

MCQs on Linked list with answers

1. In a circular linked list

- a) Components are all linked together in some sequential manner.
- b) There is no beginning and no end.
- c) Components are arranged hierarchically.
- d) Forward and backward traversal within the list is permitted.

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ANSWER: B

2. A linear collection of data elements where the linear node is given by means of pointer is called?

- a) Linked list
- b) Node list
- c) Primitive list
- d) None

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ANSWER: A

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

- a) Deleting a node whose location is 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

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ANSWER: A

4. Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head and tail pointer. Given the representation, which of the following operation can be implemented in $O(1)$ time?

- i) Insertion at the front of the linked list
- ii) Insertion at the end of the linked list
- iii) Deletion of the front node of the linked list
- iv) Deletion of the last node of the linked list

- a) I and II
- b) I and III
- c) I,II and III
- d) I,II and IV

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ANSWER: C

5. Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head pointer only. Given the representation, which of the following operation can be implemented in $O(1)$ time?

- i) Insertion at the front of the linked list
- ii) Insertion at the end of the linked list
- iii) Deletion of the front node of the linked list
- iv) Deletion of the last node of the linked list

- a) I and II

- b) I and III
- c) I,II and III
- d) I,II and IV

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ANSWER: B

6. Consider an implementation of unsorted doubly linked list. Suppose it has its representation with a head pointer and tail pointer. Given the representation, which of the following operation can be implemented in $O(1)$ time?

- i) Insertion at the front of the linked list
- ii) Insertion at the end of the linked list
- iii) Deletion of the front node of the linked list
- iv) Deletion of the end node of the linked list

- a) I and II
- b) I and III
- c) I,II and III
- d) I,II,III and IV

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ANSWER: D

7. Consider an implementation of unsorted doubly linked list. Suppose it has its representation with a head pointer only. Given the representation, which of the following operation can be implemented in $O(1)$ time?

- i) Insertion at the front of the linked list
- ii) Insertion at the end of the linked list
- iii) Deletion of the front node of the linked list

iv) Deletion of the end node of the linked list

a) I and II

b) I and III

c) I,II and III

d) I,II,III and IV

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ANSWER: B

8. Consider an implementation of unsorted circular linked list. Suppose it has its representation with a head pointer only. Given the representation, which of the following operation can be implemented in $O(1)$ time?

i) Insertion at the front of the linked list

ii) Insertion at the end of the linked list

iii) Deletion of the front node of the linked list

iv) Deletion of the end node of the linked list

a) I and II

b) I and III

c) I, II, III and IV

d) None

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ANSWER: D

9. Consider an implementation of unsorted circular doubly linked list. Suppose it has its representation with a head pointer only. Given the representation, which of the following operation can be implemented in $O(1)$ time?

- i) Insertion at the front of the linked list
 - ii) insertion at the end of the linked list
 - iii) Deletion of the front node of the linked list
 - iv) Deletion of the end node of the linked list
- a) I and II
 - b) I and III
 - c) I, II and III
 - d) I,II,III and IV

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ANSWER: D

10. 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) Node

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ANSWER: C

11. What would be the asymptotic time complexity to add a node at the end of singly linked list, if the pointer is initially pointing to the head of the list?

- a) $O(1)$
- b) $O(n)$
- c) $\theta(n)$
- d) $\theta(1)$

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ANSWER: C

12. What would be the asymptotic time complexity to add an element in the linked list?

- a) $O(1)$
- b) $O(n)$
- c) $O(n^2)$
- d) None

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ANSWER: B

13. What would be the asymptotic time complexity to find an element in the linked list?

- a) $O(1)$
- b) $O(n)$
- c) $O(n^2)$
- d) None

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ANSWER: B

14. What would be the asymptotic time complexity to insert an element at the second position in the linked list?

- a) $O(1)$
- b) $O(n)$
- c) $O(n^2)$
- d) None

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ANSWER: A

15. The concatenation of two list can performed in $O(1)$ time. Which of the following variation of linked list can be used?

- a) Singly linked list
- b) Doubly linked list
- c) Circular doubly linked list
- d) Array implementation of list

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ANSWER: C

16. Consider the following definition in c programming language

struct node

```
{  
    int data;  
    struct node * next;  
}
```

typedef struct node NODE;

NODE *ptr;

Which of the following c code is used to create new node?

