CS 101 Introduction to ComputING

Section G

Assignment 6 – WRITING C++ functions AND ARRAYS

DUE: 5th NOVEMBER, 2014.

**PROBLEM 1**

Write a function that splits a number into its individual digits and stores each digit in the array. The number, array and size of the array should be parameters of the function. Size can be a passed as a reference parameter so that the function returns the number of digits filled in the array. Note this is a question from your lab and you can reuse that code.

**Example:**

void SplitIntoDigits(int num, int arr[], int &size);

so if the function is called as:

length=10;

int arr[length] = {0};

SplitIntoDigits(1291,arr,length)

after the function executes arr should have {1,2,9,1,….} as the rest of the values in the array are not important length of the array should change to 4 (even though its actual size remains at 10).

**PROBLEM 2**

Write a function that checks if an integer array passed to the function is a palindrome or not. A palindrome is something when reversed remains unchanged. For example the arrays {1,2,1} and {1,3,8,8,3,1} are palindromes. There should be NO CIN and COUT in your function. Make sure you exchange all the data via parameters so decide on the prototype of your function very carefully.

**PROBLEM 3 (simplified from UIVJudge.com)**

The following problem deals with Palindromes composed of digits. A number is a palindrome, if the sequence of digits read from left to right, and, read from right to left are identical. Examples of palindromes are 121, 111, 66, 55.

If a number is not a palindrome then adding its reverse number again and again may/may not lead to the number becoming a palindrome.

**Example**

for the number 65 which is not a palindrome. Take its reverse 56 and add the two:

65+56 = 121 (palindrome)

(total steps = 1)

With some other number you may have to repeat the above process till you get a palindrome. For example take 87.

87 + 78 = 165

165 + 561 = 726

726 + 627 = 1353

1353 + 3531 = 4884 (palindrome finally!)

(total steps = 4)

Write a function that takes a number as parameter and returns the final palindrome represented by that number and also the total steps required to reach the palindrome. This function should call the functions of problem 2 and problem 3.

**YOU HAVE TO SUBMIT**

One header file that has all the function prototypes and one .cpp file that has all the function implementations. Your main function should input a number from the user and solve problem 3. Problem 1 and 2 will automatically be checked if you can solve problem 3.

Place all your source files along with the executable in a folder with name as your roll number and submit on xeon. LATE ASSIGNMENTS WILL BE MARKED ZERO