Q1) Write program that contains the following functions:

* + A function called ***reverse\_string***. It will take a string as a parameter. Then it will reverse its content.

**Example:** “Hello” → “olleH”

The function signature should look like this:

* + - void reverse\_string(char \*str)
  + A function called ***isPalindrome***. It will take a string as a parameter. The function should return 1 if the string is a palindrome. False otherwise. A palindrome is a word that reads the same forward or reversed.

**Example:** “mom” → 1

“hello” → 0

“Dad” → 0

The methods signature should look like this:

* + - int isPalindrome(char \*str)
* In The main function should do the following:

Print the input string in to reverse order. Tell the user if they were palindrome or not.

**Sample run:**

$ ./isPalendorme

Input a string

mom

reserve string is : "mom"

"mom" is a palindrome string.

admin@VAIO /cygdrive/c/Users/admin/Desktop/csc215

$ ./isPalendorme

Input a string

Dad

reserve string is : "daD"

"daD" is not a palindrome string.

Name your file using the following naming convention:

* “Lab5Q1\_YourFirstName\_YourLastName.c"
* Don’t forget to move to your own directory
* Compile your code and execute it.
* Show the program to your lab instructor before you leave.

**Answer:**

#include<stdio.h>  
#include <string.h>  
  
void reverse\_string(char \*str);  
int is\_palindrome(char \*str);  
  
int main()  
{  
 char str[100];  
 int result;  
 printf("Input a string\n");  
 gets(str);  
 reverse\_string(str);  
 result = is\_palindrome(str);  
 printf("reserve string is : \"%s\" \n",str);  
   
 if ( result == 1 )  
 printf("\"%s\" is a palindrome string.\n", str);  
 else  
 printf("\"%s\" is not a palindrome string.\n", str);   
   
 return 0;  
}  
int is\_palindrome(char \*str)  
{  
 int check = 0, length,i;  
 length = strlen(str);  
 for(i=0;i < length ;i++)  
 {  
 if(str[i] != str[length-i-1])  
 {  
 check = 1;  
 break;   
 }  
 }   
 if ( check == 0 )  
 return 1;  
 else  
 return 0;  
}  
void reverse\_string(char \*str)   
{  
 int length, c;  
 char \*begin, \*end, temp;  
   
 length = strlen(str);  
   
 begin = str;  
 end = str;  
   
 for ( c = 0 ; c < ( length - 1 ) ; c++ )  
 end++;  
 for ( c = 0 ; c < length/2 ; c++ )   
 {   
   
 temp = \*end;  
 \*end = \*begin;  
 \*begin = temp;  
   
 begin++;  
 end--;  
 }  
}

Q2) Write a Program that computes the average of students grades stored in an array using pointers.

**Sample Run**

Enter the number of students:5

Enter the grdae of Student# 1:88

Enter the grdae of Student# 2:98

Enter the grdae of Student# 3:100

Enter the grdae of Student# 4:90

Enter the grdae of Student# 5:70

The average of array elements : 89.00

Name your file using the following naming convention:

* “Lab5Q2\_YourFirstName\_YourLastName.c"
* Don’t forget to move to your own directory
* Compile your code and execute it.
* Show the program to your lab instructor before you leave.

**Answer:**

#include<stdio.h>  
void main() {  
 int grdaes[10];  
 int i, sum = 0,size;  
 int \*ptr;  
 double avg=0;  
 printf("Enter the number of students:");  
 scanf("%d",&size);  
 for (i = 0; i < size; i++)  
 {  
 printf("\nEnter the grdae of Student# %d:",(i+1));  
 scanf("%d", &grdaes[i]);  
 }  
 ptr = grdaes;   
 for (i = 0; i < size; i++) {  
 sum = sum + \*ptr;  
 ptr++;  
 avg = sum/size;  
 }  
 printf("The average of array elements : %.2f", avg);  
}