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1. Suppose a hash table has size 10, and that the search keys are strings consisting of 3 lower case letters. We want to hash 7 unknown values from this keyspace. In the hash function, when we refer to the alphabet positions of the letters, we mean: `a = 1, b = 2, …, z = 26` and `h(k) = ({product of the alphabet positions of k's letters}) mod 10`

Which of these ideal hash function characteristics are violated by this hash function?

(i) A good hash function is deterministic.

(ii) A good hash function distributes the keys uniformly over the array.

(iii) A good hash function is computed in constant time.

A. Only (iii) is violated.
B. [Your Answer] At least two of (i), (ii) and (iii) are violated.
C. Only (i) is violated.
D. None of these characteristics are violated.
E. [Correct Answer] (ii) is violated.

2. Which of the following expressions represents the load factor for a hash table of size `m` containing `n` keys?

A. m*n
B. m + n
C. [Correct Answer] [Your Answer] n / m
D. None of these is the load factor
E. m / n

3. There are several factors that affect the efficiency of lookup operations in a hash table. Which of the following factors affect the efficiency of the hash lookups?

(i) Number of elements stored in the hash table

(ii) Number of buckets in the hash table

(iii) Quality of the hash function

A. only (ii) is correct
B. [Your Answer] both (ii) and (iii) are correct, and (i) is incorrect
C. [Correct Answer] All (i) (ii) and (iii) are correct
D. only (iii) is correct
E. Only (i) is correct

4. You want to build an efficient spell-checker application for a Microsoft Word document made up of 10000 words. What type of collision resolution would you adopt if your hash function generates indexes based on the first character of the word, that is, for the word `apple` the output is 0, for the word `banana` the output is 1 and so on.

A. Either of Linear Probing and Separate Chaining can be used
B. None of the above
C. [Correct Answer] [Your Answer] Separate Chaining
D. Linear Probing
E. Linked List

5. Which of the following statesment(s) are correct about collision?

i) Two entries are identical except for their keys.

ii) Two entries with different data have the exact same key.

iii) Two entries with different keys have the same exact hash value.

iv) Two entries with the exact same key have different hash values.

A. iV only
B. [Correct Answer] iii only
C. [Your Answer] ii and iii only
D. i and iii only
E. i only