NetID: hxie13 QuizID: 856710 Score: 3 / 4 Answer Source: PrairieLearn

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

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

3. Which of the following collection of function signatures corresponds to the Dictionary ADT?

A. Exactly 2 of the other items can be considered to be Dictionaries.
B. `void insert(key, value); void remove(key, value); void find(key);`
C. `void insert(key, value); key remove(value); void find(value);`
D. None of the other items describe a dictionary.
E. [Correct Answer] [Your Answer] `void insert(key, value); void remove(key); value find(key);`

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