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| **Started on** | Thursday, 9 March 2023, 6:30 PM |
| **State** | Finished |
| **Completed on** | Thursday, 9 March 2023, 6:36 PM |
| **Time taken** | 6 mins 9 secs |
| **Marks** | 3.00/8.00 |
| **Grade** | **3.75** out of 10.00 (**37.5**%) |

**Question 1**

Incorrect

Mark 0.00 out of 1.00

The worst case complexity of linear search algorithm is

a. $O(n^2)$ ✖

b. O(n log(n))

c. O(n)

d. O(log n)

The correct answer is: O(n)

**Question 2**

Incorrect

Mark 0.00 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)

b. O(N*N)

c. O(N*Sqrt(N)) ✖

d. O(N*log(N))

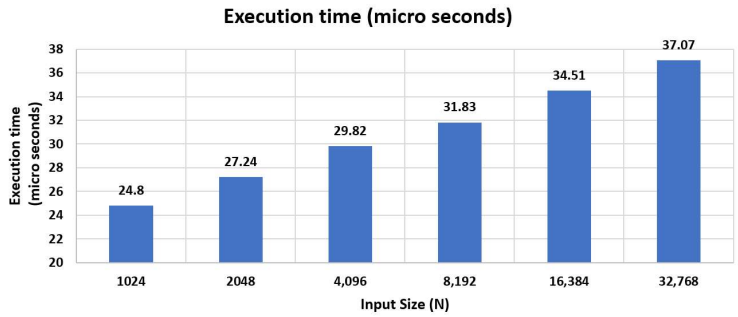
The correct answer is:
O(N*log(N))

**Question 3**

Incorrect

Mark 0.00 out of 1.00

Following is a graph of execution time of an algorithm for different input sizes.




What can be the **possible** time complexity of the algorithm?

Select one:

- a. $O(Nlg(N))$
- b. $O(N^2)$
- c. $O(N)$ ✖
- d. $O(lg(N))$

Your answer is incorrect.

The correct answer is:
$O(lg(N))$

**Question 4**

Incorrect

Mark 0.00 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*log(N)) ✖

d. O(N*N)

The correct answer is: O(N*N)

**Question 5**

Correct

Mark 1.00 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. Θ(lg(n))

c. $\Theta(n^3)$ ✔

d. $\Theta(\sqrt{n})$

The correct answer is: $\Theta(n^3)$

**Question 6**

Correct

Mark 1.00 out of 1.00

For the functions, $n^k$ and $c^n$, what is the asymptotic relationship between these functions?

Assume that k >= 1 and c > 1 are constants

a. $n^k$ is $O(c^n)$ ✔

b. $n^k$ is $\Omega(c^n)$

c. $n^k$ is $\Theta(c^n)$

The correct answer is: $n^k$ is $O(c^n)$

**Question 7**

Correct

Mark 1.00 out of 1.00

What are the factors that affect the running time of a program?

a. CPU speed

b. Nature of input data set

c. Memory

d. All of the above ✔

The correct answer is: All of the above

**Question 8**

Incorrect

Mark 0.00 out of 1.00

The Worst case occur in linear search algorithm when

a. Item is the last element in the array or is not there at all

b. Item is not in the array at all

c. Item is somewhere in the middle of the array

d. Item is the last element in the array ✖

The correct answer is: Item is the last element in the array or is not there at all