.5đ): Ask user to enter a new question and add it to the list. ID is generated by adding 1 to the maximum ID in the current list. Print out the list after adding following the format as in the example in 1/ Read.

4/ **Count** (1đ): Print out the list of chapter in the question bank along with the number of questions in that chapter, in increasing order of chapter. The first line contains headers including Chap and Count. For example:

Chap	Count
1	2

2 1

5/ **Check** (1đ): Verify the question bank. Print out the list of “qualified” questions that start with a capitalized character and not including one of the characters ‘*’, ‘$’, and ‘\’. For example:

ID	Chap	Content
1	1	“Cau 1”
3	1	“Cau 3”

6/ **Exit** (0.5đ): Exit the program.

-**End**-

* **Suggestion**: You can use scanf with scanset to read an integer, followed by a space, and a string containing spaces with the following scanf statement:

// Suppose that x and str are declared variables of types int and str

scanf("%d %[^\n]”, &x, str);

Suppose that the user enters:

1 Cau 1

then x = 1 and str = “Cau 1”