Introduction to Algorithm – STW122COM

**Important Question**

1. An algorithm is
   1. A series of generalized instructions"
   2. A series of specific instructions"
   3. A high level language"
   4. A piece of code"
2. Python is a
   1. Static typed language
   2. Dynamic typed language
   3. Both a and b
   4. None of the mentioned
3. Indicate constant time complexity in terms of Big-O notation.
   1. O(n)
   2. O(1)
   3. O(logn)
   4. O(n2)
4. The notation **O(n)** is the formal way to express .
   1. Upper bound of an algorithm’s running time.
   2. Lower bound of an algorithm’s running time.
   3. Both (a) and (b).
   4. None of the mentioned.
5. Which algorithm is not based on divide and conquer.
   1. Merge sort
   2. Binary search
   3. Quick sort
   4. Linear search
6. The notation **θ(n)** the formal way to express .
   1. Upper bound of an algorithm’s running time.
   2. Lower bound of an algorithm’s running time.
   3. Both (a) and (b)
   4. None of the mentioned
7. Which of the following is not a variant of merge sort? a) in-place merge sort

b) bottom up merge sort c) top down merge sort d) linear merge sort

1. Indicate exponential time complexity in terms of Big-O notation.
   1. O(n)
   2. O(n^2)
   3. O(2^n)
   4. O(logn)
2. Complexity of linear search algorithm is
   1. O(n)
   2. O(logn)
   3. O(n2)
   4. O(n logn)
3. Which is not a linear data structure?
   1. Stack
   2. Queue
   3. Tree
   4. Array
4. When will the else part of try-except-else be executed?
   1. always
   2. when an exception occurs
   3. when no exception occurs
   4. when an exception occurs in to except block
5. Which of the following is not an exception handling keyword in Python?
   1. try
   2. except
   3. accept
   4. finally
6. Which of the following is not an advantage of using modules?
   1. Provides a means of reuse of program code
   2. Provides a means of dividing up tasks
   3. Provides a means of reducing the size of the program
   4. Provides a means of testing individual parts of the program
7. What is the worst-case complexity of bubble sort?
   1. O(nlogn)
   2. O(logn)
   3. O(n)
   4. O(n2)
8. The symbol along with the name of the decorator function can be placed above the definition of the function to be decorated works as an alternate way for decorating a function.
   1. #
   2. $
   3. @
   4. &
9. Linear search(recursive) algorithm used in
   1. When the size of the dataset is low
   2. When the size of the dataset is large
   3. When the dataset is unordered
   4. Never used
10. How many keyword arguments can be passed to a function in a single function call?
    1. zero
    2. one
    3. zero or more
    4. one or more
11. A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as a?
    1. Queue
    2. Stack
    3. Tree
    4. Linked list

19. If a=(1,2,3,4), a[1:-1] is

a) Error, tuple slicing doesn’t exist

b) [2,3]

c) (2,3,4)

d) (2,3)

1. If a={5,6,7,8}, which of the following statements is false?
   1. print(len(a))
   2. print(min(a))
   3. a.remove(5)

d) a[2]=45

1. Mention the non-linear data structures:
   1. Tree
   2. Graph
   3. Both (a) and (b)
   4. None of the mentioned
2. Which statement is correct about constant complexity?
   1. Number of inputs does not matter.
   2. Always take same time.
   3. Always take same space.
   4. All of the mentioned above.
3. Select the run time of given algorithm

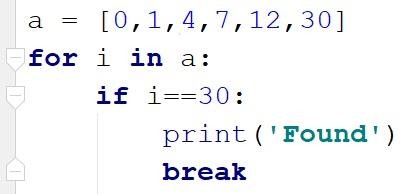
**def** ex1( n ): total = 0

**for** i **in** range( n ) : total += i

**return** total

* 1. O(1)
  2. O(n)
  3. O(logn)
  4. O(n2)

1. Find out the complexity of given below statements:

 O(n^2)

1. What is an internal sorting algorithm?
   1. Algorithm that uses tape or disk during the sort b) Algorithm that uses main memory during the sort c) Algorithm that involves swapping

d) Algorithm that are considered ‘in place

1. . What is the worst case complexity of bubble sort? a) O(nlogn)
2. O(logn)
3. O(n)
4. O(n2)
5. What is the auxiliary space complexity of merge sort? a) O(1)
6. O(log n)
7. O(n)
8. O (n log n)
9. Which of the following method is used for sorting in merge sort? a) merging

b) partitioning c) selection d)exchanging

1. Is there any difference in the speed of execution between linear search (recursive) vs linear search (iterative)? a) Both execute at same speed.

b) Linear search (recursive) is faster. c) Linear search (Iterative) is faster. d) None of the mentioned.

