

Homework report: In this homework, we are tasked with writing a program that will accurately report to the user if the input string is a palindrome or not using recursion. This lab took me about 1 hour to complete cumulatively.

Write a C++ program that implement the recursive function isPal() to check if a user input is a palindrome or not. You also state your stopping condition (base case) and your recursive step(s).

Implementation (main function)

```
//
=====
// Name      : main.cpp
// Author    : Ryan C. Ellis
// Creation Date: 3/1/2025
// Last Update:
// Description: Main function will prompt user for string input and then will call recursive function to
// determine if input
// string is a palindrome.
//
=====
#include <cstring>
#include <iostream>
#include <string>

using namespace std;

bool isPal(const string& , int , int );

int main(){

    string pal;    //user input for palindrome test

    cout<<"---Palindrome Test---"<<endl;
    cout<<"Enter a string, no spaces and all lower case: ";    //palindrome testing
    cin>>pal;

    if(isPal(pal, 0, pal.length()-1))    //enter parameters for string and indeces
        cout<< pal << " is a palindrome "<<endl;
    else
        cout<< pal << " is not a palindrome. "<<endl;    //display findings

    return 0;
```

```
}
```

```
bool isPal(const string& str, int startIndex, int endIndex){    //recursive palindrome checking function definition
```

```
    if(startIndex >= endIndex)        //base case if indices make it through recursive step
```

```
        return true;
```

```
    if(str[startIndex] != str[endIndex]){        //stop conditions/returns
```

```
        return false;
```

```
    }
```

```
    return isPal(str,startIndex+1 ,endIndex-1 );    //recursion call
```

```
}
```

Output:

```
ryan@ryan-MacBookPro:~/Documents/COSC 320/Homework/HW3$ ./prog
```

```
---Palindrome Test---
```

```
Enter a string, no spaces and all lower case: dad
```

```
dad is a palindrome
```

```
ryan@ryan-MacBookPro:~/Documents/COSC 320/Homework/HW3$ ./prog
```

```
---Palindrome Test---
```

```
Enter a string, no spaces and all lower case: level
```

```
level is a palindrome
```

```
ryan@ryan-MacBookPro:~/Documents/COSC 320/Homework/HW3$ ./prog
```

```
---Palindrome Test---
```

```
Enter a string, no spaces and all lower case: mom
```

```
mom is a palindrome
```

```
ryan@ryan-MacBookPro:~/Documents/COSC 320/Homework/HW3$ ./prog
```

```
---Palindrome Test---
```

```
Enter a string, no spaces and all lower case: madamimadam
```

```
madamimadam is a palindrome
```

```
ryan@ryan-MacBookPro:~/Documents/COSC 320/Homework/HW3$ ./prog
```

```
---Palindrome Test---
```

```
Enter a string, no spaces and all lower case: test
```

```
test is not a palindrome.
```

```
ryan@ryan-MacBookPro:~/Documents/COSC 320/Homework/HW3$ make
```