

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

### REC\_DS using C\_Week 2\_MCQ\_Updated

Attempt : 1  
Total Mark : 20  
Marks Obtained : 18

#### Section 1 : MCQ

1. Consider the following function that refers to the head of a Doubly Linked List as the parameter. Assume that a node of a doubly linked list has the previous pointer as prev and the next pointer as next.

Assume that the reference of the head of the following doubly linked list is passed to the below function 1 <--> 2 <--> 3 <--> 4 <--> 5 <--> 6. What should be the modified linked list after the function call?

Procedure fun(head\_ref: Pointer to Pointer of node)

```
temp = NULL  
current = *head_ref
```

```
While current is not NULL  
temp = current->prev  
current->prev = current->next  
current->next = temp
```

```
current = current->prev  
End While
```

```
    If temp is not NULL  
        *head_ref = temp->prev  
    End If  
End Procedure
```

**Answer**

6 &lt;--&gt; 5 &lt;--&gt; 4 &lt;--&gt; 3 &lt;--&gt; 2 &lt;--&gt; 1.

**Status :** Correct

**Marks :** 1/1

2. What happens if we insert a node at the beginning of a doubly linked list?

**Answer**

The previous pointer of the new node is NULL

**Status :** Correct

**Marks :** 1/1

3. Where Fwd and Bwd represent forward and backward links to the adjacent elements of the list. Which of the following segments of code deletes the node pointed to by X from the doubly linked list, if it is assumed that X points to neither the first nor the last node of the list?

A doubly linked list is declared as

```
struct Node {  
    int Value;  
    struct Node *Fwd;  
    struct Node *Bwd;  
};
```

**Answer**

X-&gt;Bwd-&gt;Fwd = X-&gt;Fwd; X-&gt;Fwd-&gt;Bwd = X-&gt;Bwd;

**Status :** Correct

**Marks :** 1/1

4. What will be the output of the following code?

```
#include <stdio.h>
#include <stdlib.h>
```

```
struct Node {
    int data;
    struct Node* next;
    struct Node* prev;
};
```

```
int main() {
    struct Node* head = NULL;
    struct Node* temp = (struct Node*)malloc(sizeof(struct Node));
    temp->data = 2;
    temp->next = NULL;
    temp->prev = NULL;
    head = temp;
    printf("%d\n", head->data);
    free(temp);
    return 0;
}
```

**Answer**

2

**Status :** Correct

**Marks :** 1/1

5. What is the main advantage of a two-way linked list over a one-way linked list?

**Answer**

Two-way linked lists allow for traversal in both directions.

**Status :** Correct

**Marks :** 1/1

6. Which of the following is false about a doubly linked list?

**Answer**

Implementing a doubly linked list is easier than singly linked list

**Status :** Correct

**Marks :** 1/1

7. How do you delete a node from the middle of a doubly linked list?

**Answer**

All of the mentioned options

**Status :** Correct

**Marks :** 1/1

8. What will be the output of the following program?

```
#include <stdio.h>
#include <stdlib.h>
```

```
struct Node {
    int data;
    struct Node* next;
    struct Node* prev;
};
```

```
int main() {
    struct Node* head = NULL;
    struct Node* tail = NULL;
    for (int i = 0; i < 5; i++) {
        struct Node* temp = (struct Node*)malloc(sizeof(struct Node));
        temp->data = i + 1;
        temp->prev = tail;
        temp->next = NULL;
        if (tail != NULL) {
            tail->next = temp;
        } else {
            head = temp;
        }
        tail = temp;
    }
}
```

```
struct Node* current = head;
while (current != NULL) {
    printf("%d ", current->data);
    current = current->next;
}
return 0;
}
```

**Answer**

1 2 3 4 5

**Status : Correct**

**Marks : 1/1**

9. What will be the effect of setting the prev pointer of a node to NULL in a doubly linked list?

**Answer**

It will break the list

**Status : Wrong**

**Marks : 0/1**

10. Which of the following information is stored in a doubly-linked list's nodes?

**Answer**

All of the mentioned options

**Status : Correct**

**Marks : 1/1**

11. Consider the provided pseudo code. How can you initialize an empty two-way linked list?

Define Structure Node

data: Integer

prev: Pointer to Node

next: Pointer to Node

End Define

Define Structure TwoWayLinkedList

head: Pointer to Node

tail: Pointer to Node

End Define

**Answer**

```
struct TwoWayLinkedList list = {NULL, NULL};
```

**Status : Wrong**

**Marks : 0/1**

12. What is the correct way to add a node at the beginning of a doubly linked list?

**Answer**

```
void addFirst(int data){ Node* newNode = new Node(data);  newNode->next = head;      if (head != NULL) {      head->prev = newNode;  }  head = newNode;      }
```

**Status : Correct**

**Marks : 1/1**

13. What is a memory-efficient double-linked list?

**Answer**

A doubly linked list that uses bitwise AND operator for storing addresses

**Status : Correct**

**Marks : 1/1**

14. How many pointers does a node in a doubly linked list have?

**Answer**

2

**Status : Correct**

**Marks : 1/1**

15. What does the following code snippet do?

```
struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
```

```
newNode->data = value;  
newNode->next = NULL;  
newNode->prev = NULL;
```

**Answer**

Creates a new node and initializes its data to 'value'

**Status : Correct**

**Marks : 1/1**

16. How do you reverse a doubly linked list?

**Answer**

By swapping the next and previous pointers of each node

**Status : Correct**

**Marks : 1/1**

17. Which of the following is true about the last node in a doubly linked list?

**Answer**

Its next pointer is NULL

**Status : Correct**

**Marks : 1/1**

18. Which pointer helps in traversing a doubly linked list in reverse order?

**Answer**

prev

**Status : Correct**

**Marks : 1/1**

19. Which of the following statements correctly creates a new node for a doubly linked list?

**Answer**

```
struct Node* newNode = (struct Node*) malloc(sizeof(struct Node));
```

**Status :** Correct

**Marks :** 1/1

20. Which code snippet correctly deletes a node with a given value from a doubly linked list?

```
void deleteNode(Node** head_ref, Node* del_node) {  
    if (*head_ref == NULL || del_node == NULL) {  
        return;  
    }  
    if (*head_ref == del_node) {  
        *head_ref = del_node->next;  
    }  
    if (del_node->next != NULL) {  
        del_node->next->prev = del_node->prev;  
    }  
    if (del_node->prev != NULL) {  
        del_node->prev->next = del_node->next;  
    }  
    free(del_node);  
}
```

**Answer**

Deletes the first occurrence of a given data value in a doubly linked list.

**Status :** Correct

**Marks :** 1/1