Week 7: Assignment 7 - Question 2

Linked List Operations

In this question, a linked list is partially implemented where each element in the linked list is a structure of the following format:

```
struct node{
      int id;
      int priority;
      struct node *next;
};
```

The field **priority** is a positive integer, which denotes the priority of an element inside the list.

You have to complete the C code for performing the following operations in the linked list:

1. Create and return a node **e** with given **id** and value **val**
   *struct node * create_node(int id, int val);*

2. Add an node **e** to the beginning of the **list.** Return the new list.
   *struct node * append(struct node * list, struct node * e);*

3. Search for a node **e** with **id** inside the **list**. Return a pointer to **e** if found, else return NULL
   *struct node * search(struct node * list, int id);*

4. Change the value of an element with given **id** (if found), in the **list** to the new value **val.**
   *void change_priority(struct node * list, int id, int val) ;*

Note: The code for manipulating the input as well as output is given to you. You only have to write code for the incomplete functions.

Input

A set of lines, each lines containing a character representing the operation and its inputs.

The operation can be one of the following:

- A <id> <val>
  Add an node with id and val to the list, at the start of the list.

- C <id> <val>
  Change the priority field of the element with id to val.
  If an element with this id is not found, do nothing.

- S <id>
  If an element with the id is in the list print the id and the priority and a newline.
  Else, print the id and -1 and a newline.

- E
  End of input, exit from the program

Output

The output of search queries.

Sample input

A 1 10
A 2 20
S 2
S 3
C 2 30
S 2
E

Sample Output
---

2 20
3 -1
2 30

Explanation

The list is initially empty

Add an element 1 with value 10

list : (1,10) -> NULL

Add an element 2 with value 20

list : (2,20) -> (1,10) -> NULL

Search for element with id 2, print

2 20

Search for element with id 3, print

3 -1

Change priority of 2 to 30

list : (2,30) -> (1,10) -> NULL

Search for element with id 2, print

2 30

End of input