Java program to delete a node from the middle of the singly linked list

public class deleteMid{

//Represent a node of the singly linked list

class Node{

int data;

Node next;

public Node(int data)

{

this.data = data;

this.next = null;

}

}

//Represent the head and tail of the singly linked list

public Node head = null;

public Node tail = null;

public int size;

//addNode() will add a new node to the list

public void addNode(int data) {

//Create a new node

Node newNode = new Node(data);

//Checks if the list is empty

if(head == null) {

//If list is empty, both head and tail will point to new node

head = newNode;

tail = newNode;

}

else {

//newNode will be added after tail such that tail's next will point to newNode

tail.next = newNode;

//newNode will become new tail of the list

tail = newNode;

}

size++;

}

//deleteFromMid() will delete a node from the middle of the list

void deleteFromMid() {

Node temp, current;

//Checks if the list is empty

if(head == null) {

System.out.println("List is empty");

return;

}

else {

//Store the mid position of the list

int count = (size % 2 == 0) ? (size/2) : ((size+1)/2);

//Checks whether the head is equal to the tail or not, if yes then the list has only one node.

if( head != tail ) {

//Initially, temp will point to head

temp = head;

current = null;

//Current will point to node previous to temp

//If temp is pointing to node 2 then current will point to node 1.

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

current = temp;

temp = temp.next;

}

if(current != null) {

//temp is the middle that needs to be removed.

//So, current node will point to node next to temp by skipping temp.

current.next = temp.next;

//Delete temp

temp = null;

}

//If current points to NULL then, head and tail will point to node next to temp.

else {

head = tail = temp.next;

//Delete temp

temp = null;

}

}

//If the list contains only one element

//then it will remove it and both head and tail will point to NULL

else {

head = tail = null;

}

}

size--;

}

//display() will display all the nodes present in the list

public void display() {

//Node current will point to head

Node current = head;

if(head == null) {

System.out.println("List is empty");

return;

}

while(current != null) {

//Prints each node by incrementing pointer

System.out.print(current.data + " ");

current = current.next;

}

System.out.println();

}

public static void main(String[] args) {

deleteMidsList = new deleteMid();

//Adds data to the list

sList.addNode(1);

sList.addNode(2);

sList.addNode(3);

sList.addNode(4);

//Printing original list

System.out.println("Original List: ");

sList.display();

while(sList.head != null) {

sList.deleteFromMid();

//Printing updated list

System.out.println("Updated List: ");

sList.display();

}

}

}

