DSA BANK

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1- What is the output of this code?

```
List<int> l1 = new List<int>();
l1.Insert(0, 1);
l1.Add(3);
l1.Insert(1, 2);
      Console.WriteLine(l1.Contains());
```

A. True

B. False

C. Error

2-What is the output of this code?

```
List<int> l1 = new List<int>();
l1.Insert(0, 1);
l1.Add(3);
l1.Insert(1, 2);
foreach(int i in l1)
{
    Console.Write(i+" ");
}
Console.ReadLine();
```

A. 1 2 3

B. 3 2 1

C. 2 3 1

3-What is the output of this code?

```
List<int> l1 = new List<int>();
l1.Insert(0, 1);
l1.Add(3);
l1.Insert(1, 2);
l1.Remove(1);
l1.Add(5);
l1.Add(6);
l1.Insert(2, 3);
foreach (int i in l1)
{
    Console.Write(i+" ");
}
Console.ReadLine();
```

A. 2 3 3 5 6

B. 2 3 5 3 6

C. 2 5 3 3 6

4-What is the output of this code?

```
List<int> l1 = new List<int>();
      l1.Insert(0, 1);
      l1.Add(3);
      l1.Insert(1, 2);
      l1.Remove(1);
      l1.Add(5);
      l1.Add(6);
      l1.Insert(2, 3);
      l1.RemoveAt(3);
      foreach (int i in l1)
      {
          Console.Write(i+" ");
      }
      Console.ReadLine();
```

A. 2 3 5 6

B. 2 3 3 5

C. 2 3 3 6

5-What is the output of this code?

```
List<int> l1 = new List<int>();
l1.Insert(0, 1);
l1.Add(3);
l1.Insert(1, 2);
l1.Add(4);
l1.Add(5);
Console.WriteLine(l1.IndexOf(6));
Console.ReadKey();
```

A. None

B. Null

C. -1

D. Out of range

6 – is ArrayList useful when the size of an array is unknown in advance?

A. True

B. False

7- is this code valid or not?

```
int[] arr = new int[3];
arr[0] = 1;
arr[1] = 2;
arr[2] = 3;
arr[3] = 4;
ArrayList a1 = new ArrayList();
a1.Add(1);
a1.AddRange(arr);
foreach(int i in a1)
    Console.Write(i+" ");
Console.ReadKey();
```

A. Valid

B. Not valid

8-what is the capacity of this code?

```
int[] arr = new int[3];
arr[0] = 1;
arr[1] = 2;
arr[2] = 3;
ArrayList a1 = new ArrayList();
a1.Add(1);
a1.Add(1);
a1.Add(0);
a1.AddRange(arr);
a1.AddRange(arr);
Console.WriteLine(a1.Capacity);
```

A. 4

B. 8

C. 16

D. 17

9- what is the capacity of this code?

```
int[] arr = new int[3];
arr[0] = 1;
arr[1] = 2;
arr[2] = 3;
ArrayList a1 = new ArrayList();
a1.Add(1);
a1.Add(1);
a1.Clear();
Console.WriteLine(a1.Capacity);
```

A. 0

B. 4

C. 8

D. 16

10- is this code valid or not?

```
 LinkedList<int> list = new LinkedList<int>();
list.AddLast(0);
list.AddLast(1);
list.AddLast(2);
int[] arr = new int[3];
arr[0] = 1;
arr[1] = 2;
arr[2] = 3;
ArrayList a1 = new ArrayList();
a1.AddRange(list);
foreach(int i in a1)
    Console.WriteLine(i);
```

A. Valid

B. Not valid

11- What is the output of this code?

```
LinkedList<int> list = new LinkedList<int>();
list.AddLast(0);
list.AddLast(1);
list.AddLast(2);
int[] arr = new int[3];
arr[0] = 1;
arr[1] = 2;
arr[2] = 3;
ArrayList a1 = new ArrayList();
a1.AddRange(list);
Console.WriteLine(a1.Contains(4));
```

A. True

B. False

C. -1

D. 1

12- What is the output of this code?

```
int[] arr = new int[3];
arr[0] = 4;
arr[1] = 6;
arr[2] = 8;
arr[3] = 8;
arr[4] = 8;
ArrayList a1 = new ArrayList();
a1.AddRange(arr);
Console.WriteLine(a1.IndexOf(8));
```

A. 3

B. 4

C. 2

13- What is the output of this code?

```
int[] arr = new int[5];
arr[0] = 4;
arr[1] = 6;
arr[2] = 8;
arr[3] = 9;
arr[4] = 8;
ArrayList a1 = new ArrayList();
a1.AddRange(arr);
ArrayList a2 = new ArrayList();
a1.CopyTo(a2);
foreach(int i in a2)
    Console.Write(i+" ");
```

A. 4 6 8 9 8
B. 4 6 8 9
C. Error

14-is this code work?

```
ArrayList arrayList = new ArrayList();
arrayList.Add(1);
arrayList.Add(2);
arrayList.Add(3);
int[] Array1 = new int[arrayList.Count];
arrayList.CopyTo(Array1);
foreach (int element in Array1)
{
    Console.Write(element + " ");
}
```

A. Yes
B. No

15- What is the output of this code?

```
int[] arr = new int[5];
arr[0] = 4;
arr[1] = 6;
arr[2] = 8;
arr[3] = 9;
arr[4] = 8;
ArrayList a1 = new ArrayList();
a1.AddRange(arr);
Console.Write(a1.Count()); // a1.count
```

