Assignment - 4

Subject: Programming and Problem solving
Trimester: 1

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Division: 1
Batch: A3

Aim: Write a menu driven program to perform basic operations such as addition and subtraction of two matrices

Objective: 1. To understand arrays in C
2. To learn and understand two dimensional arrays and operation on it.

Theory:

1. Arrays

→ Arrays are a kind of data structure that can store a fixed size sequential collection of elements of the same type.

2. Types of Arrays

→ 1-D Arrays, 2-D arrays.

1-D Arrays have 1 row of data, 2-D Arrays have multiple rows and columns.

3. Declaration of 1-D array

→ Datatype Arrayname [No of variables];

4. Declaration of 2-D array

→ Datatype Arrayname [No of rows] [No of columns];

5. Initialization of Arrays

→ 1-D array: Int balance [5] = { 2000, 2000, 2500, 3570, 4000 };

Int → Data type

balance → Array name

[5] → No of variables

{ 2000, 2000, 2500, 3570, 4000 } → Initialized values

2-D arrays:

Int a[3][4] = {0,1,2,3,4,5,6,7,8,9,10,11};

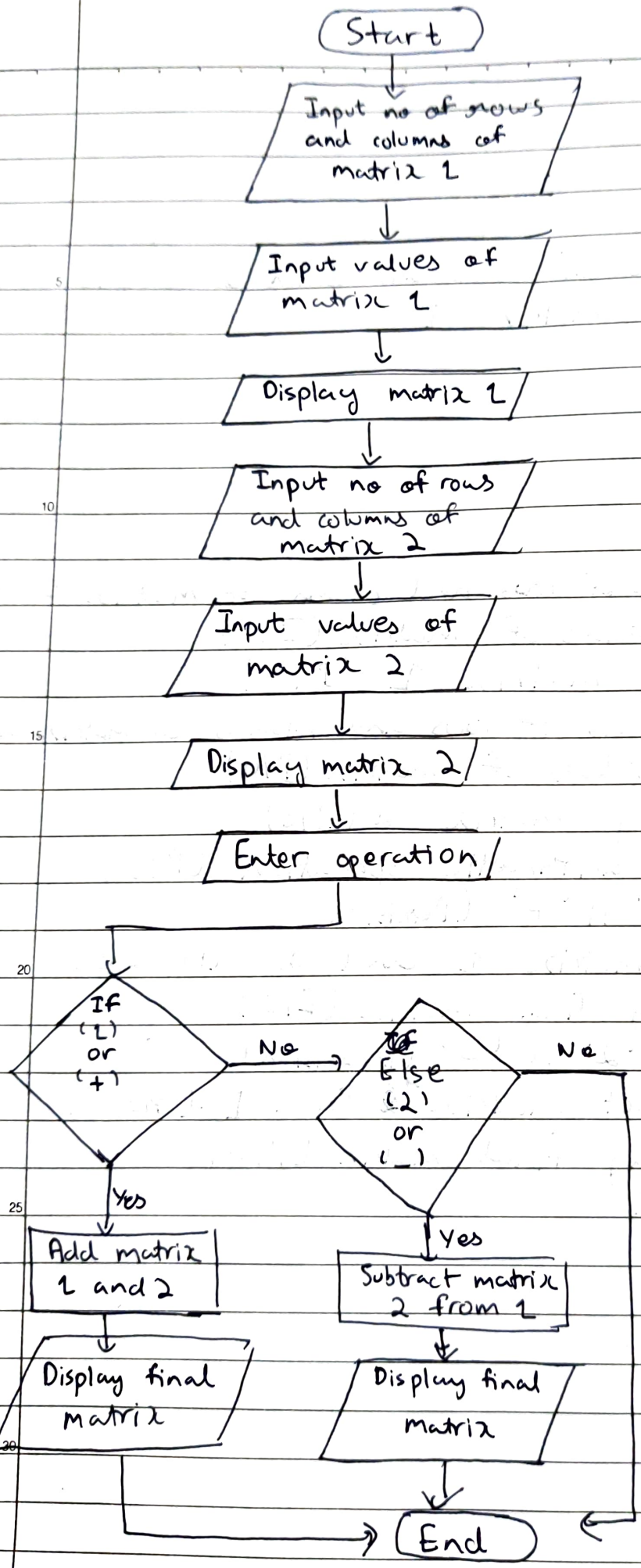
~~Stored as [1,2,3,4~~

Stored as → [0,1,2,3
4,5,6,7
8,9,10,11].

