Day: 6

C Assignments: Loops, Arrays

S.No	Assignment	Test Cases	
		Input	**Output**
1	Write a Program to find if a given number is Armstrong number. Armstrong number has property: $153 = 1^3 + 5^3 + 3^3$	153	153 is Armstrong number
		371	371 is Armstrong number
		100	100 is NOT Armstrong number
		1	1 is Armstrong number
2	Write a program to find whether given number is palindrome or not. Palindrome number is a number which is same as its reverse	121	121 is palindrome number
		12	12 is NOT palindrome number
		11	11 is palindrome number
		4	1 is palindrome number
3	Write a program in C to find whether a number n is prime number or not	101	101 is a prime number
		19	19 is a prime number
		32	32 is NOT a prime number
		93	93 is NOT a prime number
4	Write a program in C to find all prime numbers from 1 to n	18	2, 3, 5, 7, 11, 13, 17
		10	2, 3, 5, 7

5	What will be the output after execution of the program?
	`#include <stdio.h>`
	`int main()`
	`{`
	`    int i, a[4]={3,1,2,4}, result;`
	`    result=a[0];`
	`    for(i=1; i<4; i++)`
	`    {`
	`            if(result > a[i])`
	`            continue;`
	`            result=a[i];`
	`    }`
	`    printf("%d", result);`
	`    return 0;`
	`}`		

6	What will be the output?
	`#include <stdio.h>`
	`int main()`
	`{`
	`    int arr[]={1,2,3,4,5,6};`
	`    int i, j, k;`
	`    j=++arr[2];`
	`    k=arr[1]++;`
	`    i=arr[j++];`
	`    printf("i=%d, j=%d, k=%d",i,j,k);`
	`return 0;`
	`}`		

| 7 | What will be the output when the following code is executed.

```c
#include <stdio.h>
int main()
{
    int a[6]={1,2,3,4,5,6};
    switch(sizeof(a))
    {
    case 1:
    case 2:
    case 3:
    case 4:
    case 5:
        printf("IIT KGP");
        break;
    }
    printf("IIT MADRAS");
    return 0;
}
``` |
|---|---|
| 8 | How many 'a' will be printed when the following code is executed?

```c
#include <stdio.h>
int main()
{
    int i = 0;
    char c = 'a';
    while (i < 5)
    {
        i++;
        switch (c)
        {
            case 'a':
            printf("%c ", c);
            break;
        }
    }
    printf("a\n");
    return 0;
}
``` |

| 9 | Find the output of the following C program
```c
#include<stdio.h>
int main()
{
        int a;
        int arr[5] = {1, 2, 3, 4, 5};
        arr[1] = ++arr[1];
        a = arr[1]++;
        arr[1] = arr[a++];
        printf("%d,%d", a, arr[1]);
        return 0;
}
``` |

S.NO	Assignment	Test cases	
		INPUT	OUTPUT
10	Write a C Program to find Largest Element of an Integer Array. Here the number of elements in the array 'n' and the elements of the array is read from the test data. Use the printf statement given below to print the largest element. printf("Largest element = %d", largest);	4 -400 -800 -700 -50	Largest element = -50
		7 60 70 200 12 40 -90 60	Largest element = 200
		5 10 50 40 30 20	Largest element = 50
		7 100 50	Largest element = 100

		60 70 90 30 40	
11	Write a C Program to print the array elements in reverse order (Not reverse sorted order. Just the last element will become first element, second last element will become second element and so on) Here the size of the array, 'n' and the array elements is accepted from the test case data.	5 10 20 30 40 50	50 40 30 20 10
		6 41 42 43 44 45 46	46 45 44 43 42 41
		5 1 2 3 4 5	5 4 3 2 1
		4 45 65 35 25	25 35 65 45
12	Write a C program to read Two One Dimensional Arrays of same data type (integer type) and merge them into another One Dimensional Array of same type. First take n as size of first array, then input all n elements of first array. Take m as size of second array, then input all m elements of second array. At last merge these two arrays to make third array of size n+m	3 15 45 25 3 60 70 80	15 45 25 60 70 80
		4 90 80 10 30 2 25 75	90 80 10 30 25 75
		3 10	10 20

		20 30 4 40 50 60 70	30 40 50 60 70
		4 9 7 6 5 2 30 50	9 7 6 5 30 50
13	Write a C Program to delete duplicate elements from an array of integers. First take n as size of first array, then input all n elements of first array. Now delete duplicate elements from nested array. You can use nested loop for deleting duplicate elements.	6 50 6 7 7 2 7	50 6 7 2
		7 2 4 2 6 4 2 4	2 4 6
		5 50 60 30 20 30	50 60 30 20
		6 40 20 50 30 20 10	40 20 50 30 10
14	C Program to delete an element from a specified location of an Array starting from array [0] as the 1st position, array[1] as second position and so on.	4 50 60 70 80	60 70 80

	First take n as size of first array, then input all n elements of first array. Now input index value from user, print the array after deleting that index value from array.	1	
		5 9 10 11 1 20 5	9 10 11 1
		5 10 20 30 40 50 4	10 20 30 50
		6 600 500 400 300 300 200 4	600 500 400 300 200

15	**Write a C program to find the sum of all elements of each row of a matrix.**
	Input number of rows and number of cols from user.
	Now input all rows*cols values from user
	  Example: For a 3x3 matrix
	              4 5 6
	              6 7 3
	              1 2 3
	
	  The output will be
	  15
	  16
	   6
		3
		2
		4
		4
		5
		5
		6
		6
			8
			10
			12

		3 4 1 -1 2 -2 5 -5 7 -7 8 -8 6 -6	0 0 0
		3 3 1 1 1 2	3 6 9

		2 2 3 3 3	
		2 3 1 2 3 4 5 6	6 15
16	Write a C program to find subtraction of two matrices i.e. matrix_A - matrix_B=matrix_C. Input number of rows and number of cols from user for both A and B matrix. Now input all rows*cols values from user If the given martix are 2 3 5 1 5 2 4 5 6 2 3 4 6 5 7 3 3 4 Output will be: 1 -2 3 2 2 2 3 2 3 The elements of the output matrix are separated by one blank space	3 4 5 6 7 8 3 2 5 6 1 3 9 5 2 9 3 1 2 5 1 2 2 3 4 1	3 -3 4 7 1 -3 4 4 -1 0 5 4
		3 3 2 3 5 4 5 6 6 5 7 1 5 2 2 3	1 -2 3 2 2 2 3 2 3

		4	
		3	
		3	
		4	

| 17 | Write a C program to print lower triangle of a square matrix.
Input size of square matrix as n. Solve of nxn square matrix
For example the output of a given matrix
2 3 4   will be   2 0 0
5 6 7   5 6 0
4 5 6   4 5 6 | 4
1
1
1
1
2
2
2
2
3
3
3
3
4
4
4
4 | 1 0 0 0
2 2 0 0
3 3 3 0
4 4 4 4 |
| | | 3
1
2
3
1
2
3
1
2
3 | 1 0 0
1 2 0
1 2 3 |