**Lab 2 C++**

Unless otherwise stated, all your programs should be created as C++ *console application*. All code must be appropriately commented and consistently indented.

A deadline for demonstration and upload of code to blackboard will be announced in class

You **cannot** **use <string>** in this lab, the strings referred to are character arrays.

**If user input is required you must only read in single characters within a loop for user input.**

1)Write a program that contains an array of 20 integer values. The program will find and display the index of the first occurrence and the last occurrence of the number 12. Your program should print the value -1 if the number 12 is not found. The index is array offset for the item. For example if the 8th data item is the only 12, the index value 7 should be displayed for the first and last occurrence. The program must contain only one loop.

2) Amend program 1 to only use pointer arithmetic to access the values in the the array and to loop through the array .

3) Write a function to print out all occurrences of pairs of any 2 number in an array of integers whose product (numbers multiplied together) is equal to a given Number

printPairs(int product,int arr[],int arrSize)

write the appropriate code that fully tests the function you write.

4)Write a program which will input a string from the keyboard, and output the number of separate words, where a word is one or more characters separated by spaces. Your program should only count as words groups of characters in the ranges A..Z and a..z.

For example the characters “ dd 3 f4 fff ff2 dd ” would return a word count of 2.

5) Write an application called **SHUFFLE.CPP** that will search a string for a single ‘\*’ character which may or may not be present. If the asterisk is present the string will be copied to another string in such a way that all that came after the ‘\*’ will now come first, followed by the ‘\*’, followed by all that originally came before the ‘\*’. In other words, the two parts of the string separated by ‘\*’ will be swapped. If there is no asterisk present, then the string will be copied as it is, that is, with no shuffling taking place. If there is more than one asterisk present, shuffling will take place about the first occurrence.

See next page🡪

↵ is the symbol for the return or enter key

Sample Input Output

↵ ---->

hello↵ ---->hello

\* ↵ ---->\*

characters\*↵ ---->\*characters

\*characters↵ ---->characters\*

\*\*characters↵ ---->\*characters\*

characters\*characters↵ ---->characters\*characters

chara\*ters\*haracters↵ ----> ters\*haracters \*chara