A. 5
B. 4
C. 3
D. Error

16- What is the output of this code?

```
ArrayList arrayList = new ArrayList();
arrayList.Add("Apple");
arrayList.Add("Banana");
arrayList.Add("Cherry");
arrayList.Add("Durian");
ArrayList subList = arrayList.GetRange(3, 2);
foreach (string element in subList)
{
    Console.WriteLine(element);
}

Console.ReadKey();
```

A. Durian
B. Cherry Durian
C. Banana Cherry Durian
D. Error

17- What is the output of this code?

```
int[] arr = new int[5];
arr[0] = 4;
arr[1] = 6;
arr[2] = 8;
arr[3] = 9;
arr[4] = 8;
ArrayList a1 = new ArrayList();
a1.AddRange(arr);
a1.Insert(2, 0);
foreach(int i in a1)
    Console.Write(i+" ");
```

A. 4 6 8 0 9 8
B. 4 6 0 8 9 8

18- What is the output of this code?

```
int[] arr = new int[3];
arr[0] = 4;
arr[1] = 6;
ArrayList a1 = new ArrayList();
a1.AddRange(arr);
a1.InsertRange(1, arr);
foreach(int i in a1)
    Console.Write(i+" ");
Console.ReadKey();
```

A. 4 6 4 6
B. 4 4 6 6
C. 4 4 6 0 6 0

18- What is the output of this code?

```
int[] arr = new int[3];
arr[0] = 4;
arr[1] = 6;
ArrayList a1 = new ArrayList();
a1.AddRange(arr);
a1.RemoveAt(2);
a1.InsertRange(1, arr);
foreach(int i in a1)
    Console.Write(i+" ");
Console.ReadKey();
```

A. 4 4 6 6
B. 4 4 6 6 0
C. 4 4 6 0 6
D. 4 4 6 0 6 0

19- What is the output of this code?

```
int[] arr = new int[3];
arr[0] = 4;
arr[1] = 6;
ArrayList a1 = new ArrayList();
a1.AddRange(arr);
a1.Reverse();
a1.RemoveAt(2);
a1.InsertRange(1, arr);
foreach(int i in a1)
    Console.Write(i+" ");
Console.ReadKey();
```

A. 6 4 6 4
B. 6 6 4 4
C. 0 6 4 6 4
D. 0 4 6 0 6

20- What is the output of this code?

```
int[] arr = new int[3];
arr[0] = 4;
arr[1] = 6;
ArrayList a1 = new ArrayList();
a1.AddRange(arr);
a1.Reverse();
a1.RemoveAt(2);
a1.InsertRange(1, arr);
a1.Sort();
a1.Reverse();
foreach(int i in a1)
    Console.Write(i+" ");
Console.ReadKey();
```

A. 0 0 4 6 6
B. 0 4 6 0 6
C. 0 4 6 4 6
D. 6 6 4 0 0

محمد بكر عبد المنعم المسماري

```
static void Main(string[] args)
{
	Queue<int> q = new Queue<int>();
	q.Enqueue(1);
	q.Enqueue(2);
	q.Enqueue(q.Peek());
	q.Enqueue(q.Dequeue());
	q.Dequeue();
	Console.WriteLine(q.Peek());
}
```

Output is:

a. 2
b. 1
c. 3
d. 4

```
static void Main(string[] args)
{
	LinkedList<int> linkedList = new LinkedList<int>();
	linkedList.AddLast(1);
	linkedList.AddLast(linkedList.First.Value);
	linkedList.AddAfter(linkedList.First.Next, 2);
	linkedList.Remove(linkedList.Find(1));
	foreach (int ele in linkedList)
	{
		Console.Write(ele+" ");
	}
	Console.WriteLine();
}
```

Output is:

a. 1 1 2
b. 1 2 1
c. 1 2
d. 2 1 1

```
static void Main(string[] args)
{
	List<int> li  = new List<int>();
	li.Add(3);
	li.Add(5);
	li.Add(7);
	li.Add(9);
	li.Add(11);
	Console.WriteLine("Capacity = "+li.Capacity+" , Count = "+li.Count());
}
```

Output is:

a. Capacity = 16 , Count = 5
b. Capacity = 8 , Count = 5
c. Capacity = 4 , Count = 4
d. Capacity = 4 , Count = 5

```
static void Main(string[] args)
{
	List<int> li  = new List<int>();
	li.AddRange(new int[] { 1,2,3});
	li.RemoveRange(1, 2);
	li.Add(11);
	foreach(int ele in li)
	{
		Console.Write(ele + " ");
	}
	Console.WriteLine();
}
```

Output is:

a. 1 2 3 11
b. 1 2 11
c. 1 11
d. 2 11 1 3

```
static void Main(string[] args)
{
	int[] arr = new int[11];
	for(int i =0;i<arr.Length;i++)
	{
		arr[i] = i*2;
	}
	foreach(int ele in arr)
	{
		Console.Write(ele + " ");
	}
	Console.WriteLine();
}
```

Output is:

a. 0 2 4 6 8 10 12 14 16 18 20
b. 1 2 5 6 9 10 13 14 17 18 21
c. 0 2 4 6 8 10 12 14 16 18 20
d. OutOfRange

```
static void Main(string[] args)
{
	int[] arr = new int[11];
	for(int i =0;i<arr.Length+1;i++)
	{
		arr[i] = i*2;
	}
	foreach(int ele in arr)
	{
		Console.Write(ele + " ");
	}
	Console.WriteLine();
}
```

Output is:

a. 0 2 4 6 8 10 12 14 16 18 20
b. 1 2 5 6 9 10 13 14 17 18 21
c. 0 2 4 6 8 10 12 14 16 18 20
d. OutOfRange

```
static void Main(string[] args)
{
	ArrayList arrL = new ArrayList();
	arrL.Add(1);
	arrL.Add("Amr");
	arrL.Add("Ali");
	arrL.Add(2.4);
	arrL.Remove(2);
	arrL.Add(true);
	foreach (object ele in arrL)
	{
		Console.Write(ele+" ");
	}
	Console.WriteLine();
}
```

