3/11/24, 1:06 AM DSA MIDS REVIEWER

DSA MIDS REVIEWER

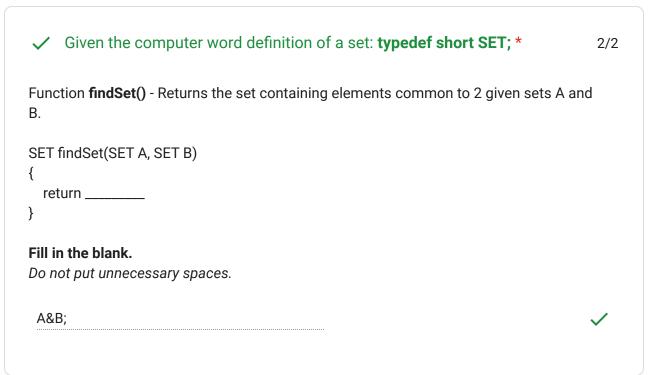
Total points 26/40

Hope this helps!! ^-^

22 of 30 points

| Which of the following is true about the running time of SET operations *0/2 where elements are distinct? Note: N is the number of elements. |
|---|
| $\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $ |
| In bit-vector implementation, inserting an element is $O(1)$ and deleting and element is $O(N)$. |
| In the array implementation, inserting an element is $O(1)$ and deleting an element is $O(N)$. |
| Correct answer |
| In linked list, inserting an element is $O(1)$ and deleting a given element is $O(N)$. |
| In the array implementation, inserting an element is $O(1)$ and deleting an element is $O(N)$. |
| |

| Function findSet() - The function will return the set containing elements found in the 1st given set but not found in the 2nd given set. SET findSet(SET B, SET A) { return } Fill in the blank. Do not put unnecessary spaces. | ✓ Given the computer word definition of a set: typedef short SET; * | 2/2 |
|--|---|----------|
| <pre>fill in the blank. Do not put unnecessary spaces.</pre> | · · · · · · · · · · · · · · · · · · · | e 1st |
| Do not put unnecessary spaces. | | |
| | | |
| B&~A; | B&~A; | ✓ |



| ★ Given the bit-vector definition of a set: typedef char SET[8]; * | 0/2 |
|---|-----|
| Function isElem() - The function will return 1, if the given element is a member of the given set; otherwise return 0. | |
| int isElem(SET B, int elem) | |
| { return? 0 : 1; } | |
| Fill in the blank. Do not put unnecessary spaces. | |
| B&(1 << elem)==1 | × |
| Correct answers | |
| B[elem]==0 | |
| B[elem]!=1 | |

| ✓ Given the computer word definition of a set: typedef short SET; * | 2/2 |
|---|----------|
| Function findSet() - The function will return the union of two sets A and B. | |
| SET findSet(SET A, SET B) { return } Fill in the blank. Do not put unnecessary spaces. | |
| A B; | ~ |

| Given the computer word definition of a set: typedef char SET; * Declaration: SET A = 70; | 2/2 |
|---|----------|
| What is the smallest element of set A? | |
| 1 | ~ |

| ✓ Given the computer word definition of a set: typedef char SET; * Declaration: SET A = -59; | 2/2 |
|--|----------|
| What is the biggest element of the Universal set where A is a subset? | |
| 7 | ✓ |
| | |

| Given the computer word definition of a set: typedef short SET; * | 2/2 |
|---|----------|
| What is the biggest possible element in the set? | |
| 15 | ✓ |
| | |

| ✓ Given the computer word definition of a set: typedef char SET; * Declaration: SET A = -59 ; | 2/2 |
|--|----------|
| Which of the following is not an element of set A? 2 | |
| 06 | |
| 5 | ✓ |

✓ Given the computer word definition of a set: typedef char SET; *

Declaration: **SET A = 70, B = -59**;

Give an element that is found in both sets A and B.

