Muhle Musa Khumalo

410921335

Department of CSIE

Algorithms Design and Analysis

Assignment 1

1.

#include<iostream>

#include<vector>

using namespace std;

bool isPalindrome(string str)

{

// str = clean\_string(str);

if(str.length() < 2)

return false;

for(int i=0; i<str.length()/2; i++)

{

if(str[i] != str[str.length()-1-i])

return false;

}

return true;

}

int main()

{

vector<string> test\_cases = {"dad", "abc", "wasiteliotstoiletisaw", "dontnod", "s"};

for(int i=0; i<test\_cases.size(); ++i)

{

if(!isPalindrome(test\_cases[i]))

test\_cases.erase(test\_cases.begin() + i);

}

for(int i=0; i<test\_cases.size();i++){

cout << test\_cases[i] << endl;

}

return 0;

}

2.Analysis

Let n represent the number of elements in the vector and m represent the number of characters each string has.

Best case for traversing n elements: O(n)

Worst case for traversing n elements: O(n)

Best case for isPalindrome fn(): O(1)

Worst case for isPalindrome fn(): O(m/2)

Overall time complexities:

Best case: O(n)

Worst case: O(n\*m/2)

Text, letter

Description automatically generated

Text, letter

Description automatically generated