

```

#include <stdio.h>
#include <stdlib.h>
#include <stdbool.h>
typedef struct Node {
    char data;
    struct Node* next;
} Node;
Node* createNode(char data) {
    Node* newNode = (Node*)malloc(sizeof(Node));
    newNode->data = data;
    newNode->next = NULL;
    return newNode;
}
void insertEnd(Node** head, char data) {
    Node* newNode = createNode(data);
    if (*head == NULL) {
        *head = newNode;
        return;
    }
    Node* temp = *head;
    while (temp->next != NULL)
        temp = temp->next;
    temp->next = newNode;
}
Node* reverse(Node* head) {
    Node* prev = NULL;
    Node* curr = head;
    Node* next = NULL;
    while (curr) {
        next = curr->next;
        curr->next = prev;
        prev = curr;
        curr = next;
    }
    return prev;
}
bool isEqual(Node* head1, Node* head2) {
    while (head1 && head2) {
        if (head1->data != head2->data)
            return false;
        head1 = head1->next;
        head2 = head2->next;
    }
    return (head1 == NULL && head2 == NULL);
}

```

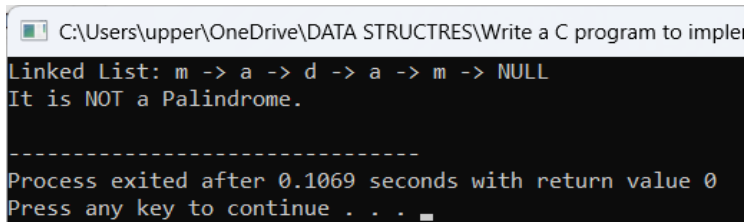
```

}
bool isPalindrome(Node* head) {
    if (!head || !head->next)
        return true;
    Node *slow = head, *fast = head;
    while (fast->next && fast->next->next) {
        slow = slow->next;
        fast = fast->next->next;
    }
    Node* secondHalf = reverse(slow->next);
    bool result = isEqual(head, secondHalf);
    slow->next = reverse(secondHalf);

    return result;
}
void display(Node* head) {
    while (head) {
        printf("%c -> ", head->data);
        head = head->next;
    }
    printf("NULL\n");
}
int main() {
    Node* head = NULL;
    char str[] = "madam";

    for (int i = 0; str[i] != '\0'; i++) {
        insertEnd(&head, str[i]);
    }
    printf("Linked List: ");
    display(head);
    if (isPalindrome(head))
        printf("It is a Palindrome.\n");
    else
        printf("It is NOT a Palindrome.\n");
    return 0;
}

```



```

C:\Users\upper\OneDrive\DATA STRUCTRES\Write a C program to imple
Linked List: m -> a -> d -> a -> m -> NULL
It is NOT a Palindrome.

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Process exited after 0.1069 seconds with return value 0
Press any key to continue . . .

```