

C Exam

15/12/2023

We have a 2-dimensional array: matrix[R][C], where R is a rows numbers and C is the column numbers.

Write a C program to make some operations on this matrix:

1. Function to build and fill the matrix with random numbers in the range of 0 and 999.
2. Function to print this matrix to the terminal.
3. Function to find odd numbers in the matrix and put them in another array (odd-array).
4. Function to print odd-array.
5. Function to check if odd-array has any duplicated numbers and remove the duplication.
6. Function to print odd-number after removing duplication.
7. Function to calculate the average of every row in the matrix and fill it in another array (avg-array) and print this array.

In your program:

1. Ask the user to enter the number of rows and the number of columns.
2. Use pointers in your implementation.

For G, the requirements shall be fulfilled.

For VG, the requirements shall be fulfilled and:

- Header file for the module shall be created and well-described using the doxygen format.
- The function in point (5) shall count the total number of duplicated elements in the odd-array and print the total number of duplications in the terminal.

```
Enter the number of rows: 8
Enter the number of columns: 7

Matrix:
158    85    462    281    313    42    503
204    783    419    834    449    761    567
903    12    191    893    476    198    167
684    78    955    751    30    184    1
909    234    90    605    482    882    942
472    962    922    135    611    728    75
803    438    535    822    467    927    475
484    776    401    521    606    264    675

Odd Numbers:
85 281 313 503 783 419 449 761 567 903 191 893 167 955 751 1 909 605 135 611 75 803 535 467 927 475 401 521 675

Total Number of Duplications in Odd Numbers: 0

Odd Numbers (After Removing Duplicates):
85 281 313 503 783 419 449 761 567 903 191 893 167 955 751 1 909 605 135 611 75 803 535 467 927 475 401 521 675

Row Averages:
Row 1 Average: 263.43
Row 2 Average: 573.86
Row 3 Average: 405.71
Row 4 Average: 383.29
Row 5 Average: 592.00
Row 6 Average: 557.86
Row 7 Average: 638.14
Row 8 Average: 532.43
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