NetID: penggu2 QuizID: 330013 Score: 4 / 5 Answer Source: PrairieLearn

1. Given a hash table `T` that can store 3000 elements and has 15 slots, the load factor `alpha` for `T` is:

A. 400
B. [Correct Answer] [Your Answer] 200
C. None of the other options are correct.
D. 0.05
E. 0.025

2. A hash table of length 10 uses open addressing with hash function `h(k) = k mod 10`, and linear probing.

0	1	2	3	4	5	6	7	8	9
		42	23	34	52	46	33		

After inserting 6 values into an empty hash table, the table is as shown below. Which one of the following choices gives a possible order in which the key values could have been inserted in the table?

A. None of the options is correct
B. `42, 46, 33, 23, 34, 52`
C. [Correct Answer] [Your Answer] `46, 34, 42, 23, 52, 33`
D. `34, 42, 23, 52, 33, 46`
E. `46, 42, 34, 52, 23, 33`

3. The CS department wants to maintain a database of up to 1800 UINs of students who have taken CS 225 so that it can be determined very quickly whether or not a given student has taken the course. Speed of response is very important; efficient use of memory is not required. Which of the following data structures would be most appropriate for this task?

A. A sorted linked list
B. A sorted array with 1800 entries
C. A hash table using probing with capacity 4500
D. A hash table using probing with capacity 1800
E. [Correct Answer] [Your Answer] A hash table using probing with capacity 100000

4. Which of the following statement(s) is TRUE?

(i) A hash function takes a message of arbitrary length and generates a fixed length code.

(ii) A hash function takes a message of fixed length and generates a code of variable length.

(iii) A hash function may give the same hash value for distinct messages.

A. None of the above options are correct.
B. i only
C. [Correct Answer] [Your Answer] i and iii only
D. ii and iii only
E. ii only

5. A hash table of size n stores n data items. Which of the following collision resolution strategies minimizes the worst case time complexity of the find operation?

A. Open addressing with double hashing
B. Separate chaining
C. Open addressing with linear probing
D. [Your Answer] Open addressing with either linear probing or double hashing, as both are equally efficient in this case
E. [Correct Answer] All collision resolution algorithms give the same worst case time complexity for the find operation