Output is:

a. 1 Amr Ali 2.4 True
b. 1 Amr Ali 2.4
c. 1 Amr Ali True
d. Amr Ali

```
static void Main(string[] args)
{
	LinkedList<int> linkedList = new LinkedList<int>();
	linkedList.AddFirst(1);
	linkedList.AddFirst(4);
	linkedList.AddFirst(7);
	LinkedListNode<int> node = linkedList.First;
	while(node != null)
	{
		if (node.Value % 2 == 0) Console.Write(2+" ");
		else Console.Write(1+" ");
		node = node.Next;
	}
	Console.WriteLine();
}
```

Output is:

a. 1 1 2
b. 1 2 1
c. 1 2
d. 2 1 1

```
static void Main(string[] args)
{
	Stack<int> st = new Stack<int>();
	for(int i =1;i<6;i++)
	{
		st.Push(i);
	}
	st.Pop();
	st.Peek();
	st.Push(st.Pop());
	Console.WriteLine(st.Peek());
}
```

Output is:

a. 1
b. 4
c. 3
d. 5

Which of the following is the not correct way of declaring an array?

a. `int[] arr = new int[3];`
b. `Array<int> arr = new Array<int>();`
c. `int[] arr = { 1, 2, 3 };`
d. `int[] arr = new int[3] { 1,2,3};`

What is the process done by Pop() method in Stack?

a. Remove Top element in Stack only.
b. Remove Top element in Stack and return its value.
c. Return Top element in Stack only.
d. Return Bottom element in Stack only.

What's the Method used in Queue to return First element without remove it?

a. Dequeue()
b. Enqueue()
c. Pop()
d. Peek()

If the elements 1, 2, 3 and 4 are inserted in a Queue, what would be order for the foreach loop on Queue?

a. 1 2 3 4
b. 1 3 2 4
c. 4 3 2 1
d. 4 1 3 2

If the elements 1, 2, 3 and 4 are inserted in a Stack, what would be order for the foreach loop on Stack?

a. 1 2 3 4
b. 1 3 2 4
c. 4 3 2 1
d. 4 1 3 2

Which of the following principle is used in Queue?

a. FIFO
b. FILO
c. LIFO
d. None of the above

Every node in a linked list has two components: one to store the relevant information and one to store the address.

a. True
b. False

You can traverse Singly Linked List backward from the last node to the first node?

a. True
b. False

You can traverse Doubly Linked List backward from the last node to the first node?

a. True
b. False

Bottom element of the Stack is the last element added to Stack>

a. True
b. False

```
static void Main(string[] args)
{
	Queue<int> q = new Queue<int>();
	Stack<int> st = new Stack<int>();
	for(int i =1;i<4;i++)
	{
	q.Enqueue(i);
		st.Push(i);
	}
	foreach(int ele in q)
	{
		Console.Write(ele + " ");
	}
	Console.WriteLine();
	foreach(int ele in st)
	{
		Console.Write(ele + " ");
	}
	Console.WriteLine();
}
```

Output is:

a. 1 2 3
   3 2 1
b. 1 3 2
   2 3 1
c. 3 2 1
   1 2 3
d. 1 2 3
   1 2 3

Each node in Singly Linked List contains 2 fields?

a. True
b. False

Each node in Doubly Linked List contains 2 fields?

a. True
b. False

Data Structure Types?

a. Linear data structure.
b. Non-Linear data structure.
c. Linear and Non-Linear data Structure.
d. None of the above.

Linked List is Non-Linear data structure?

a. True
b. False

What's the ArrayList data type is object?

a. True
b. False

The return of the LinkedList.First is first node in the Linked List?

a. True
b. False

The return of the Queue.Peek() is last element inserted to Queue?

a. True
b. False

```
static void Main(string[] args)
{
	Stack<char> st = new Stack<char>();
	string word = "Ahmed";
	foreach(char c in word)
	{
		st.Push(c);
	}
	foreach(char c in st)
	{
		Console.Write(c);
	}
	Console.WriteLine();
}
```

Output is:

a. Ahmed
b. demhA
c. amedH
d. Amehd

```
static void Main(string[] args)
{
	Queue<char> q = new Queue<char>();
	string word = "Mohamed";
	foreach(char c in word)
	{
		q.Enqueue(c);
	}
	foreach(char c in q)
	{
		Console.Write(c);
	}
	Console.WriteLine();
}
```

Output is:

a. Mohamed
b. demahoM
c. Mohemad
d. demohaM

Which of the following principle is used in Stack?

a. FIFO
b. LILO
c. LIFO
d. None of the above

محمد صلاح محمد كرد

1-What is a data structure?
a) A way to organize and store data
b) A programming language
c) A type of data
d) A software tool

2-Which of the following is a non-linear data structure?
a) Array
b) Linked list
c) Tree
d) Stack

3-Which data structure is based on the principle of last-in-first-out (LIFO)?
a) Queue
b) Stack
c) Linked list
d) Tree

4-Which data structure is based on the principle of first-in-first-out (FIFO)?
a) Stack
b) Queue
c) Linked list
d) Tree

5-Which of the following is not a linear data structure?
a) Array
b) Stack
c) Queue
d) Tree

6-Which of the following is not a type of tree?
a) Binary tree
b) AVL tree
c) B-tree
d) Stack

7-Which data structure uses pointers to connect elements?
a) Array
b) Stack
c) Queue
d) Linked list

8-Which data structure is best suited for implementing a queue?
a) Array
b) Stack
c) Linked list
d) Tree

