

1. 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. None of the other answers are correct.
- 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. unique indices starting from 0 are the keys and the pair (books,patrons) is the value.
- E. a concatenated string books+patrons is the key and a boolean is the value.

2. Which of the following can be used to implement the Dictionary data structure? (do not worry about the efficiency)

- A. **[Correct Answer]** All of these are dictionaries
- B. AVL Trees
- C. **[Your Answer]** Binary Search Tree
- D. Singly-Linked list
- E. Array

3. Assume that you have a templated 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 object?

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

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

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