1bm24cs174 ds lab 5.c - Code::Blocks 20.03

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

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

struct Node* head = NULL;


struct Node* createNode(int data) {
    struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
    newNode->data = data;
    newNode->next = NULL;
    return newNode;
}


void createList(int n) {
    int data;
    struct Node *temp, *newNode;

    if (n <= 0) {
        printf("Invalid size!\n");
        return;
    }

    printf("Enter data for node 1: ");
    scanf("%d", &data);
    head = createNode(data);
    temp = head;

    for (int i = 2; i <= n; i++) {
        printf("Enter data for node %d: ", i);
        scanf("%d", &data);
        newNode = createNode(data);
        temp->next = newNode;
        temp = newNode;
    }
    printf("Linked list created successfully.\n");
}

void displayList() {
    struct Node* temp = head;
    if (head == NULL) {
        printf("List is empty.\n");
        return;
    }
    printf("Linked List: ");
    while (temp != NULL) {
        printf("%d -> ", temp->data);
        temp = temp->next;
    }
```


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```
52          printf("%d -> ", temp->data);
53          temp = temp->next;
54      }
55      printf("NULL\n");
56  }
57
58
59  void deleteFromBeginning() {
60      if (head == NULL) {
61          printf("List is empty.\n");
62          return;
63      }
64      struct Node* temp = head;
65      head = head->next;
66      printf("Deleted node: %d\n", temp->data);
67      free(temp);
68  }
69
70
71  void deleteFromEnd() {
72      if (head == NULL) {
73          printf("List is empty.\n");
74          return;
75      }
76
77      struct Node *temp = head, *prev = NULL;
78
79      if (head->next == NULL) {
80          printf("Deleted node: %d\n", head->data);
81          free(head);
82          head = NULL;
83          return;
84      }
85
86      while (temp->next != NULL) {
87          prev = temp;
88          temp = temp->next;
89      }
90      printf("Deleted node: %d\n", temp->data);
91      prev->next = NULL;
92      free(temp);
93  }
94
95  void deleteFromPosition(int pos) {
96      if (head == NULL) {
97          printf("List is empty.\n");
98          return;
99      }
100
101     struct Node *temp = head, *prev = NULL;
102
103     if (pos == 1) {
104         deleteFromBeginning();
105         return;
```


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```
103     if (pos == 1) {
104         deleteFromBeginning();
105         return;
106     }
107
108     for (int i = 1; i < pos && temp != NULL; i++) {
109         prev = temp;
110         temp = temp->next;
111     }
112
113     if (temp == NULL) {
114         printf("Position out of range.\n");
115         return;
116     }
117
118     prev->next = temp->next;
119     printf("Deleted node: %d\n", temp->data);
120     free(temp);
121 }
122
123
124 int main() {
125     int choice, n, pos;
126
127     while (1) {
128         printf("\n--- Linked List Menu ---\n");
129         printf("1. Create List\n");
130         printf("2. Display List\n");
131         printf("3. Delete from Beginning\n");
132         printf("4. Delete from Middle (Position)\n");
133         printf("5. Delete from End\n");
134         printf("6. Exit\n");
135         printf("Enter your choice: ");
136         scanf("%d", &choice);
137
138         switch (choice) {
139             case 1:
140                 printf("Enter number of nodes: ");
141                 scanf("%d", &n);
142                 createList(n);
143                 break;
144             case 2:
145                 displayList();
146                 break;
147             case 3:
148                 deleteFromBeginning();
149                 break;
150             case 4:
151                 printf("Enter position to delete: ");
152                 scanf("%d", &pos);
153                 deleteFromPosition(pos);
154                 break;
155             case 5:
156                 deleteFromEnd();
```


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```c
                printf("Enter position to delete: ");
                scanf("%d", &pos);
                deleteFromPosition(pos);
                break;
            case 5:
                deleteFromEnd();
                break;
            case 6:
                exit(0);
            default:
                printf("Invalid choice! Try again.\n");
        }
    }
    return 0;
}
```

"C:\Users\Admin\Desktop\1bm24cs174 ds lab 5.exe"

```
--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice: 1
Enter number of nodes: 5
Enter data for node 1: 10
Enter data for node 2: 20
Enter data for node 3: 30
Enter data for node 4: 40
Enter data for node 5: 50
Linked list created successfully.

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice: 2
Linked List: 10 -> 20 -> 30 -> 40 -> 50 -> NULL

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice: 3
Deleted node: 10

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice: 2
Linked List: 20 -> 30 -> 40 -> 50 -> NULL

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice: 4
Enter position to delete: 3
Deleted node: 40

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
```

"C:\Users\Admin\Desktop\1bm24cs174 ds lab 5.exe"

```
6. Exit
Enter your choice: 4
Enter position to delete: 3
Deleted node: 40

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice: 2
Linked List: 20 -> 30 -> 50 -> NULL

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice: 5
Deleted node: 50

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice: 2
Linked List: 20 -> 30 -> NULL

--- Linked List Menu ---
1. Create List
2. Display List
3. Delete from Beginning
4. Delete from Middle (Position)
5. Delete from End
6. Exit
Enter your choice:
```