Program-1

package shortestpalindromeexample.java;

import java.util.Scanner;

public class ShortestPalindromeDemo {

public static String shortestPalindrome(String str) {

int x=0;

int y=str.length()-1;

while(y>=0){

if(str.charAt(x)==str.charAt(y)){

x++;

}

y--;

}

if(x==str.length())

return str;

String suffix = str.substring(x);

String prefix = new StringBuilder(suffix).reverse().toString();

String mid = shortestPalindrome(str.substring(0, x));

return prefix+mid+suffix;

}

public static void main(String[] args) {

Scanner in = new Scanner(System.in);

System.out.println("Enter a String to find out shortest palindrome");

String str=in.nextLine();

System.out.println("Shortest palindrome of "+str+" is "+shortestPalindrome(str));

}

Program-2

import java.util.Stack;

// Data Structure to store a linked list node

class Node {

int data;

Node next;

Node(int i)

{

this.data = i;

this.next = null;

}

};

class Main

{

// Function to determine if a given linked list is palindrome or not

public static boolean isPalindrome(Node head)

{

// construct an empty stack

Stack s = new Stack<>();

// push all elements of the linked list into the stack

Node node = head;

while (node != null) {

s.push(node.data);

node = node.next;

}

// traverse the linked list again

node = head;

while (node != null)

{

// pop the top element from the stack

int top = s.pop();

// compare the popped element with current node's data

// return false if mismatch happens

if (top != node.data) {

return false;

}

// advance to the next node

node = node.next;

}

// we reach here only when the linked list is palindrome

return true;

}

public static void main(String[] args)

{

Node head = new Node(1);

head.next = new Node(2);

head.next.next = new Node(3);

head.next.next.next = new Node(2);

head.next.next.next.next = new Node(1);

if (isPalindrome(head)) {

System.out.print("Linked List is a palindrome.");

} else {

System.out.print("Linked List is not a palindrome.");

}

}

}