Complexity Quiz: Test your understanding of complexity

The top ten most commonly asked interview questions about complexity measure will be covered in this lesson in form of a quiz.

1 Which of the following best describes the useful criterion for comparing the efficiency of algorithms?

- A) Time
- B) Memory

Correct Answer

- C) Both of the above
- D) None of the above

2 How is time complexity measured?

- A) By counting the number of statements in an algorithm

Correct Answer

- B) By counting the number of primitive operations performed by the algorithm on a given input size
- C) By counting the size of data input to the algorithm
- D) None of the above

3 Which of the following does NOT belong to the family of notations?

- A) Big (O)

B) Big (Ω)

C) Big (θ)

Correct Answer

D) Big (⋈)

4 Which of the following covers the ‘worst’ case scenario?

A) Big (O)

B) Big (Ω)

C) Big (θ)

Correct Answer

D) All of the above

Explanation

One can use any of the notations to represent the worst case scenario with.

5 Which of the following covers the ‘average’ case scenario?

A) Big (O)

B) Big (Ω)

C) Big (θ)

Correct Answer

D) All of the above

Explanation

One can use any of the notations to represent the average case scenario with.

6 Which of the following covers the 'best' case scenario?

A) Big (O)

B) Big (Ω)

C) Big (θ)

Correct Answer

D) All of the above

Explanation

One can use any of the notations to represent the best case scenario with.

7 What will be the time complexity of following fragment of code?

```
for i in range(n):
    i*=k
```

Correct Answer

A) $O(n)$

Explanation

`i` is picked from a list of values from 0 to `n` - 1. Inside the loop, you can modify the value of `i`, but in the next iteration, the loop will pick the value of `i` from the original list 0, 1, 2, ..., `n` - 1.

B) $O(k)$

C) $O(log_n k)$

D) $O(log_k n)$

8 What is the Big O time complexity of the following?

```
for i in range(n):
    for j in range(m):
```

A) $O(n)$

B) $O(m)$

Correct Answer

C) $O(nm)$

Explanation

The outer loop runs n times and the inner lop runs nm times.

D) $O(n+m)$

9 What is the running time complexity of the following code snippet?

```
for i in range(n):
    for j in range(i):
        val += 1
```

A) n

B) $n(n+1)$

Correct Answer

C) $\frac{n(n-1)}{2}$

Explanation

The outer loop runs n times and the inner loop runs $\frac{n(n-1)}{2}$ times.

D) $\frac{n(n+1)}{n}$

10 Algorithm A and B have a worst case running time of O(n) and O(log n), respectively. Therefore, algorithm B always run faster than algorithm A.

A) True

Correct Answer

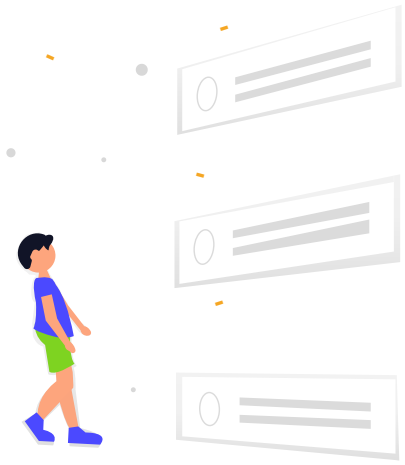
B) False

Explanation

First, this is a worst case characterization. In the best case, algorithm A might run faster than B. Secondly, due to the leading multiplicative constants that are omitted in the asymptotic analysis might mean that algorithm A runs faster than B for small input sizes

SUMMARY

Correct	0
Incorrect	0
Unanswered	10



Seems like you skipped few questions. Would you like to try again?

Retake Quiz