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 : 16

Section 1 : MCQ

1. 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->Bwd->Fwd = X->Fwd; X->Fwd->Bwd = X->Bwd;

Status : Correct ***Marks : 1/1***

2. 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***

3. How do you reverse a doubly linked list?

Answer

By traversing the list in reverse order and creating a new reversed list

Status : Wrong ***Marks : 0/1***

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

Answer

The node will become the new head

Status : Correct ***Marks : 1/1***

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

Answer

prev

Status : Correct ***Marks : 1/1***

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

Answer

2

Status : Correct ***Marks : 1/1***

7. 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***

8. 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***

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

Answer

An auxiliary singly linked list acts as a helper list to traverse through the doubly linked list

Status : Wrong ***Marks : 0/1***

10. 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 node at a given position in a doubly linked list.

Status : Wrong ***Marks : 0/1***

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

Answer

It always points back to the head

Status : Wrong ***Marks : 0/1***

12. 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***

13. 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***

14. 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***

15. 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***

16. 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***

17. 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 <--> 5 <--> 4 <--> 3 <--> 2 <--> 1.

Status : Correct ***Marks : 1/1***

18. 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 = malloc(sizeof(struct TwoWayLinkedList)); list->head = NULL; list->tail = NULL;

Status : Correct ***Marks : 1/1***

19. 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***

20. 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***