

CS19003 Programming and Data Structures Lab

Assignment Set 5

May 2, 2023

INSTRUCTIONS

1. There are three assignments in this Lab. You need to submit each of the three assignments separately. It is advisable to submit each assignment as you complete it, rather than wait for the end to submit everything.

1. [Filename: **set5asg1.c**]

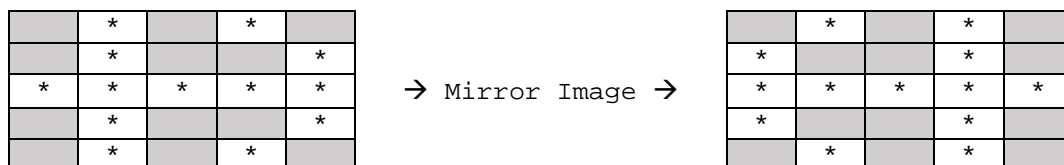
Recursion. Write the following *recursive* function to reverse the sequence of words in a sentence.

```
void reverse( char str[] )
```

For example, the function should convert “cat is running” to “running is cat”. Write a `main()` that reads a line of text, calls the above function, and prints the reversed sentence.

2. [Filename: **set5asg2.c**]

Mirroring a 2D array. Write a function that converts a 5 x 5 array of characters into its mirror image. The following example illustrates the notion of a mirror image using only .



The function prototype is: `void mirror(char grid[5][5])`

Write a `main()` that reads a 5 x 5 array and calls the above function to mirror the array. It should print the original array and the mirrored array.

3. [Filename: **set5asg3.c**]

Dropping Tiles. Write a program that reads an N x N 2D array of integers, `tiles[][]`, where N is read as an input. The program then reads an integer key, K, and removes all instances of K from the array. When an instance of K is removed, then the tiles above it drop downwards. This results in blank spaces at the top of those columns. The following example shows a case with N=5 and K=2.



Your program should print the original array, the key, and the final array.