



Shaheed Zulfikar Ali Bhutto Institute of Science & Technology

COMPUTER SCIENCE DEPARTMENT

Total Marks: 7.5

Obtained Marks: _____

DATA STRUCTURE AND ALGORITHM

Lab Report # 07

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Question no 1:

A palindrome is a string that reads the same forwards as backwards. Using only a fixed number of stacks and queues, the stack and queue ADT functions, and a fixed number of int and char variables, write a code to determine if a string is a palindrome. Assume that the string is read from standard input one character at a time. The code should output

true or false as appropriate.

Code:

```
#include <bits/stdc++.h>
using namespace std;

//Palindrome means a reserve of input string same as original
//if same then YES otherwise No
// Function that returns true
// if string is a palindrome
bool isPalindrome(string s)
{
    int length = s.size();

    // Creating a Stack
    stack<char> st;

    // Finding the mid
    int i, mid = length / 2;
```

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```
for (i = 0; i < mid; i++) {
    st.push(s[i]);
}

// Checking if the length of the string
// is odd, if odd then neglect the
// middle character
if (length % 2 != 0) {
    i++;
}

char ele;
// While not the end of the string
while (s[i] != '\0')
{
    ele = st.top();
    st.pop();

    // If the characters differ then the
    // given string is not a palindrome
    if (ele != s[i])
        return false;
    i++;
}

return true;
}
```

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```
// Driver code
int main()
{
    string s = "madam";
    cout<<" Input String " <<s<<" Palindrome Of String Is
"<<endl;
    if (isPalindrome(s)) {
        cout << "Yes";
    }
    else {
        cout << "No";
    }

    return 0;
}
```

CONSOLE SCREEN:

```
Input String madam Palindrome Of String Is
Yes
-----
Process exited after 8.833 seconds with return value 0
Press any key to continue . . .
```



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```
Input String Hammad Palindrome Of String Is  
No  
-----  
Process exited after 9.347 seconds with return value 0  
Press any key to continue . . .
```