Started on	Sunday, 12 March 2023, 4:42 PM
State	Finished
Completed on	Sunday, 12 March 2023, 4:53 PM
Time taken	11 mins 16 secs

Question 1

Complete

Marked out of 1.00

What is the time complexity of the following code?

```
int a = 0;
for (i = 0; i < N; i++) {
   for (j = N; j > i; j--) {
      a = a + i + j;
   }
}
```

a. O(N*Sqrt(N))

b. O(N)

c. O(N*N)

d. O(N*log(N))

Question 2

Complete

Marked out of 1.00

Which of the following case does **not** exist in complexity theory

a. Average Case

b. Best Case

c. Worst Case

d. Null Case

Question 3

Complete

Marked out of 1.00

The best case occur in binary search algorithm when

a. Item is the middle element of the array or is not there at all

b. Item is the first element in the array

c. Item is not in the array at all

d. Item is the middle element of the array

Question 4

Complete

Marked out of 1.00

Let $f(n) = 7n + 8$ and $g(n) = n$, find c (a suitable constant) such that $O(g(n)) = f(n)$ for $n \geq n_0$

a. 7

b. 8

c. There is no such constant

Question 5

Complete

Marked out of 1.00

The worst case complexity of Bubble sort algorithm is

a. $O(n^2)$

b. $O(\log(n))$

c. $O(n)$

d. $O(n \log(n))$

Question 6

Complete

Marked out of 1.00

What is the time complexity of the following code?

```
int i, j, k = 0;
for (i = N / 2; i <= N; i++) {
   for (j = 2; j <= N; j = j * 2) {
      k = k + N/ 2;
   }
}
```

a. O(N*Sqrt(N))

b. O(N*log(N))

c. O(N)

d. O(N*N)

Question 7

Complete

Marked out of 1.00

Following is the execution time measurement taken for a sorting algorithm to sort an array with a random permutation of elements.

No. of elements in the array (N)	Execution time (micro seconds)
1024	51
2048	202
4096	805
8192	3227
16384	12900
32768	51592

What can be the possible average case time complexity of this sorting algorithm?

Select one:

a. $O(4N)$

b. $O(Nlg(N))$

c. $O(N^2)$

d. $O(N)$

Question 8

Complete

Marked out of 1.00

Express the function $\frac{n^3}{1000} - 100n^2 - 100n + 3$ in terms of Θ-notation.

a. $\Theta(n^2)$
b. $\Theta(n^3)$
c. $\Theta(\sqrt{n})$
d. $\Theta(\lg(n))$

Previous activity

◄ Complexity Analysis - Take home assignment

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