9-Which of the following is not an operation performed on a data structure?
a) Insertion
b) Deletion
c) Sort
d) Search

10-Which data structure is best suited for implementing a stack?
a) Array
b) Linked list
c) Tree
d) Queue

11-Which of the following is not a type of array?
a) One-dimensional array
b) Two-dimensional array
c) Multi-dimensional array
d) Linked array

12-Which of the following is a dynamic data structure?
a) Array
b) Stack
c) Queue
d) Linked list

13-Which of the following is a static data structure?
a) Array
b) Stack
c) Queue
d) Linked list

14-Which data structure has a constant time complexity for accessing and retrieving elements?
a) Linked list
b) Array
c) Tree
d) Stack

15-Which data structure has a time complexity of O(log n) for searching and inserting elements?
a) Stack
b) Linked list
c) Array
d) Tree

16-Which of the following is a type of linked list?
a) Single linked list
b) Double linked list
c) Circular linked list
d) All of the above

17-Which data structure uses a pointer to represent the last element?
a) Stack
b) Queue
c) Linked list
d) Array

18-Which of the following is a type of tree traversal?
a) Depth-first search
b) Breadth-first search
c) In-order traversal
d) All of the above

19-Which data structure is used to implement a priority queue?
a) Linked list
b) Stack
c) Tree
d) Heap

20-Which data structure uses a binary search to retrieve elements?
a) Stack
b) Linked list
c) Array
d) Tree

21-Which of the following is not a type of tree node?
a) Root node
b) Leaf node
c) Middle node
d) Parent node

22-Which of the following data structures is best suited for implementing a graph?
a) Linked list
b) Stack
c) Tree
d) Array

23-Which of the following is not a type of graph traversal?
a) Depth-first search
b) Breadth-first search
c) In-order traversal
24-Which data structure is based on the FIFO principle?
a) Stack
b) Queue
c) Tree
d) Linked List

25-Which of the following is not a type of tree data structure?

a) Binary tree
b) AVL tree
c) Hash tree
d) B-tree

26-Which of the following is not a type of search algorithm?
a) Binary search
b) Linear search
c) Depth-first search
d) Breadth-first search
27-Which data structure is used for implementing a recursive function?
a) Stack
b) Queue
c) Array
d) Linked List

28-Which of the following is not an application of stacks?
a) Function calls
b) Expression evaluation
c) Binary search
d) Backtracking
29-Which data structure is based on the FIFO principle?
a) Stack
b) Queue
c) Tree
d) Linked List

30-Which of the following is not a type of tree data structure?
a) Binary tree
b) AVL tree
c) Hash tree
d) B-tree

الاسم: محمد صابر عبد عبد الجليل الديباني

Multiple Choice:
Which of the following data structures is not a dynamic data structure?
a. Array b. Linked List c. Stack d. Queue
Which of the following data structures uses contiguous memory allocation?
a. Linked List b. Stack c. Queue d. Array
Which data structure follows the First-In-First-Out (FIFO) principle?
a. Linked List b. Stack c. Queue d. Array
Which data structure can be implemented using either an array or a linked list?
a. Stack b. Queue c. Both d. Neither
Which data structure is commonly used to implement recursion?
a. Stack b. Queue c. Linked List d. Array
Which data structure is commonly used for implementing undo-redo functionalities in software applications?
a. Stack b. Queue c. Linked List d. Array
Which data structure is better suited for inserting elements at the beginning of the collection?
a. Linked List b. Array c. Stack d. Queue
Which data structure is better suited for searching an element in the collection?
a. Linked List b. Array c. Stack d. Queue
Which of the following operations cannot be performed on a stack?
a. Insertion of an element b. Deletion of an element c. Access of the middle element d. None of the above
Which of the following operations is not supported by an ArrayList?
a. Insertion of an element at a specific index b. Deletion of an element at a specific index c. Access of an element at a specific index d. None of the above

Which of the following is not a linear data structure?
a. Array b. LinkedList c. Tree d. Stack
Which data structure uses a pointer to the next node to link elements?
a) Array b) LinkedList c) Stack d) Queue
Which data structure can only be traversed in a single direction?
a) Array b) LinkedList c) Stack d) Queue

Which of the following operations can be performed on a stack?
A) Push B) Pop C) Peek D) All of the above

محمد علاء محمد ابوطالب

1)What is the difference between an array and a linked list?
a) Arrays are static data structures, while linked lists are dynamic data structures
b) Arrays can store elements of different types, while linked lists can only store elements of the same type
c) Arrays have a fixed size, while linked lists can grow or shrink as needed
d) None of the above

2)Which of the following is a non-linear data structure?
a) Array
b) Linked list
c) Stack
d) Tree

3)Which data structure is best suited for implementing a LIFO (Last-In-First-Out) behavior?
a) Queue
b) Tree
c) Stack
d) Linked list

4)Which data structure is used for efficient searching and sorting of data?
a) Queue
b) Linked list
c) Stack
d) Tree

5)Which data structure uses a First-In-First-Out (FIFO) approach?
a) Queue
b) Stack
c) Linked list
d) Tree

6)Which data structure is used to implement a hash table?
a) Array
b) Linked list

c) Stack
d) Tree

7)Which data structure is used to represent a hierarchical relationship between elements?
a) Array
b) Linked list
c) Stack
d) Tree

8)Which data structure is used to implement a graph?
a) Array
b) Linked list
c) Stack
d) Tree

9)Which data structure is used to implement a priority queue?
a) Queue
b) Linked list
c) Stack
d) Tree

10)Which data structure is used to store and retrieve data in a sorted order?
a) Queue
b) Linked list
c) Stack
d) Tree

