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| --- |
| /\*Write a C program to construct a singly linked list by removing duplicate elements in the sorted linked list |
|  | Description: |
|  | Take a sorted list and traverse the list. Compare the current node element with next adjacent node. If it is same then delete second element, if not retain. Finally print the resulting list. |
|  | Sample output: |
|  | Given list {1,2,2,3,3,3,4} |
|  | Resulting list{1,2,3,4} |
|  | \*/ |
|  |  |
|  |  |
|  |  |
|  | #include<stdio.h> |
|  | #include<stdlib.h> |
|  | struct node |
|  | { |
|  | int data; |
|  | struct node\* next; |
|  | }; |
|  |  |
|  | /\* Function to insert a node \*/ |
|  | void insert\_elements(struct node\*\* head, int new\_data) |
|  | { |
|  | struct node\* new\_node = (struct node\*) malloc(sizeof(struct node)); |
|  | new\_node -> data = new\_data; |
|  | new\_node -> next = (\*head); |
|  | (\*head) = new\_node; |
|  | } |
|  |  |
|  |  |
|  | /\* Function to print nodes \*/ |
|  | void display\_list(struct node \*node) |
|  | { |
|  | while (node!=NULL) |
|  | { |
|  | printf("%d ", node->data); |
|  | node = node -> next; |
|  | } |
|  | } |
|  |  |
|  | /\* Function to remove duplicates from a sorted list \*/ |
|  | void remove\_duplicate\_elements(struct node\* head) |
|  | { |
|  | struct node\* current = head; |
|  |  |
|  | struct node\* next\_next; |
|  |  |
|  | if (current == NULL) |
|  | return; |
|  |  |
|  | while (current -> next != NULL) |
|  | { |
|  | /\* Compare current node with its next \*/ |
|  | if (current -> data == current -> next -> data) |
|  | { |
|  | next\_next = current -> next -> next; |
|  | free(current -> next); |
|  | current -> next = next\_next; |
|  | } |
|  | else |
|  | { |
|  | current = current -> next; |
|  | } |
|  | } |
|  | } |
|  |  |
|  |  |
|  | int main() |
|  | { |
|  | struct node\* head = NULL; |
|  | int n; |
|  | printf("Enter the total number of elements : "); |
|  | scanf("%d", &n); |
|  | printf("\nEnter the sorted linked list : "); |
|  | int i; |
|  | for(i = 0; i < n; i++) |
|  | { |
|  | int data; |
|  | scanf("%d", &data); |
|  | insert\_elements(&head, data); |
|  | } |
|  |  |
|  | printf("\nLinked list before removing duplicates : "); |
|  | display\_list(head); |
|  | printf("\n"); |
|  |  |
|  | remove\_duplicate\_elements(head); |
|  |  |
|  | printf("\nLinked list after removing duplicates : "); |
|  | display\_list(head); |
|  | printf("\n"); |
|  |  |
|  |  |
|  | return 0; |
|  | } |