Presidency University, Bengaluru
2nd Semester 2018-19
Computer Programming
Lab Sheet 7

Objectives

- Declaring 2D Array
- Reading contents to 2D Array
- Displaying the contents of 2D Array
- Application and usage of 2D Array

Exercise 1,2,3, and 4 to be written in lab record

Problem1:
Hari and Priya want to buy 5 items each from the shop. They want to store the price of all the items in one list. Help Hari & Priya to store the price list of all ten items.
Requirements
1: Declare a 2D array with 2 row and 5 column.
2: Read the price of all ten items.
3: Display the price of all ten items.

```
#include<stdio.h>
void main()
{
int plhari[2][5],row,col;

printf("Enter 5 items each for Hari and Priya\n");
for(row=0;row<2;row++)
{
  for(col=0;col<5;col++)
  {
    scanf("%d",&plhari[row][col]);
  }
}

printf("Items bought by Hari and Priya are\n");
for(row=0;row<2;row++)
{
  for(col=0;col<5;col++)
  {
    printf("%d\t",plhari[row][col]);
  }
 printf("\n");
}
}
```

Exercise 1: Poorna and Chandra will join Hari and Priya for shopping. Poorna and Chandra also want to buy 5 items each. Help Hari to maintain the price list of items purchased by Poorna and Chandra in his list.

Modify the program given in **Problem1.**

Exercise2:
Hari want to list all the items which are less than a particular price. Modify the program in Exercise 1 with following requirement.

1: Read the price to compare.
2: Compare the price with all price in Hari's list.
3: Display the item number whose value is less than the price.

Exercise 3:
Hari want to know the total cost of purchase by all 4 members. Help Hari to calculate sum of all price and display the price.

Modify the program in **Exercise1** to accommodate new requirement.

Exercise 4: Hari want to know the price of items which are purchased 1st by each member.

Modify the program in Exercise 1 to display the price of 1st item purchased by each member.

Example:

If following is the list created by Hari

Plhari[4][5]

20	30	40	50	60
10	12	14	16	18
23	34	45	56	67
87	76	65	54	43

Output will be

20
10
23
87

Exercise 5: Hari want to create a separate list for each members. Help Hari to create separate list, one for Hari, one for Priya, one for Poorna and one for Chandra.
Example:
If following is the list created by Hari

Plhari[4][5]

20	30	40	50	60
10	12	14	16	18
23	34	45	56	67
87	76	65	54	43

Output will be

ListHari[4]:

20	30	40	50	60

ListPriya[4]:

10	12	14	16	18

ListPoorna[4]:

23	34	45	56	67

ListChandra[4]:

87	76	65	54	43

Exercise to Practice (Self Study Component)

In engineering applications, matrix play a major role in solving problems. Matrix can be represented using 2D array in C programming language. Following are few exercise on matrix. Take it as exercise to practice.

1: Write a C Program to create and display 4X4 matrix
Example:

20	30	40	50
10	12	14	16
23	34	45	56
87	76	65	54

2: Write a C Program to create two matrix say M1 and M2 both of size 4X4. Add the content of matrix M1 and matrix M2. Copy the result of addition to a new matrix M3.
Example:
M1[4][4]

20	30	40	50
10	12	14	16
23	34	45	56
87	76	65	54

M2[4][4]

2	3	4	5
1	2	4	6
10	20	30	40

1	1	1	1

M3[4][4]

22	33	44	55
11	14	18	22
33	54	75	96
88	77	66	55

3: Write the program to display the upper triangle of the matrix M1

Example:

M1[4][4]

20	30	40	50
10	12	14	16
23	34	45	56
87	76	65	54

Output will be :

Example:

M1[4][4]

20	30	40	50
	12	14	16
		45	56
			54

4: Write the program to display the lower triangle of the matrix M1

Example:

M1[4][4]

20	30	40	50
10	12	14	16
23	34	45	56
87	76	65	54

Output will be

M1[4][4]

20			
10	12		
23	34	45	
87	76	65	54

5: Write the program to display the items in the diagonal of the matrix M1

Example:

M1[4][4]

20	30	40	50
10	12	14	16
23	34	45	56
87	76	65	54

Output will be

M1[4][4]

20			
	12		
		45	

			54