11)What is the time complexity of searching for an element in a binary search tree?
a) O(n)
b) O(log n)
c) O(n^2)
d) O(1)

12)Which of the following is not a type of binary tree?
a) Full binary tree

b) Complete binary tree
c) Perfect binary tree
d) Balanced binary tree

13)Which of the following is not a type of tree traversal?
a) Breadth-first traversal
b) Depth-first traversal
c) In-order traversal
d) Binary traversal

14)Which data structure is used to implement depth-first search in a graph?
a) Queue
b) Linked list
c) Stack
d) Tree

15)Which data structure is used to implement breadth-first search in a graph?
a) Queue
b) Linked list
c) Stack
d) Tree

16)What is the time complexity of adding an element to the end of a linked list?
a) O(n)
b) O(log n)
c) O(1)
d) O(n^2)

17)What is the time complexity of adding an element to the beginning of an array?
a) O(n)
b) O(log n)
c) O(1)
d) O(n^2)

18)Which data structure is used to implement a cache?
a) Queue

b) Linked list
c) Stack
d) Tree

19)Which data structure is used to implement undo-redo functionality?
a) Queue
b) Linked list
c) Stack
d) Tree

20)What is the time complexity of searching for an element in a hash table?
a) O(n)
b) O(log n)
c) O(1)
d) O(n^2)

21)Which of the following is a data structure used to store a collection of elements of the same data type?
a) Array
b) Stack
c) Queue
d) Linked list

22)Which of the following data structures uses LIFO (Last-In, First-Out) order?
a) Stack
b) Queue
c) Linked list
d) Tree

23)Which of the following data structures uses FIFO (First-In, First-Out) order?
a) Stack
b) Queue
c) Linked list
d) Tree

24)Which of the following data structures allows for fast insertion and deletion at both the beginning and end?

a) Array
b) Linked list
c) Stack
d) Queue

25)Which of the following is not a type of tree data structure?
a) Binary tree
b) B-tree
c) AVL tree
d) Linked tree

26)What is the worst-case time complexity for searching an element in an unsorted array of n elements?
a) O(n)
b) O(log n)
c) O(n log n)
d) O(1)

27)What is the worst-case time complexity for searching an element in a sorted array of n elements using binary search?
a) O(n)
b) O(log n)
c) O(n log n)
d) O(1)

28)Which of the following data structures uses key-value pairs to store data?
a) Array
b) Linked list
c) Hash table
d) Tree

29)What is the worst-case time complexity for inserting an element into an array of n elements at a random position?
a) O(n)
b) O(log n)
c) O(n log n)
d) O(1)

30)Which of the following is not a type of linked list?
a) Singly linked list
b) Doubly linked list
c) Circular linked list
d) Quad linked list

احمد اسامه سمير محمد

1. 1. Data structures can be divided into _B types
A) One
B) Two
B) Three
D) Four

2. In general, the index of the first element in an array is a
a) 0
b) -1
c) 2
d) 1

3. Array is an example of a data structure
a) Linear data structure
b) Non-Linear data structure

4. Which of these best describes an array? b
a) A data structure that shows a hierarchical behavior
b) Array contains elements only of the same type.
c) Arrays are immutable once initialized.
d) Array is not a data structure

5. What are the advantages of arrays? d
a) Objects of mixed data types can be stored
b) Elements in an array cannot be sorted
c) Index of first element of an array is 1
d) Easier to store elements of same data type

6. What are the disadvantages of arrays? b
a) Data structure like queue or stack cannot be implemented
b) There are chances of wastage of memory space if elements inserted in an array are lesser than the allocated size
c) Index value of an array can be negative
d) Elements are sequentially accessed

7. Select non-linear data structures from the list of following data structures E

A) Linked List
B) Graphs
C) Array
D) Trees
E) Both B and D

8. In the linked list the elements are connected by the link field which contains the address of the A

A) Next Node
B) Previous node
C) The Last node
D) None of these

9. The process to find the location of the record with the given key value is called _C

A) Traversing
B) Sorting
C) Searching
D) Deletion

10. D is a data structure in which insertions and deletions are restricted at one end, called the top.

A) Linked Lists
B) Trees
C) Graph
D) Stack

11. D is the process of removing a node from the linked list.

A) Traversal
B) Searching
C) Insertion
D) Deletion

12. The two basic operations in the stack are __C .
A) Insertion and deletion
B) Searching and sorting
C) Push and pop
D) None of these

13. Before executing push operation one must check for the B condition.
A) Underflow
B) Overflow
C) Full
D) Empty

14. Before executing the pop operation we must check for the A_ condition.
A) Underflow
B) Overflow
C) Full
D) Empty

15. A C is a non-linear data structure consisting of a root node.
A) Stack
B) Queue
C) Tree
D) Graph

16. Which method adds a new item to the queue? C
A) Addition.
B) Insertion.
C) Enqueue.
D) Dequeue.

17. A tree with no nodes is called A .
A) Null
B) Void
C) Free
D) Open

18. B_ and _B are examples of linear and non-linear data structures, respectively.

A) Stack, queue
B) Array, graphs
C) Trees, files
D) Graphs, linked list

19. Name the two parts in which a node is divided. D

A) Next field, raw field
B) Next field, data field
C) Link field, raw field
D) Data field, link field

20. Stack cannot be used to D

A) Evaluate an arithmetic expression in postfix form
B) Implement recursion
C) Convert infix form to postfix of an expression
D) Allocate resources by the operating system

21. If the elements '1', '2', '3' and '4' are inserted in a queue, what would be order for the removal? A

A) 1234

B) 4321

C) 3241

D) None of the above

22. A list of elements in which En queue operation takes place from one end, and De queue operation takes place from one end is C

A) Binary tree

B) Stack

C) Queue

D) Linked list

23. which of the following type of data structure is used in recursion? D

A) Queues type of data structure

B) Array type of data structures

C) List type of data structures

D) Stack type of data structures

24. Name the type of data structure among the following that could be used to implement queues? D

A) Linked List type of data structure

B) Arrays type of data structure

C) Stack type of data structure

D) All of the above following type

25. The advantage of B is that they solve the problem if sequential storage representation. But disadvantage in that is they are sequential lists.

