National University of Computer and Emerging Sciences, Lahore Campus

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	Lab No 5			
	Course Name:	**Programming Fundamentals**	**Course Code:**	**CS 188**
	Program:	**BS(SE)**	**Semester:**	**Fall 2020**
	Duration:	**2.5 hours**	**Total Points:**	**20 + 30 + 30**
	Lab Date:	**Saturday, October 31, 2020**	**Weight**	**5%**
	Section:	**SE-1A and SE-1B**	**Page(s):**	

Instruction/Notes: **Cheating during the lab will result in negative marks**

Topics Covered: Loops and 1D Array

You might use any IDE available at your computer or use one of the online IDE available at http://cpp.sh/, https://www.codechef.com/ide, https://ideone.com/, https://www.onlinegdb.com/

Problem No 1:

a) Write a function that reads **n** elements into a one dimensional integer array. Your function must have the following form also called the function prototype

void cin_Array(int arr[], int n)

b) Write a function that display the first **n** elements into a one dimensional integer array. Your function must have the following form also called the function prototype

void cout_Array(int arr[], int n)

c) Finally write a main function that demonstrate the use of above function by declaring multiple arrays and then input values into the arrays and show these values to the user.

Problem No 2:

a) Extend your program of problem no 1 by adding the following functions

i. Function that computes point by point sum of the two arrays, A and B, and store the result in a third array C.

Your function will have the following prototype

void Add_Array(int arrA[], int arrB[], int arrC[], int n)

ii. Function that computes point by point difference of the two arrays, A and B, and store the result in a third array C.

Your function will have the following prototype

void Sub_Array(int arrA[], int arrB[], int arrC[], int n)

iii. Function that computes point by point product of the two arrays, A and B, and store the result in a third array C.

Your function will have the following prototype

void Multiply_Array(int arrA[], int arrB[], int arrC[], int n)

iv. Function that computes point by point division of the two arrays, A and B, and store the result in a third array C.

Your function will have the following prototype

void Divide_Array(int arrA[], int arrB[], int arrC[], int n)

v. Function that computes dot product of two arrays, A and B, and returns the value of dot product.

Your function will have the following prototype

int Dot_Product(int arrA[], int arrB[], int n)

vi. Finally write a main function that demonstrate the use of above functions by declaring multiple arrays and then using each of the functions to compute and show the results.

Problem No 3:

Extend your program of problem no 1 by adding a function to sort elements of the array using selection sort algorithm given below.

SELECTION SORT
Inputs: **An array A [0, 1, …, n-1] of size n** Output: **First n elements of A sorted in ascending order**
FOR I = 1 To n – 1 **Find the position L of largest element in array A[0, …, N - i]** **SWAP the Largest element A[L] with element A[N - i]** **END FOR**