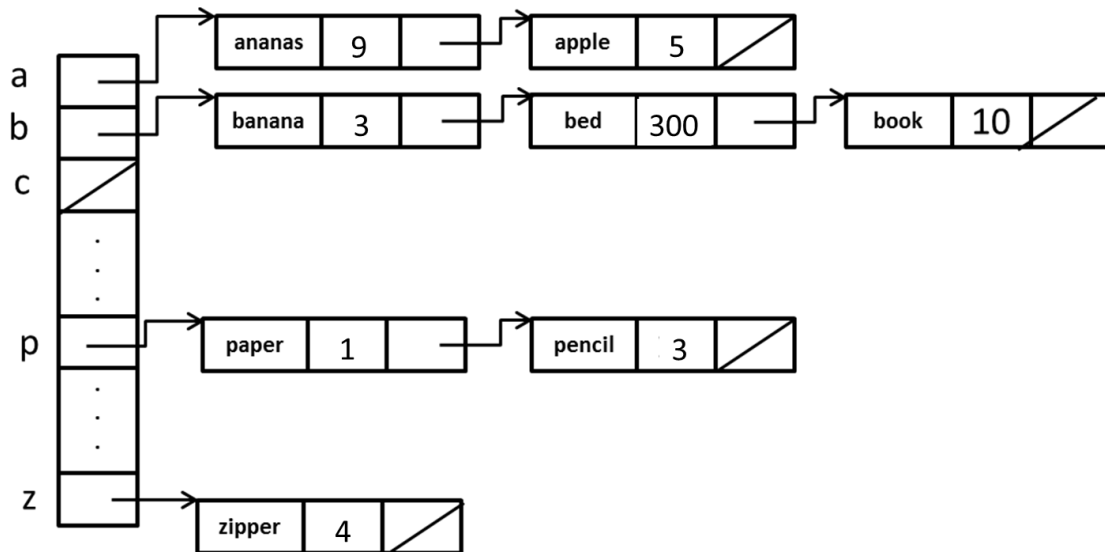


### Exercise I

A price catalogue is sorted according the alphanumeric order of item names. To accelerate a search of an item, the catalogue stores the head list of each different starting letter in an array. For example, in order to find the price of the item “pencil” we only search in the linked list corresponding to the letter ‘p’ in the array. The data contained in the catalogue, for each item, are the name and the price. The figure below shows an example of such a catalogue. As the figure shows, the main component is a fixed size array (26) of pointers to linked lists of elements.



1. What are the main differences between an array and a linked list? When do we use an array, and when do we prefer to use a linked list?
2. Define in C the necessary types to implement a price catalogue. Think about where would you allocate the array, in the stack memory or in the heap.
3. Write the function "put" which adds an item with its price to a given catalogue. Remember that the lists are sorted according to the names of the items.
4. Write the function "get" which, given a catalogue and an item name, returns its price, if it is found in the catalogue, else returns NULL.
5. Write the function "save" which writes a given catalogue to a binary file and frees it.
6. Write the function "load" which loads a catalogue from a binary file, given its name, and returns it.