A) Lists

B) Linked Lists

C) Trees

D) Queues

26. Stack is also called as A

A) Last in first out
B) First in last out
C) Last in last out
D) First in first out

27. For declaring an array, which of the following way is correct? B

A) int arr;

B) int arr[10];

C) arr{10};

D) None of the above

28. Which among the following data structures is best suited for storing very large Numbers. B

a) HashMap
b) Linked List.
c) Tree
d) Stack

29. D is not the component of data structure?

A) Operations
B) Storage Structures
C) Algorithms
D) None of above

29. A is very useful in situation when data have to stored and then retrieved in reverse order?

A) Stack
B) Queue
C) List
D) Linked list

30. A refers to a linear collection of data items ?

A. List
B. Tree
C. Graph
D. Edge

أحمد السيد توفيق ابراهيم غلوش

1. What is an array? a. A collection of elements of the same data type b. A collection of elements of different data types c. A collection of elements with no data type d. None of the above

2. What is the difference between an array and an array list? a. Array is a static data structure while array list is a dynamic data structure b. Array is a dynamic data structure while array list is a static data structure c. Array and array list are both static data structures d. None of the above

3. What is a linked list? a. A data structure where elements are stored in contiguous memory locations b. A data structure where elements are stored in non-contiguous memory locations c. A data structure where elements are stored in a stack d. None of the above

4. What is the difference between a singly linked list and a doubly linked list?
a. Singly linked list has one pointer while doubly linked list has two pointers
b. Singly linked list has two pointers while doubly linked list has one pointer
c. Singly linked list and doubly linked list have the same number of pointers
d. None of the above

5. What is a stack?
a. A data structure where elements are stored in a queue
b. A data structure where elements are stored in a linked list c. A data structure where elements are stored in a last-in-first-out (LIFO) manner d. None of the above

6. What is a queue?
a. A data structure where elements are stored in a stack
b. A data structure where elements are stored in a linked list c. A data structure where elements are stored in a first-in-first-out (FIFO) manner d. None of the above

7. What is a priority queue?

a. A data structure where elements are stored in a stack b. A data structure where elements are stored in a linked list c. A data structure where elements are stored based on priority d. None of the above

8. What is linear search?

a. A search algorithm that works on sorted data b. A search algorithm that works on unsorted data c. A search algorithm that works on arrays only d. None of the above

9. What is binary search?

a. A search algorithm that works on sorted data b. A search algorithm that works on unsorted data c. A search algorithm that works on arrays only d. None of the above

10. Which data structure is used to store a collection of elements of the same data type?

a) Array b) Stack c) Linked list d) Queue

11. Which data structure is used to implement a stack?

a) Array b) Stack c) Linked list d) Queue

12. What is a hash table?

a. A data structure that uses a hash function to map keys to values b. A data structure that stores elements in a binary tree c. A data structure that stores elements in a linked list d. None of the above

13. What is a hash function?

a. A function that converts data into a fixed-size hash code b. A function that converts data into a linked list c. A function that converts data into a binary tree d. None of the above

14. What is collision in a hash table?

a. When two or more keys hash to the same index b. When two or more keys hash to different indices c. When a key is not found in the hash table d. None of the above

15. What is an array index?

a. The value of an element in an array b. The position of an element in an array c. The number of elements in an array d. None of the above

16. What is an array list index?

a. The value of an element in an array list b. The position of an element in an array list c. The number of elements in an array list d. None of the above
17. What is a dynamic array?
a. An array whose size is fixed at compile time b. An array whose size can be changed during runtime c. An array whose size is fixed during runtime d. None of the above
18. What is a circular queue?
a. A queue where elements are stored in a circular manner b. A queue where elements are stored in a linear manner c. A queue where elements are stored in a binary tree d. None of the above
19. What is a doubly linked list? a. A linked list where each node has two pointers b. A linked list where each node has one pointer c. A linked list where each node has no pointers d. None of the above

20. What is a linear linked list? a. A linked list where each node has one pointer b. A linked list where each node has two pointers c. A linked list where each node has no pointers d. None of the above
21. What is a stack overflow? a. A condition where the stack is full and no more elements can be added b. A condition where the stack is empty and no more elements can be removed c. A condition where the stack has too many elements d. None of the above
22. What is a heap? a. A data structure that stores elements in a binary tree b. A data structure that stores elements in a linked list c. A data structure that stores elements in a stack d. None of the above
23. What is a tree? a. A data structure where elements are stored in a binary tree b. A data structure where elements are stored in a linked list c. A data structure where elements are stored in a queue d. None of the above
24. What is a binary tree? a. A tree where each node has one child b. A tree where each node has two children c. A tree where each node has three children d. None of the above
25. What is a traversal in a binary tree? a. The process of visiting every node in a binary tree b. The process of inserting nodes in a binary tree c. The process of deleting nodes in a binary tree d. None of the above
26. What is a preorder traversal in a binary tree? a. Visit the root, then the left subtree, then the right subtree b. Visit the left subtree, then the root, then the right subtree c. Visit the left subtree, then the right subtree, then the root d. None of the above

27. What is an inorder traversal in a binary tree? a. Visit the root, then the left subtree, then the right subtree b. Visit the left subtree, then the root, then the right subtree c. Visit the left subtree, then the right subtree, then the root d. None of the above
28. What is a postorder traversal in a binary tree? a. Visit the root, then the left subtree, then the right subtree b. Visit the left subtree, then the root, then the right subtree c. Visit the left subtree, then the right subtree
29. Which data structure is best suited for implementing a dynamic data structure that can grow or shrink in size? a) Array b) Stack c) Linked list d) Queue

30. Which data structure allows random access to its elements using an index? a) Array b) Stack c) Linked list d) Queue
31. Which data structure is used to store a collection of elements of different data types? a) Array b) Stack c) Linked list d) Queue

الاسم /طه طارق سعد بليله
1-what is the difference between list and array in c#?

