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1. One of the main operations associated with the dictionary ADT is:

A. [Correct Answer] given a key and value, insert an entry with given key and value into the dictionary
B. remove the last item in the dictionary
C. given a value, remove the entry that contains the value
D. given a value, find the set of keys mapped to that value
E. [Your Answer] given a value, return the key of the dictionary entry with the given value

2. How many data structures in this list can used to implement a Dictionary so that all of its functions have a worst case running time strictly better than $O(n)$?

- Stack
- Queue
- Binary-Search Tree
- AVL Tree
- Linked List

A. [Your Answer] 2
B. 3
C. 4
D. [Correct Answer] 1
E. 5

3. Assume that you have a templatized `Latte` class, and another `coffee` class. Which of the following correctly declares a variable called `beverages` which is a dynamic array of type `Latte` whose parameterized type is a `coffee` pointer?

A. `Latte * beverages = new coffee[size];`
B. [Your Answer] More than one of the other options are correct.
C. `Latte<coffee> * beverages;`
D. None of the other options is correct.
E. [Correct Answer] `Latte<coffee *> * beverages;`

4. Suppose that the set of loans made by a library is to be represented in a data structure. Each book in the library may be electronically checked out by multiple patrons at a time. Moreover, a single patron may be able to check out multiple books. To be able to efficiently determine whether a patron has a given book, the library data structure is best represented by a dictionary where:

A. the books are the keys and the patrons are the values.
B. None of the other answers are correct.
C. [Correct Answer] a concatenated string `books+patrons` is the key and a boolean is the value.
D. the patrons are the keys and the books are the values.
E. [Your Answer] unique indices starting from 0 are the keys and the pair (books,patrons) is the value.