Homework 1

Write a C++ program that operates on a 10x10 matrix *S* of characters. The indices of the rows and columns are 0 to 9. Your program shall first prompt the user to input the 100 characters of *S* row by row. It will then perform the following **string search**:

(1) Prompt the user to input a string *patt* of no more than 10 characters in length and a binary parameter *reused* whose meaning will be described shortly.

(2) Design a function *FindPattern(patt, reused)* to determine whether there exists a sequence of consecutive characters in *S* that matches the given *patt*. If *reused* is TRUE, a location in S can be visited more than once; if FALSE, any location in S can be visited at most once. If *patt* exists, print out the locations (*x*,*y*) of the sequence of characters. Each location in S has two, three, or four neighbors, depending on their locations, one each to the **east**, **west**, **south**, and **north**.

(3) **Examples**:

Due to space limitation, we use a 5x5 matrix to illustrate two examples.

S:

a	d	b	d	e
d	b	c	b	e
d	e	a	d	c
b	d	d	b	d
c	e	d	c	b

Case 1: *patt*: a c b e a

reused: TRUE

Output: (2,2), (1,2), (1,1), (2,1), (2,2)

***Case 2*:** *patt*: a c b e a

reused: FALSE

Output: no match

Due date: Oct. 18, 2017.