A-List allows adding and removing items at runtime, while the size of an array is determined at creation
B-List is a collection of items linked sequentially, while an array is a collection of items linked linearly.
C-List uses IEnumerable and ICollection, while array only uses IEnumerable.
D-All of the above are correct.

2-What is the difference between a Stack and a Queue in C # ?

A- Stack follows Last-In-First-Out (LIFO) order, while a Queue follows First-In-First-Out (FIFO) order.
B-A Stack allows access to its elements through a single endpoint, while a Queue allows access through both endpoints.
C-A Stack uses Push() and Pop() methods, while a Queue uses Enqueue() and Dequeue() methods.
D-All of the above are correct.

3-What the output:

A-1 Bill True 4.5
B-Bill True 4.5 1
C-Error
D-There is no correct answer

4-what the output

A-Count : 2 ,Capacity : 4
B-Count : 0 ,Capacity : 2
B-Count : 2 ,Capacity : 2
D-there is no correct answer

5-What is a LinkedList in C#?

a. It is a collection that stores items in a sequential order.
b. It is a collection that allows duplicate items.
c. It is a collection that stores items as nodes that are linked together.
d. It is a collection that allows random access to its elements.

6-What the output

A- 4 5 6 7 8 9 B-456789
C-45 67 89 D-error

7-

A-5 B-4
C-6 D-0

8-What is a SortedList in C#?
a. It is a collection that stores key-value pairs sorted by the keys.
b. It is a collection that stores items in a sequential order.
c. It is a collection that allows duplicate items.
d. It is a collection that stores unique items in an unordered collection.

9-How can you reverse a string in C#?
a. Using the built-in Array.Reverse() method.
b. Using the built-in String.Reverse() method.
c. Implementing a custom string reversal algorithm.
d. All of the above are correct.

10-what the output

A-3 B-2
C-4 D-8 9 2

11-what the output

A-A-True
False

B-True
True

C-False
False

D-False
True

12-what the output

A- taha tarek m null 1234 490.98
B- 1234 490.98 null m taha tarek
C- taha tarek 1234 490.98
D- 490.98 1234 m tarek taha

13-The operation ----------does not effect stack.
A-pop B-push
C-top D-none of above

14-what the output

A-Total elements present in my_stack:4
Total elements present in my_stack:3
Total elements present in my_stack:3

B- Total elements present in my_stack:4
Total elements present in my_stack:0
Total elements present in my_stack:3

C-Total elements present in my_stack:4

D- Total elements present in my_stack:4

Total elements present in my_stack:3 Total elements present in my_stack:0
Total elements present in my_stack:0

15----------is an example of non-linear data structure
A-stack B-Array
B-Graph D-Queue

16----------is an example of LIFO (Last is First Out)data structure
A-stack B-Array
C-Graph D-Queue

17-The operation ---------- does not effect on a stack.
A-push B-pop
B-top D-clear

18-what the output

A-Element is found...!! B-Element is not found...!!
B-error D-none of above

19-what output

A-Total elements present in my: 5 B-Total elements present in my: 5
Total elements present in my: 4 Total elements present in my: 5
Total elements present in my: 0 Total elements present in my: 5

C-Total elements present in my: 5 D-error
Total elements present in my: 4
Total elements present in my: 0

20- What the output

A-All items deleted successfully B-error
B-none of above D-10 20 30 40

21-…… form of access is used to add and remove nodes from a queue.
A. LIFO, Last In First Out B. FIFO, First In First Out
C. Both a and b D. None of these

22- The term push and pop is related to
A- Array B-Lists
C- Stacks D-Trees

23- To perform level-order traversal on a binary tree, which of the following data structure will be required?
A- Hash table B- Queue
C-Binary search tree D-Stack

24-Which of the following data structure can't store the nonhomogeneous data elements?
A- Arrays B -Stacks
C -Records D -None of the above

25- A linear list in which the pointer points only to the successive node is.....
A -singly linked list B- circular linked list
C -doubly linked list D -none of the above

26-what the output

A-yes B-no

B-error D-none of above

27-What is a Stack in C#?
a. It is a collection that stores key-value pairs.
b. It is a collection that stores items in a sequential order.
c. It is a collection that allows duplicate items.
d. It is a collection that stores items in a Last-In-First-Out (LIFO) order.

28-what the output

A-yes B-no
C-none of above D-error

29-what the output

A- 4,3,2,1
Number of elements in Stack:0

B- Number of elements in Stack:0
1,2,3,4

C-1,2,3,4
Number of elements in Stack:0

D-none of above

30-What the output

B-True
False

B-True
True

C-False
False

D-False
True

منة الله عصام ابو الحسن

1-Consider the following operation performed on a stack of size

Push(1);
Pop();
Push(2);
Push(3);
Pop();
Push(4);
Pop();
Pop();
Push(5);

After the completion of all operation, the no of element present on stack are

a) 1
b) 2
c) 3
d) 4

2- A linear collection of data elements where the linear node is given by means of pointer is

a) array list
b) list
c) linked list
d) no thing

3-in linked list each node contain minimum of two fields . one field is data field to store the data , second field is …….

a) pointer to character
b) pointer to integer
c) pointer to node
d) nothing

4-what is the disadvantage of array data structure

a) The amount of memory to be allocated should be known beforehand.
b) Elements of an array can be accessed in constant time
c) Elements are stored in contiguous memory blocks.
d) Multiple other data structures can be implemented using arrays.