- a) `ptr=(NODE*)malloc(sizeof(NODE));`
- b) `ptr=(NODE*)malloc(NODE);`
- c) `ptr=(NODE*)malloc(sizeof(NODE*));`
- d) `ptr=(NODE)malloc(sizeof(NODE));`

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ANSWER: A

17. A variant of linked list in which last node of the list points to the first node of the list is?

- a) Singly linked list
- b) Doubly linked list
- c) Circular linked list
- d) Multiply linked list

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ANSWER: C

18. In doubly linked lists, traversal can be performed?

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

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ANSWER: C

19. What kind of linked list is best to answer question like “What is the item at position n?”

- a) Singly linked list
- b) Doubly linked list
- c) Circular linked list
- d) Array implementation of linked list

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ANSWER: D

20. A variation of linked list is circular linked list, in which the last node in the list points to first node of the list. One problem with this type of list is?

- a) It waste memory space since the pointer head already points to the first node and thus the list node does not need to point to the first node.
- b) It is not possible to add a node at the end of the list.
- c) It is difficult to traverse the list as the pointer of the last node is now not NULL
- d) All of above

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ANSWER: C

21. A variant of the linked list in which none of the node contains NULL pointer is?

- a) Singly linked list
- b) Doubly linked list
- c) Circular linked list
- d) None

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ANSWER: C

22. In circular linked list, insertion of node requires modification of?

- a) One pointer
- b) Two pointer
- c) Three pointer
- d) None

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ANSWER: B

23. Which of the following statements about linked list data structure is/are TRUE?

- a) Addition and deletion of an item to/ from the linked list require modification of the existing pointers
- b) The linked list pointers do not provide an efficient way to search an item in the linked list
- c) Linked list pointers always maintain the list in ascending order
- d) The linked list data structure provides an efficient way to find kth element in the list

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ANSWER: B

24. Linked lists are not suitable to for the implementation of?

- a) Insertion sort
- b) Radix sort
- c) Polynomial manipulation
- d) Binary search

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ANSWER: D

25. In worst case, the number of comparison need to search a singly linked list of length n for a given element is

- a) $\log n$
- b) $n/2$
- c) $\log_2 n - 1$
- d) n

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ANSWER: D

26. consider the function f defined here:

```
struct item
{
    int data;
    struct item * next;
};

int f (struct item *p)
{
    return((p==NULL) || ((p->next==NULL) || (p->data<=p->next->data) && (p->next)));
}
```

For a given linked list p, the function f returns 1 if and only if

- a) the list is empty or has exactly one element
- b) the element in the list are sorted in non-decreasing order of data value
- c) the element in the list are sorted in non-increasing order of data value
- d) not all element in the list have the same data value

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ANSWER: B

27. The following C function takes a singly linked list as input argument. It modifies the list by moving the last element to the front of the list and returns the modified list. Some part of the code left blank.

```
typedef struct node
{
    int value;
    struct node* next;
}Node;

Node* move_to_front(Node* head)
{
    Node* p, *q;
    if((head==NULL) || (head->next==NULL))
        return head;
    q=NULL;
    p=head;
    while(p->next != NULL)
    {
        q=p;
        p=p->next;
    }
    return head;
}
```

Choose the correct alternative to replace the blank line

- a) `q=NULL; p->next=head; head =p ;`
- b) `q->next=NULL; head =p; p->next = head;`
- c) `head=p; p->next=q; q->next=NULL;`
- d) `q->next=NULL; p->next=head; head=p;`

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ANSWER: D

28. The following C Function takes a singly- linked list of integers as a parameter and rearranges the elements of the lists. The function is called with the list containing the integers 1,2,3,4,5,6,7 in the given order. What will be the contents of the list after the function completes execution?

```
struct node{  
  
    int value;  
  
    struct node* next;  
  
};  
  
void rearrange (struct node* list)  
{  
    struct node *p,q;  
    int temp;  
    if (! List || ! list->next) return;  
    p->list; q=list->next;  
    while(q)  
    {  
        temp=p->value; p->value=q->value;  
        q->value=temp;p=q->next;  
        q=p?p->next:0;  
    }  
}
```

}

a) 1, 2, 3, 4, 5, 6, 7

b) 2, 1, 4, 3, 6, 5, 7

c) 1, 3, 2, 5, 4, 7, 6

d) 2, 3, 4, 5, 6, 7, 1

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ANSWER: B