CSE 114 - Fundamentals of Computer Programming
Assignment 5
Due: 29.04.2021, 11:59 PM

In this assignment, you are going to implement a C program that finds a path in a matrix starting from top left corner, ending at bottom right corner. The matrix has 5 columns but the number of rows can vary (Let's say R x 5 matrix where R denotes number of rows). The matrix consists of positive integers between 1-99. Your task is, starting from the top left corner, move one step towards bigger integer by comparing the right and down neighbours. Note that, after you reach to edge of the matrix, you will have only one possibility; so you don't need to make a comparison after that point. You can see an example matrix and found path (green background) below.

41	48	4	76	95
79	81	68	40	15
34	59	21	38	26
70	80	12	97	11
37	94	83	39	35
62	96	14	28	69

You will have 4 functions (including main function) in total:

- **print_matrix:** You can use the function that we implemented in the lab.
- **print_array:** You can use the function that we implemented in the lab.
- **find_path:**
    - Parameters: source matrix, destination array, number of rows in the source matrix
    - Return type: int
    - In this function, you will find the path and sum of the numbers in the path at the same time. You will fill the destination array with the numbers in the path, and return the sum of the numbers in the path.
- **main:**
    - In the main function, you will create the source matrix where:
        - The number of columns = 5
        - The number of rows (R) = Last digit of your university id + 5 (If your university id is 2xxxxxxxx3 or 2xxxxxxxx3-2D, R=8)
        - You can fill the source matrix with { } notation when creating it or you can fill the matrix after you create it. You can use rand() function like we did in the lab or you can use your own numbers.

- You need to create an empty destination array with the appropriate size. Find out how big the array should be according to size of the source matrix.
- Print the source matrix by calling the print_matrix function.
- Find the path and sum by calling the find_path function.
- Print the path by calling the print_array function.
- Finally, print the value returned from the find_path function.

WARNING:

- **DO YOUR OWN WORK.**
- Submit only the source file in the format **assignment5_name_surname.c**
- Be sure the extension of your file is **.c**. If you do not know how to check the extension please look at the file ("How to run your code?") on the COADSYS.
- Do not use any library other than stdio (Exception: You can use stdlib for rand() function only).
- Do not use pointers.

Example:

```
41 48 4 76 95
79 81 68 40 15
34 59 21 38 26
70 80 12 97 11
37 94 83 39 35
62 96 14 28 69

41 79 81 68 40 38 97 39 35 69
Sum of the numbers in the path is 587
```