

Singly Linked List Implementation in C

```
#include <stdio.h>

#include <stdlib.h>

// Define the node structure

struct Node {

    int data;

    struct Node *next;

};

// Function to create a new node

struct Node* createNode(int data) {

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

    if (!newNode) {

        printf("Memory allocation failed.\n");

        exit(1);

    }

    newNode->data = data;

    newNode->next = NULL;

    return newNode;

}

// Function to insert a node at the beginning

void insertAtBeginning(struct Node **head, int data) {

    struct Node *newNode = createNode(data);
```

```
newNode->next = *head;

*head = newNode;

printf("Node with data %d inserted at the beginning.\n", data);

}
```

// Function to delete a node with a specific value

```
void deleteNode(struct Node **head, int key) {

    struct Node *temp = *head, *prev = NULL;

    // If the head node itself holds the key

    if (temp != NULL && temp->data == key) {

        *head = temp->next;

        free(temp);

        printf("Node with data %d deleted.\n", key);

        return;

    }
```

// Search for the key in the list

```
while (temp != NULL && temp->data != key) {

    prev = temp;

    temp = temp->next;

}
```

// If the key was not present

```
if (temp == NULL) {

    printf("Node with data %d not found.\n", key);

    return;

}
```

```

}

// Unlink the node from the list

prev->next = temp->next;

free(temp);

printf("Node with data %d deleted.\n", key);

}

// Function to traverse the linked list

void traverseList(struct Node *head) {

    if (head == NULL) {

        printf("The linked list is empty.\n");

        return;

    }

    printf("Linked list contents: ");

    while (head != NULL) {

        printf("%d -> ", head->data);

        head = head->next;

    }

    printf("NULL\n");

}

// Main function to demonstrate linked list operations

int main() {

    struct Node *head = NULL;

    // Insert nodes into the list

```

```
insertAtBeginning(&head, 10);

insertAtBeginning(&head, 20);

insertAtBeginning(&head, 30);


// Traverse the list

traverseList(head);


// Delete a node

deleteNode(&head, 20);

traverseList(head);


// Attempt to delete a node that doesn't exist

deleteNode(&head, 40);


return 0;

}
```