TITLE

**DETECTING PALINDROMES**

INTRODUCTION

A **palindrome** is a string that reads the same forwards and backwards (ignoring spaces, punctuation, and capitalization). Examples are the familiar ``If I had a hi-fi,'' and ``Some men interpret nine memos.'' In this program, it takes the input sentence form the user and saves it into character array. From the character array the extra spaces and operators are removed and stored in a new String. The new String is further taken and stored in an array which is reversed to save it in a another new String to compare the characters removed String, to check whether at last, the inputted sentence by the user is Palindrome or not.

**Data Structures**

The program uses only one data structure, a string (array of characters) called Sentence. The Sentence is stored in Character Array and holds each word read from the input file, in turn. A program constant sets the maximum allowed value of the output line length of 80 characters. An output line is printed at the third function or at each section to make it user friendly code.

**Functions**

The program uses three functions. One is the int main() function, where the user inputs the Sentence and the program converts it into Character Array, which is further checked by the ‘if’ statement whether it’s in the character limit of 80 Characters. In the same main() function, the array is passed by reference to another function named ‘string FirstString()’. The second function, ‘string Palindrome()’ is called to reverse the string and ‘CheckPal() is called where the two new strings is compared to check for Palindrome Sentence.

1. string FirstString():where the inputs in the Character Array named ‘char array[]’ is checked for extra spaces and operators and is removed using the ASCII Code of the Characters. The extracted array is further saved into another array named StrArray[] and it’s characters are added to form NewString. The New String is returned to the main function.
2. string Palindrome(): where the Stringname.size() is used to count the number of characters in the string and uses explicit conversion of character to integers ( int = (int) string[i];) to check for the respective character’s ASCII Code to retain the alphabets in the char array.
3. Void CheckPal(): in this function, the two string, one from which the characters except alphabets are extracted and the reversed string is passed by reference from main() function by call by value is taken and checked if the two strings are equal to determine the entered sentence is palindrome or not.

**The Main Program**

The main program reads the sentence from the user and saves in a character array[], and checked for the maximum characters in the string (80). If the characters does not exceed, the main calls the three functions that first remove the spaces and non-alphabetical characters from the string using char array[] and saved into FirstString, then, the FirstString is Reversed in the second function, and at last, the reversed string is compared and the result is printed at the third function.

If the sentence exceeds the maximum character limit, the cout statememt is printed prompting the user to re-enter the sentence with character limit and the main() function is called again.

The program terminates after the third function (void CheckPal() ) is executed and the final cout statement is printed and the main() function returns void.