# Assignment # 4: Arrays

***Due Date: Friday, May 03, 2019***

## Objectives:

To understand the syntax of array, declaration, assignment and initialization

To learn to write programs to model repetitive data using arrays

## Tasks:

1. Write a program that takes an integer array of size 10 form the user and displays how many times integer 5 appears in it.

**Sample input:**

Array = {0, 3, 5, 6,-1, 5,-9, 10, 5,-7}

**Sample Output:** 3

1. Write a program that displays
   1. How many numbers in the above array (task 1) are greater and less than 5.
   2. The program should also display the minimum and maximum values in the array.
2. Write a program that reads two integer arrays as input from user and displays their:
   1. Sum
   2. Dot Product
3. Write a program that takes a long string from the user (size should be greater than 30) and displays the number of characters, and number of words in it. Here is a sample run.

**Sample Run:**

**Input:**

The quick brown fox jumps over the lazy dog.

**Output:**

No. of characters: 44

No. of Words: 9

1. Reads a sentence and prints frequency of each of the vowels and total count of consonants.
2. Write a program to read a string and check for palindrome without using string related function (a string is palindrome if its half is mirror by itself eg: abcdcba)
3. Write Develop, implement and execute a program that reads two matrices A (m x n ) and B (p x q ) and Compute the product A and B. Read matrix A in row major order and matrix B in column major order. Print both the input matrices and resultant matrix with suitable headings and in matrix format. Program must check the compatibility oforders of the matrices for multiplication. Report appropriate message in case of incompatibility.

**Algorithm**:

**Step 1**.[input the no. of rows and columns of matrix a]

read m,n

**Step 2**.[input the no. of rows and columns of matrix b]

read p,q

**Step 3**.[check the compatibility for multiplication of matrices a and b]

if(n!=p)

output matrix multiplication is not possible

goto step 8

else

goto step 4

end if

**Step 4**.[input the elements of matrix a]

for i=0 to m-1 in step 1

for j=0 to n-1 in step 1

read a[i][j]

end for

end for

**Step 5**.[input the elements of matrix b]

for i=0 to p-1 in step 1

for j=0 to q-1 in step 1

read b[i][j]

end for

end for

**Step 6.**[perform multiplication of matrices a and b]

for i=0 to m-1 in step 1

for j=0 to q-1 in step 1

sum=0

for k=0 to n-1 in step 1

sum=sum+a[i][k]\*b[k][j]

end for

c[i][j]=sum

end for

end for

**Step 7**.[output the matrix a]

for i=0 to m-1 in step 1

for j=0 ton-1 in step 1

output a[i][j]

end for

end for

**Step 8**.[output the matrix b]

for i=0 to p-1 in step 1

for j=0 to q-1 in step 1

output b[i][j]

end for

end for

**Step 9**.[output the resultant matrix c]

for i=0 to m-1 in step 1

for j=0 to q-1 in step 1

output c[i][j]

end for

end for