Lab 13

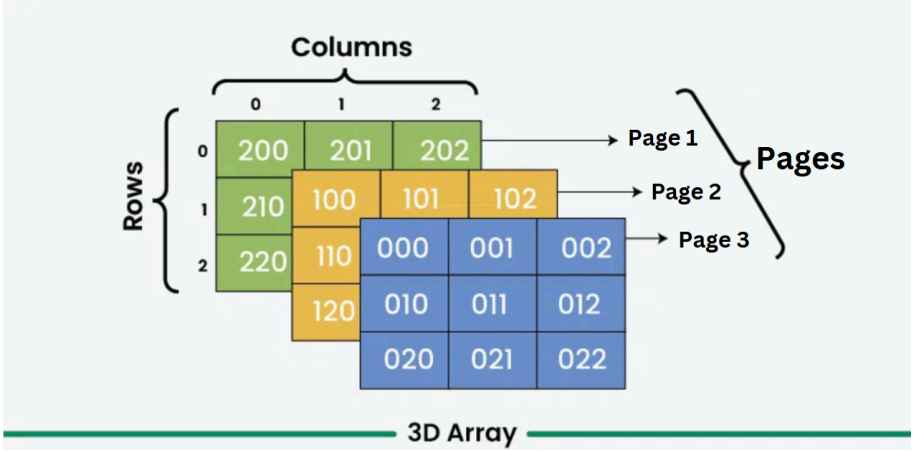
Functions (Passing by Value and Passing by Reference)

NOTE: Outputs should be properly formatted.

Problem 01

Define a three-dimensional array having all unique items of type int and of any size (PAGE, ROWS, COLS). The user should now be able to enter a number and your code should search whether the entered number is present in the array or not and if the item exists in the array, your code should be able to display an index of the array's location where the item is located. The entire code should have a single function for all the work. You can use the following prototype for the function (you need to figure out the four hidden parameters of the function yourself)

- `SearchingItem(int[PAGE][ROWS][COLS], -, -, -, -);`




```
Enter an item to search: 5

GIVEN ARRAY
PAGE#1
1   2   3
4   5   6
PAGE#2
7   8   9
10  11  12

SUCCESS! Item Exists at Location '0' '1'' '1'
```

```
Enter an item to search: -23

GIVEN ARRAY
PAGE#1
1   2   3
4   5   6
PAGE#2
7   8   9
10  11  12

Sorry! Item Doesn't Exist
```

Problem 02

Write a program where you have declared an empty string variable called triangle. The code should contain a function which concatenates different characters with the declared triangle (consider spaces too) using a function. Your program should ask the value for the size of the triangle from the user in the beginning and ask for a character on each line to be concatenated. Keep name the function as, 'concatenateWithTriangle();

Output

```
Enter size of the triangle: 5
What character should be printed in line<1>: *
What character should be printed in line<2>: #
What character should be printed in line<3>: =
What character should be printed in line<4>: #
What character should be printed in line<5>: *
        *
      # #
    = = =
  # # # #
* * * * *
```

Problem 03

Write a program that does the following temperature conversion from one unit to another unit using references. All the functions must take only one parameter and must be declared as void.

From	To	Formula
C	K	$K = (Centigrade + 273.15)$
K	F	$F = (Kelvin - 273.15) \times \left(\frac{9}{5}\right) + 32$
F	C	$C = (Fahrenheit - 32) \times \left(\frac{5}{9}\right)$

Output

```
Enter temperature in Centigrade: 37
Enter temperature in Fahrenheit: 102
Enter temperature in Kelvin: 0

Centigrade to Kelvin: 310.15
Kelvin to Fahrenheit: -459.67
Fahrenheit to Centigrade: 38.89
```

Problem 04

Write a program that reads three inputs from the user and sorts them in a decreasing manner. Show the data before and after sorting. Your function named '`decreasingSort()`' must take two reference parameters only.

Output

```
Enter Three Numbers
71 31 144
Before Ordering : 71 , 31 , 144
After Ordering  : 144 , 71 , 31
```