

INFO 206 IMPÉRATIVE PROGRAMMING II

Exercise 1

The file “elections” contains for each office the following data: the number of the office and the number of voters in this office.

- 1.1 Write the function CreateList which builds, from the file “elections”, a linked list of the offices classified by ascending order. To start define the necessary types.
- 1.2 Suppose that the list is now created. Write the function MaxVoters which returns the number of the Office which has the largest number of voters.

Exercise 2

We manage a stock exchange game by using linked lists and arrays. A table "TheActions" contains information on the available actions, their unit prices and the number available for each action.

Action1	12	52
Action2	4	101
Action3	11	12
Action4	23	37
Action5	34	45

- 2.1 Give the definition of the AnAction structure as well as of the array of structures TheActions.

The diagram below show an instance of the type User which is a linked list. This list comprises information on the users (name, amount of money in its account, and actions whom it has with for each action the number of units).

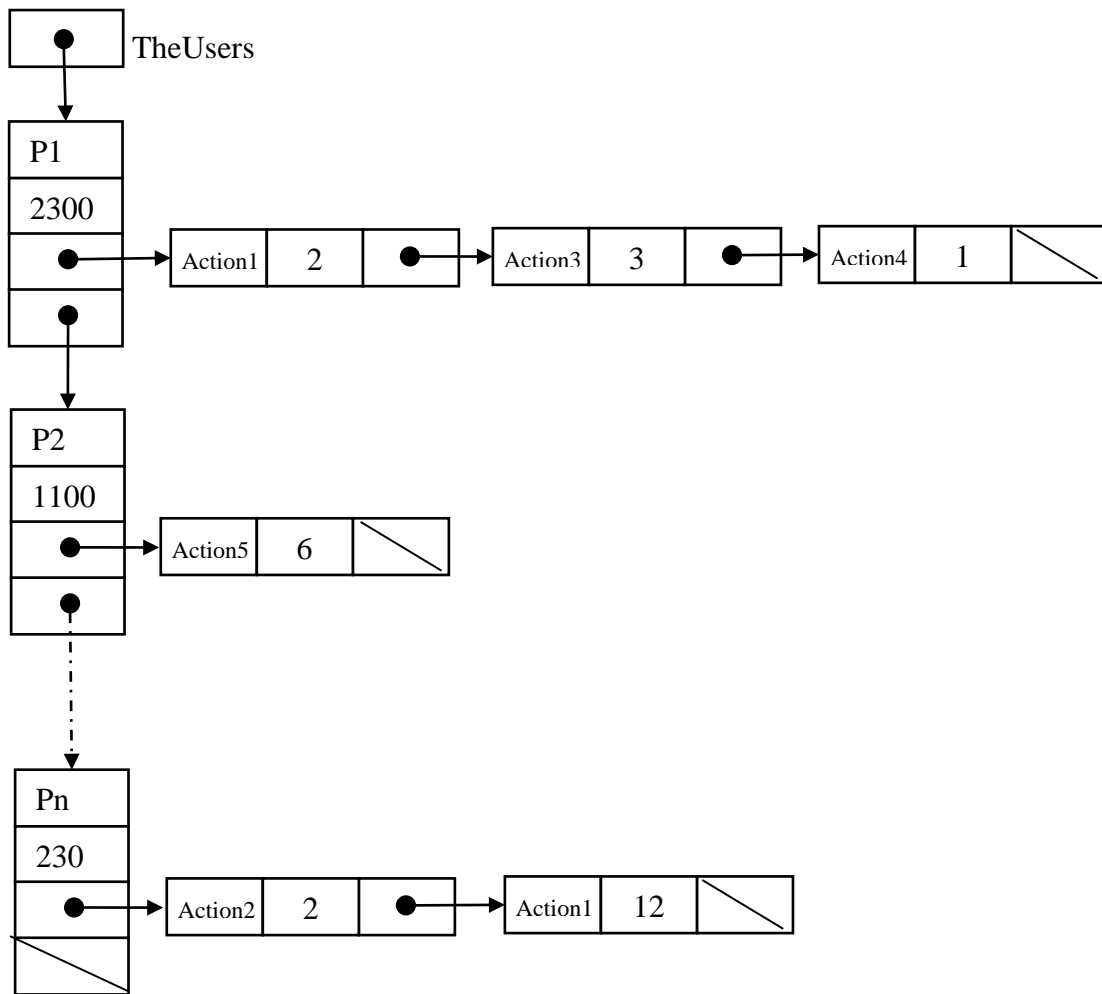
- 2.2 Define the two types : User and Action.

Being given the two global variables: TheActions and TheUsers;

- 2.3 Write the function buy (P, act, quantity) which makes it possible for a user of name P to buy an action act in desired quantity. This operation is valid only if the user's account allows him (he has sufficient money) and if the desired quantity is available in the TheActions array. If the addition of the action is done for the first time in the user's list, a new node will be created and added, else the corresponding quantity will be increased. Not to forget to adjust the account of the user as well as the information of the TheActions array.

2.4 Write the function `sell (P, act, quantity)` which carries out the opposite operation, while returning the money to `P` and taking again the quantity sold in the `TheActions` array. If the quantity becomes zero, it is necessary to remove the node from the user's list. Attention, one cannot sell what one does not have.

Note: the two given variables `TheActions` and `TheUsers` are supposed to be filled.



Good Luck