Algorithm

Step 1: Start
Step 2: Input no of rows and colums of matrix 1 (I/O)
Step 3: Enter values of matrix (I/O)
Step 4: Display matrix 1 (I/O)
Step 5: Input no of rows and columns of matrix 2 (I/
Step 6: Enter values of matrix (I/O)
Step 7: Display matrix 2 (I/O)
Step 8: Input arithmetic operation (I/O)
Step 9: If '1' || '+' (Desisiun)
    Add matrix 1 and 2 (Process)
    Display final matrix (I/O)
Step 9: Else '2' || '-' (Descision)
    Subtract matrix 1 from 2 (Process)
    Display final matrix (I/O)
Step 10: End.

Flow chart


Start
Input no of rows and columns of matrix 1
Input values of matrix 1
Display matrix 1
Input no of rows and columns of matrix 2
Input values of matrix 2
Display matrix 2
Enter operation
If (1) or (+)
No
Else (2) or (-)
No
Yes
Add matrix 1 and 2
Display final matrix
Yes
Subtract matrix 2 from 1
Display final matrix
End

Input:

Enter first matrix elements

1 2 3

1 2 3

Enter second matrix elements

1 2 3

1 2 3

Output

Addition is

2 4 6

2 4 6

Conclusion:

Thus implemented the program to perform addition and subtraction of two matrices

FAQ:

1. What are different types of arrays? How do we define them?

→ One dimensional or Linear arrays.
Only have 1 row of data.

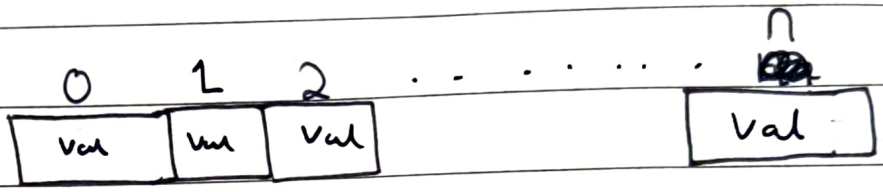
Two dimensional or Matrix arrays
Has m x n array meaning m rows and n columns.

2. How are Arrays initialized and processed

→ 1-D array initialize

Datatype Arrayname [variable numbers [n]] = [values to be put in Array]

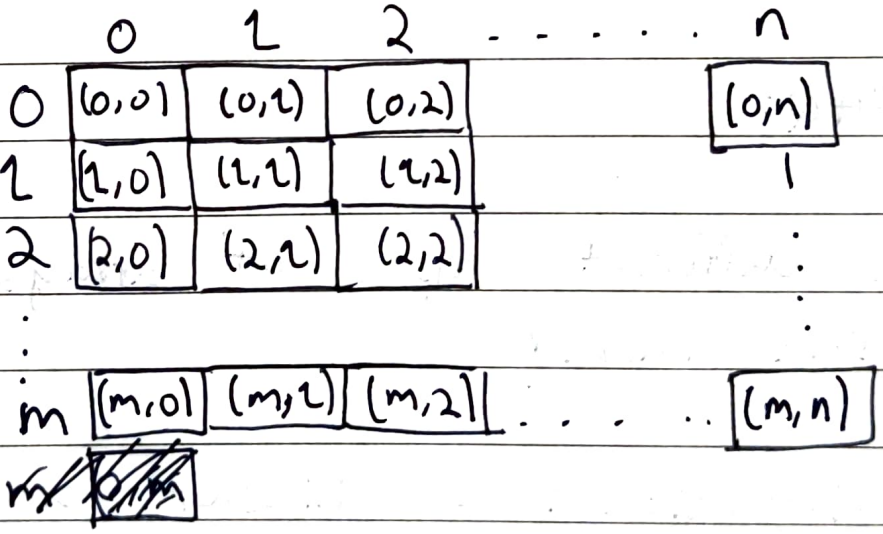
Processed



2-D array Initialize

Datatype Arrayname [rows [m]] [columns [n]] = [variables]

Processed



3. How are elements accessed in 2D arrays