MAT 115E Introduction to Programming Language
Lab-10 / CRN : 21132

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Question 1

Write a C code that checks whether a sentence entered from the keyboard contains a letter you enter from the keyboard.
Senario:

- Make space in memory to receive a sentence of maximum 80 characters from the user.(malloc)

- Send the received sentence to a function. This function also asks us for a letter.

- It checks whether the letter received from the user is included in the sent sentence and prints the result on the screen.

Test Data:
Enter the sentence (80 characters) : Have a nice day
Enter the letter: e
Is the letter in the sentence: Yes

Question 2

A game is being designed to determine whether a robot can reach the exit in a maze. In this game, the maze is represented by a matrix of $m \times n$ dimensions, and the rules of the game are as follows:

- The movement starts from the top left corner of the maze matrix and ends at the bottom right corner of the maze matrix.
- In this matrix, zero represents the obstacle and one represents the open path.
- There are two possible directions in the maze: **Down** or **Right**.
- At a point where the robot is located, at most one direction—either right or downward—can be open.

Write a **<u>C function</u>** that takes a maze matrix as a parameter and determines whether or not the robot can reach the exit. If the robot can reach the exit, it returns 1; otherwise, it returns 0.

Test Data:

Function returns 1 if the maze matrix is $\begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$.

On the other hand, it returns 0 if the maze matrix is $\begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$.