Started on	Sunday, 24 February 2019, 10:48 PM
State	Finished
Completed on	Sunday, 24 February 2019, 11:02 PM
Time taken	13 mins 32 secs
Grade	**10.00** out of 10.00 (**100**%)

Question 1

Correct Mark 1.00 out of 1.00

How can you fix following binary search?

```
def BinarySearch(values,target):
    min = 0
    max = len(values) - 1
    while (min <= max):
    # Find the dividing item.
        [missing code]
        # See if we need to search the left or right half.
        if (target < values[mid]):
            max = mid - 1
        elif (target > values[mid]):
            min = mid + 1
        else: return mid

# If we get here, the target is not in the array.
    return -1
```

Select one:

- a. mid = max / 2
- b. min = (min + max) / 2
- c. mid = (min + max) / 2 ✓
- d. max = (min + max) / 2

Your answer is correct.

The correct answer is: mid = (min + max) / 2

Question 2

Correct Mark 1.00 out of 1.00

What is the complexity of Binary Search?

Select one:

- a. O(log N) ✓
- b. O(N*N)
- c. O(log (log N))
- d. O(N)

Your answer is correct.

The correct answer is: O(log N)

Question 3

Correct Mark 2.00 out of 2.00

What is the running time of the following algorithm?

```
def surprise(A,B):
    while (B != 0):
        remainder = A % B
        A = B
        B = remainder
    return A
```

Select one:

- a. O(1)
- b. O(log N) ✓
- c. O(A%B)
- d. O(N)

Your answer is correct.

The correct answer is: O(log N)

Question 4

Correct Mark 2.00 out of 2.00

Suppose we need to sort a list of employee records in ascending order, using the social security number (a 9-digit number) as the key (i.e., sort the records by social security number). If we need to guarantee that the running time will be no worse than O(N log N), which sorting methods could we use?

Select one:

- a. Selection sort
- b. None of these algorithms guarantee a worst-case performance of O(N log N) or better
- c. Mergesort ✓
- d. Insertion sort
- e. Quicksort

Your answer is correct.

The correct answer is: Mergesort

Question 5

Correct Mark 1.00 out of 1.00

Which one is not an O(N log N) algorithm?

Select one:

- a. Heap Sort
- b. Selection Sort ✓
- c. Quick Sort
- d. Merge Sort

Your answer is correct.

The correct answer is: Selection Sort

Question 6

Correct Mark 1.00 out of 1.00

The best, worst, and average case time complexity for mergesort is O(N*log N).

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 7

Correct Mark 1.00 out of 1.00

Which one is not an $O(N^2)$ algorithm?

Select one:

- a. Merge Sort ✓
- b. Bubble Sort
- c. Selection Sort
- d. Insertion Sort

Your answer is correct.

The correct answer is: Merge Sort

Question 8

Correct Mark 1.00 out of 1.00

Which of the following are NOT true about quicksort?

Select one:

- a. It is considered the method of choice for internal sorting of large files
- b. None of the options ✓
- c. The worst case time complexity is $O(N^2)$
- d. The best case and average case time complexity is O(N*log N)
- e. It is an example of sorting algorithm that uses divide and conquer approach

Your answer is correct.

The correct answer is: None of the options

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