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**Class Assignment**

**Program 4**

**Question:**

WAP to check if a Singly Linked List is a palindrome or not.

**Code:**

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#include <math.h>

#include <stdint.h>

#include <stdbool.h>

//all packages are imported now

typedef struct node

{

int data;

struct node \*next;

}\*NODE;

//we made the structure

NODE create(NODE start)

{

//this method creates a new node

NODE new\_node;

int data;

printf("\nEnter the data. If entered -1, list is complete \n");

scanf("%d",&data);

while(data!=-1)

{

new\_node=(struct node\*)malloc(sizeof(struct node\*));

new\_node->data=data;

if(start==NULL)

{

//this is for empty list

start=new\_node;

new\_node->next=NULL;

}

else //making it the first node

{

//here the nodes are inserted from the first

new\_node->next=start;

start=new\_node;

}

printf("\nEnter the data. If entered -1, list is complete \n");

scanf("%d",&data);

//for next data

}

return start;

}

//end of creating node method

int count\_node(NODE start)

{

//here the number of nodes are counted

NODE ptr=start;

int count=0;

while(ptr!=NULL)

{

ptr=ptr->next;

count++;

}

return count; //returning the no. of nodes

}

//end of count\_node method

void palindrome(NODE start)

{

//this method checks for palindromic list

int count=count\_node(start);

int count2=1;

int flag=0;

NODE ptr=start;

while(count2<=(count/2))

{

NODE ptr2=start;

for(int i=0;i<=count-(count2+1);i++)

{

ptr2=ptr2->next;

}

if(ptr->data!=ptr2->data)

{

flag=1;

break;

}

count2++;

ptr=ptr->next;

}//this is the logic

if(flag==1)

{

printf("\nNOT PALINDROME\n");

}

else

{

printf("\nPALINDROME\n");

}

//this was the final check for palindromic list

}

//end of search method

int main()

{

//this is the main execution method which controls the flow of execution

NODE start=NULL;

start=create(start); //this is the node creation method

palindrome(start); //this is the palindrome check method

return 0;

}

//end of main method

**Output:**

