Name:

PRN No.:

Dept. :I.T.

Q] Construct a linked list to create a polynomial and perform the operations like displaying and evaluating that polynomial.

Code:

#include <iostream>

#include <math.h>

using namespace std;

class Node

{

public:

    int coeff;

    int exp;

    Node \*next;

};

class linkedList

{

public:

    Node \*first = NULL;

    linkedList();

    ~linkedList();

    void display();

    double evaluate(int x);

};

linkedList::linkedList()

{

    Node \*last = NULL, \*t;

    int n;

    cout << "Enter the numbers of terms" << endl;

    cin >> n;

    for (int i = 0; i < n; i++)

    {

        t = new Node;

        cout << "Enter the coeff and exp" << endl;

        cin >> t->coeff >> t->exp;

        t->next = NULL;

        if (!first)

        {

            first = last = t;

        }

        else

        {

            last->next = t;

            last = t;

        }

    }

};

linkedList::~linkedList()

{

    Node \*p = first;

    while (first)

    {

        first = first->next;

        delete p;

        p = first;

    }

}

void linkedList::display()

{

    Node \*p = first;

    while (p)

    {

        cout << p->coeff << "x^" << p->exp << " + ";

        p = p->next;

    }

    cout << endl;

}

double linkedList ::evaluate(int x)

{

    int sum = 0;

    Node \*p = first;

    while (p)

    {

        sum += p->coeff \* pow(x, p->exp);

        p = p->next;

    }

    return sum;

}

int main()

{

    linkedList l;

    cout<<"Displaying the polynomial\n";

    l.display();

    cout<<"\nEvaluating the polynomial by adding the value of x variable\n";

    cout << l.evaluate(2);

    return 0;

}

Output:

1. Displaying but without evaluation:

Text

Description automatically generated

1. Display and evaluation by taking x=2

Text

Description automatically generated