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1. Which of the following data-structures can be used to implement a Dictionary so that all of its functions have a worst case running time strictly better than $O(n)$?

A. Linked List
B. Stack
C. [Correct Answer] [Your Answer] AVL Tree
D. Queue
E. Binary-Search Tree

2. 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 checked out only by a single library patron at a time. However, a single patron may be able to check out multiple books. To be able to efficiently determine which patron has a given book, the library data structure is best represented by a dictionary where:

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

3. Which of the following is a correct way to declare an instance of a `list` whose parameterized type is a `sphere` object?

A. `sphere<list> s;`
B. `list s(sphere);`
C. [Correct Answer] [Your Answer] `list<sphere> s;`
D. More than one of the declarations are correct.
E. None of the declarations are correct.

4. Which of the following is not a fundamental capability of a dictionary?

A. [Your Answer] all of these are part of the Dictionary ADT
B. insert
C. [Correct Answer] traverse
D. delete
E. find