

Q1 Instructions

0 Points

To receive full credit on this quiz, you must score at least 50%.

The Github repo for Lecture 17 is at:

<https://github.com/ucsd-cse12-w21/ucsd-cse12-w21.github.io/tree/master/lectures/lecture-17>

Q2 Hash Table - Linear Probing

2 Points

Refer to the hash table implementation from lecture 17 and the following hash function:

```
int hash(char key) {  
    return (int) key;  
}
```

Also refer to the following sequence of insertions:

```
add('N', 7);  
add('R', 24);  
add('V', 92);  
add('Z', 100);
```

Q2.1 Pre-Expand Capacity

1 Point

Which of the following shows the contents of the bucket array right before calling `expandCapacity()`?

- ☐ [null, null, {N: 7}, null]
- ☐ [null, null, {N: 7}, {R: 24}]
- ☒ [{V: 92}, null, {N: 7}, {R: 24}]
- ☐ [{V: 92}, {Z: 100}, {N: 7}, {R: 24}]

Q2.2 After Sequence

1 Point

Which of the following shows the contents of the bucket array after the sequence has ended?

- ☐ [{V: 92}, {Z: 100}, {N: 7}, {R: 24}]
- ☐ [null, null, {N: 7}, {R: 24}, {V: 92}, {Z: 100}, null, null]
- ☐ [null, null, {V: 92}, {N: 7}, {R: 24}, {Z: 100}, null, null]
- ☐ [null, null, {R: 24}, {Z: 100}, null, null, {N: 7}, {V: 92}]
- ☒ [null, null, {R: 24}, {Z: 100}, null, null, {V: 92}, {N: 7}]

Q3 Amortized Analysis

1 Point

Select all of the following that are true:

- ☒ The best case for an ArrayList's add() method is $O(1)$
- ☒ The worse case for an ArrayList's add() method is $O(n)$
- ☐ The average case for ArrayList's add() method is $O(n)$ per add
- ☒ The average case for ArrayList's add() method is $O(1)$ per add

