Inter-State School Of Higher Education
PAUL BIYA TECHNOLOGICAL CENTRE OF EXCELLENCE
P.O Box 13 719 Yaounde (Cameroon) Tel. (237) 22 72 99 58
Web site: www.iaicameroun.com E-mail: iaicameroun@yahoo.fr

CONTINOUS ASSESMENT **DESIGN AND IMPLEMENTATION OF DATA STRUCTURES**
Level : I Academic year: 2020/2021 Speciality : Software Engineering Duration : 01h

MCQ(Correct answer: +0.75; Wrong answer: -0.5 ;No answer: 0)

1. Which statement is true about a circular linked list
   a) Components are all linked together in some sequential manner.
   b) Components are arranged hierarchically.
   c) Forward and backward traversal within the list is permitted.
   d) There is no beginning and no end.
2. A linear collection of data elements where the linear node is given by means of pointer is called?
   a) Struct Node b) Struct *Node c) Linked list d) None
3. Header linked lists are frequently used for maintaining ..... in memory
   a) Polynomilas b) Storage c) Space d) BTS
4. The representation of data structure in memory is called?
   a) File structure b) Abstract data type
   c)Storage structure d)Circular linked list
5. Which of the following is a dynamic data structure ?
   a) BTS b) Singly Linked list c) Doubly linked list d) Struct
6. In....., search starts at the begining of the list and check every element inthe list
   a) BST b) Hash search c) Binary search d) Linear search
7. The link field in a node contains :
   a) data of the next node b) data of the previous node
   c) data of the current node d) address of the next node
8. What does the following function do for a given Linked List with first node as *head*?

```
void fun1(struct node* head)
{ if(head == NULL) return;
 fun1(head->next); printf("%d ", head->data);}
```

   a) Prints all nodes of linked list in reverse order
   b) Prints alternate nodes of Linked List
   c) Prints alternate nodes in reverse order
   d) Prints all nodes of linked lists
9. Which of the following is not a disadvantage to the usage of array?
   a) Accessing elements at specified positions
   b) There are chances of wastage of memory space if elements inserted in an array are lesser than the allocated size
   c) Insertion based on position d) Fixed size
10. In a circular linked list
    a) Forward and backward traversal within the list is permitted.
    b) There is no beginning and no end.
    c) Components are all linked together in some sequential manner
    d) Components are arranged hierarchically.
11. A singly linked list is also called
    a) linked list b) two way chain
    c) one way chain d) forward list
12. To represent hierarchical relationship between elements, which data structure is suitable ?
    a) Node b) Singly c) Doubly d) Tree
13. There are how many null pointer(s) in a circular doubly linked list ?
    a) 0 b) 1 c) 2 d) 3
14. Which of the following points is/are true about Linked List data structure when it is compared with array ?
    a)It is easy to insert and delete elements in Linked List
    b) Arrays have better cache locality that can make them better in terms of performance.
    c) All of the above d) Non of the above
15. Which of these is not an application of linked list?
    a) Implementation of file systems
    b) Random access of elements
    c) Implimentation of non-binary trees
    d) performing arithmetic operations on long int
16. Which of the following operations is performed more efficiently by doubly linked list than by singly linked list?
    a) Traversing a list to process each node
    b) Inverting a node after the node with given location
    c) Searching of an unsorted list for a given item
    d) Deleting a node whose location in given
17. In a circular doubly linked list each node is divided into .....parts?
    a) 1 b) 2 c) 3 d) 4
18. Which of the data structures can't store nonhomogeneous data elements ?
    a) Array b) Tree d) Struct e) doubly linked list
19. Memory is allocated dynamically to a data structure during execution by _____ function
    a) realloc() b) malloc() c)calloc() d) All mentiioned

20. What is the output of following function for start pointing to first node of following linked list?
1->2->3->4->5->6

```
void fun(struct node* start)
{ if(start == NULL) return;
 printf("%d ", start->data);
 if(start->next != NULL )
  fun(start->next->next);
 printf("%d ", start->data);}
```

a) 1 4 6 6 4 1 b) 1 3 5 1 3 5 c) 1 3 5 5 3 1 d) 1 2 3 5

21. What kind of linked list is best to answer question like "What is the item at position n?":
a) Circular linked list
b) Array implementation of linked list
c) Doubly linked list d) Singly linked list

22. Which of the following is a non-linear data structure ?
a) Strings b) Struct c) BST d) Records

23. Let p be a pointer variable containing NULL. What happens if the program tries to write or read* p ?
a) A syntax error always occurs at compilation time
b) The results are unpredictable
c) A run-time error always occurs when *p is evaluated
d) A run time error occurs when the program stops

24. What does the following code do?

```
void function(Node node)
{ if(size == 0) p = node;
  else {Node temp,cur;
   for(cur = p; (temp = cur.getNext())!=null; cur = temp);
       cur.setNext(node);}
       size++;}
```

a) Inserting a node at the end of the list
b) Inserting a node at the beginning of the list
c) Deleting a node at the beginning of the list
d) Deleting a node at the end of the list

25. The following C function takes a single-linked list of integers as a parameter and rearranges the elements of the list. 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) 1,3,2,5,4,7,6
c) 2,3,4,5,6,7,1
d) 2,1,4,3,6,5,7

26. Which among the following segment of code deletes the element pointed to by X from the doubly linked list , if it is assumed thst X points to the first element of the list and start pointer points to the beginning of the list ?.
a) X->bwf=X->fwd ;X->fwd=X->bwd ;
b) X->bwd->bwd=X->bwd ; X->fwd->fwd=X->fwd ;
c) start=X->fwd ;start->bwd=NULL ;
d) start=X->fwd ; X->fwd =NULL

27. The following C function takes a simply-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 is left blank. Choose the correct alternative to replace the blank line.

```
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;
}
```

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

Course Instructor : M. NDENGE