5- . In doubly linked lists, traversal can be performed?

a) Only in forward direction

b) Only in reverse direction
c) In both directions
d) None

6- . What is the result of the following operation Top (Push (S, X))
a) X
b) Null
c) S
d) None

7- Consider the linked list implementation of a stack. Which of the following node is considered as Top of the stack?

a) First node
b) Last node
c) Any node
d) Middle node

8- Which of the following operations is performed more efficiently by doubly linked list than by singly linked list?

a) Deleting a node whose location in given
b) Searching of an unsorted list for a given item
c) Inverting a node after the node with given location
d) Traversing a list to process each node

9- In general, the index of the first element in an array is _____
a) 0
b) -1
c) 2
d) 1

10- A queue follows _____
a) FIFO (First In First Out) principle
b) LIFO (Last In First Out) principle
c) Ordered array

d) Linear tree

11-what the output of this program

```
{  LinkedList <int> L = new LinkedList<int>();
  L.AddFirst(5);
  L.AddFirst(2);
  L.AddFirst(8);
  L.AddLast(4);
  L.AddLast(9);
  L.AddLast(1);
  Console.Write("Linked List elements are: ");
  foreach (int i in L)
    {  Console.Write(i + " ");  } }
```

a) 914852
b) 852491
c) 825491
d) 194528

12-what out put after deletion

```
{  LinkedList <int> L = new LinkedList<int>();
      L.AddFirst(5);
      L.AddFirst(2);
      L.AddFirst(8);
      L.AddLast(4);
      L.AddLast(9);
      L.AddLast(1);
      Console.Write("Original Linked List: ");
      foreach (int i in L)
      {   Console.Write(i + " ");}
      L.RemoveFirst();
      L.RemoveLast();
      Console.WriteLine();
      Console.Write("Linked List after deletion: ");
      foreach (int i in L)
      {  Console.Write(i + " ");}
}
```

a) 825491
b) 2549
c) 9452
d) 194528

13-what output of this program

```
public static void main(String args[])
 {
  int []arr = {1,2,3,4,5};
  console.writeline(arr[2]);
  console.writeline(arr[4]);
 }
}
```

a) 3 and 5
b) 5 and 3

c) 2 and 4
d) 4 and 2

14-which of following data structure works on the principle of first come first serve

a) priority queue
b) heap
c) stack
d) queue

15-A queue where all elements have equal priority is a

a) ILFO data structure
b) LILO data structure
c) FIFO data structure
d) LIFO data structure

16-what is right way to initialize array
.

a) int num[6] = { 2, 4, 12, 5, 45, 5 };
b) int n{} = { 2, 4, 12, 5, 45, 5 };
c) int n{6} = { 2, 4, 12 };
d) int n(6) = { 2, 4, 12, 5, 45, 5 };

17-an array elements are always stored in ……. memory locations

a) Sequential
b) Random
c) Sequential and Random
d) None of the above

18-Process of inserting an element in stack is called ____.

a) Create
b) Push
c) Evaluation
d) Pop

19-Process of removing an element from stack is called __

a) Create
b) Push
c) Evaluation
d) Pod

20-In a stack, if a user tries to remove an element from empty stack it is called _____.

a) Underflow
b) Empty collection
c) Overflow
d) Garbage Collection

21- what output of this program

```
{
public static void main(String args[])
 {
  int []arr = {1,2,3,4,5};
  System.out.println(arr[5]);
 }
}
```

a) 4
b) 5
c) array index out of bounds exception
d) inavlidinput exception

```
Queue<string> strQ = new Queue<string>();
strQ.Enqueue("H");
strQ.Enqueue("e");
```

```
strQ.Enqueue("l");
strQ.Enqueue("l");
strQ.Enqueue("o");

Console.WriteLine("Total elements: {0}", strQ.Count);

while (strQ.Count > 0)
   Console.WriteLine(strQ.Dequeue());
Console.WriteLine("Total elements: {0}", strQ.Count);
```

22- what output of first print of above program

a) 4
b) 5
c) 0
d) hello

23- what output of second print of above program

a) 4
b) 5
c) 0
d) hello

24- what output of thid print of above program

a) 4
b) 5
c) 0
d) hello

25-what out put

```
Stack<int> myStack = new Stack<int>();
myStack.Push(1);
myStack.Push(2);
myStack.Push(3);
myStack.Push(4);

foreach (var item in myStack)
    Console.Write(item + ",");
```

a) 1234
b) 1
c) 4
d) 4321

26-4. In Linked List implementation, a node carries information regarding _____

a) Data
b) Link
c) Data and Link
d) Node

27- Linked list is considered as an example of _____ type of memory allocation.

a) Dynamic
b) Static
c) Compile time
d) Heap

28- Which of the following properties is associated with a queue?

a) First In Last Out
b) First In First Out
c) Last In First Out
d) Last In Last Out

29- To implement a stack using queue(with only enqueue and dequeue operations), how many queues will you need?

a) 1
b) 2
c) 3
d) 4

30-The … method removes and returns the object at the begining of the Queue.

a) public virtual void Dequeue();
b) public virtual void Delete();
c) public virtual void Clear();
d) public virtual object Dequeue();