

## Coding Test - No.3

Name: \_\_\_\_\_

1. a is a list of integers e.g. a = [2,3,5,2,1,3,6,7,...] - what is the time complexity to check if a number exists in the array e.g. aNum in a

O( )

2. If we convert the list to a set e.g. b = set(a), what is the time complexity to check if a number exists in the set? e.g aNum in b

O( )

3. The following is the code to merge two sorted list - please complete the code

```
def merge(a, b):
    i, j, la, lb = 0, 0, len(a), len(b)
    res = []
    while i < la and j < lb:
        if a[i] < b[j]:
            res.append(_____)
            i += 1
        else:
            res.append(_____)
            j += 1
    while i < la:
        res += [a[i]]
        i += 1
    while j < lb:
        res += [b[j]]
        j += 1
    return res
```

4. If the length of first sorted list is A, and the length of the second sorted list is B, what is the time complexity of above (merging two sorted list)

O( )

5. What nodes should we push to queue (starting nodes) if we want to obtain a topological sorting on a directed graph?

A. Nodes with zero indegree   B. Nodes with zero outdegree   C. Nodes with no edges

6. Which of the following can be used to check if numbers are odd?

A. n & 1   B. n % 2 == 1   C. n >> 1   D. n << 1

7. Which of the following guarantees a shortest path when a path is found between src to dest?

- A. DFS    B. BFS    C. Iterative Deepening Search,

8. If N is a single digit string '0' to '9' which of the following can we use to convert to integer.

- A. int(N)  
B. ord(N)-ord('0')  
C. str(N)  
D. N-'0'

9. What is the sum of the first 20 even numbers? E.g.  $0 + 2 + 4 + \dots$

10. How many trailing zeros for 20! (factorial e.g.  $1*2*3*4*5*6*.....20$ )