1. What is the worst-case runtime of linear search (recursive) algorithm? a) O(n)
2. O(logn)
3. O(n2)
4. O(nx)
5. What does it mean when we say that an algorithm X is asymptotically more efficient than Y?
   1. X will always be a better choice for small inputs
   2. X will always be a better choice for large inputs
   3. Y will always be a better choice for small inputs
   4. X will always be a better choice for all inputs
6. What is the time complexity of following code? int a = 0, i = N;

while (i > 0) { a += i;

i /= 2;

}

* 1. O(N)
  2. O(Sqrt(N))
  3. O (N / 2)
  4. O (log N)

1. To shuffle the list (say list1) what function do we use?
   1. list1.shuffle()
   2. shuffle(list1)
   3. random.shuffle(list1)
   4. random.shuffleList(list1)
2. Which of the following statements create a dictionary?
   1. d = {}

b) d = {“john”:40, “peter”:45}

c) d = {40:”john”, 45:”peter”}

d) All of the mentioned

1. What is a variable defined outside a function referred to as?
   1. A static variable
   2. A global variable
   3. A local variable
   4. An automatic variable
2. What is the advantage of recursive approach than an iterative approach?
   1. Consumes less memory
   2. Less code and easy to implement
   3. Consumes more memory
   4. More code has to be written
3. What is the worst-case complexity of binary search using recursion?
   1. O(nlogn)
   2. O(logn)
   3. O(n)
   4. O(n2)
4. Which of the following sorting algorithm is best suited if the elements are already sorted?
   1. Heap Sort
   2. Quick Sort
   3. Insertion Sort
   4. Merge Sort
5. Which of the following recursive formula can be used to find the factorial of a number?
   1. fact(n) = n \* fact(n)
   2. fact(n) = n \* fact(n+1)
   3. fact(n) = n \* fact(n-1)
   4. fact(n) = n \* fact(1)
6. Consider the following operation performed on a stack of size 5. Push(1);

Pop();

Push(2);

Push(3);

Pop();

Push(4);

Pop();

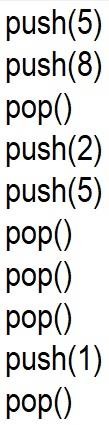
Pop();

Push(5);

After the completion of all operation, the number of elements present in stack are

* 1. 1
  2. 2
  3. 3
  4. 4

1. How many stacks are needed to implement a queue? Consider the situation where no other data structure like arrays, linked list is available to you.
2. 1
3. 2
4. 3
5. 4
6. A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as a?
   1. Queue
   2. Stack
   3. Tree
   4. Linked list
7. Which data structure is used for implementing recursion?
   1. Queue
   2. Stack
   3. Array
   4. List
8. If the elements “A”, “B”, “C” and “D” are placed in a queue and are deleted one at a time, in what order will they be removed?
   1. ABCD
   2. DCBA
   3. DCAB
   4. ABDC
9. Which of the following is not the type of queue?
   1. Ordinary Queue
   2. Single ended queue
   3. Circular queue
   4. Priority queue
10. What data structure would you mostly likely see in a non-recursive implementation of a recursive algorithm?
    1. Linked List
    2. Stack
    3. Queue
    4. Tree
11. A technique for direct search is
    1. Binary Search
    2. Linear Search
    3. Tree Search
    4. Hashing
12. The term push and pop is related to .
    1. Queue
    2. Stack
    3. Both
    4. None
13. What are the values that you get when performing following operations?



a) 85251

b) 85521

c) 82551

d) 81255

1. Insertion and Deletion in Queue is known as .
   1. Push and pop
   2. Enqueue and Dequeue
   3. Insert and Delete
   4. None of the mentioned
2. config() function in Python tkinter is used for
   1. destroy the widget
   2. place the widget
   3. change the property of widget
   4. configure the widget
3. What should we do to create a window screen using tkinter Python?
   1. Call tk() function.
   2. Creae a button.
   3. Define a geometry.
   4. All of the above.
4. How pack() function works on tkinter Python?
   1. According to x, y coordinate.
   2. According to rows and columns.
   3. According to left, right, top, down.
   4. None of the mentioned
5. How we import tkinter in Python?
   1. import tkinter
   2. import tkinter as t
   3. from tkinter import \*
   4. All of the above
6. To delete any widget from the screen which function we use?
   1. stop()
   2. delete()
   3. destroy()
   4. break()
7. To hold the screen which function we use in tkinter Python?
   1. mainloop()
   2. stop()
   3. pause()
   4. None of the mentioned
8. Which type of database management system is MySQL?
   1. Object-oriented
   2. Hierarchical
   3. Relational
   4. Network
9. What represents a ‘tuple’ in a relational database?
   1. Table
   2. Row
   3. Column
   4. Object
10. How is communication established with MySQL?
    1. SQL
    2. Network calls
    3. A programming language like c++
    4. APIs
11. Which of the following clauses is used to display information that match a given pattern?
    1. LIKE
    2. WHERE
    3. IS
    4. SAME