2

2/2

| ✓ | If the number of expected elements to be stored in a closed hash table is 200 and packing density or load factor is 80%, what is the size of the hash table? | *2/2 |
|----------|--|----------|
| 250 | 0 | ✓ |

➤ Which of the following is true? *
 If M elements are evenly distributed by the hash function in an open hash table with N array size, then the running time of operation member is O(N/M).
 In closed hashing, as packing density increases, the number of collision increases.
 A perfect hash function for a given set of N elements is a function that maps each element to a distinct integer within the range and produces a few collision.
 Correct answer
 In closed hashing, as packing density increases, the number of collision increases.

| ✓ When the integers 16, 43, 73, 85, and 24 are processed in this order, in *2/2 which entry is the last value 24 stored? |
|--|
| Let A be an array of integers of size 10, whose i^{h} th entry is represented by A[i] for i = 0 to 9, and its initial value is 0. For a positive integer k, the rules below determine the entry in which the value k is stored. Here, x mod y represents the remainder after the division of x by y. |
| [Rules] |
| If A[k mod 10] = 0, then store k in A[k mod 10]. Otherwise, if A[(k + 1) mod 10] = 0, then store k in A[(k + 1) mod 10]. Otherwise, if A[(k + 4) mod 10] = 0, then store k in A[(k + 4) mod 10]. Otherwise, discard k. |
| 24 is discarded |
| O A[4] |
| |
| |
| |

| ✓ | A 5-digit decimal number "a1a2a3a4a5" is stored in the array representing the closed hash table. If the hash function returns the result of operation: (a1+a2+a3+a4+a5) % 13, what is the hash value of number 55555? | *2/2 |
|----------|---|----------|
| 12 | | ✓ |

| X | the hash function returns a hash value V where 0 <= V <= M -1, what is the running time of function isMember() ? | *0/2 |
|---|---|------|
| 0 | O(M) | |
| 0 | O(1) | |
| 0 | O(N/M) | |
| 0 | O(N/V) | |
| • | O(N) | × |
| | | |

Correct answer

O(N/M)

DSA MIDS REVIEWER - PART 2

4 of 10 points

This part is a bit scuffed, so just do your best!! ^-^

Given the data type definition

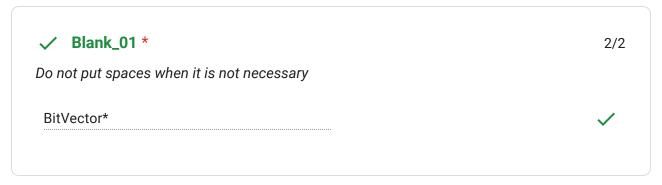
```
#define SIZE OXA typedef short BitVector[SIZE];
```

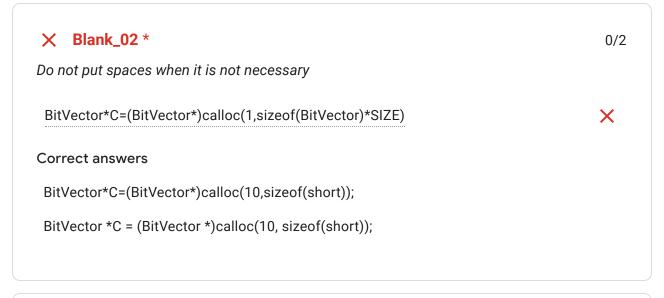
Function Specification:

The function **findDifference()** will return to the calling function the pointer to the set that contains elements in the 1st given set that are not found in the 2nd given set.

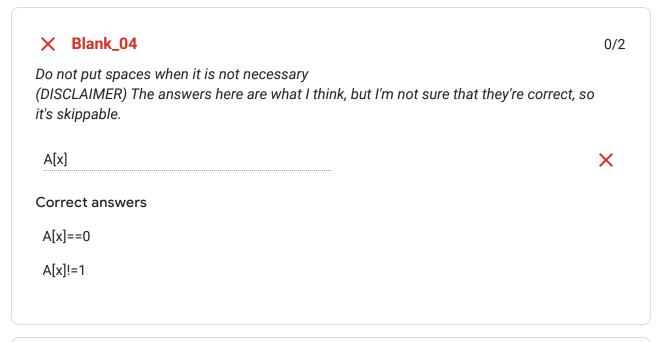
Function Definition:

Fill in the blanks.









| ★ Blank_05 | 0/2 |
|--|--------------------------|
| Do not put spaces when it is not necessary (DISCLAIMER) The answers here are what I think, but I'm not sure to it's skippable. | that they're correct, so |
| B[x] | × |
| Correct answers | |
| B[x]==1 | |
| B[x]!=0 | |
| | |

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