Basic Programming Lab

— — 0x07

1D-Array

// Program to declare and initialise 1D Array

```
#include <stdio.h>
int main()
{
	int arr[10];

	for (int i = 0; i < 10; ++i)
	{
		printf("\nEnter element no%d: ", i +
1);
		scanf("%d", &arr[i]);
	}
	for (int i = 0; i < 10; ++i)
	{
		printf("\n%d", arr[i]);
	}
	return 0;
}

/*
Another type of declaration
int arr[] = {1,2,3,4,5}; //array of size 5
*/
```

// Program to search an element in an array

```
#include <stdio.h>
int main()
{
	int arr[10], x, flag = 0;

	for (int i = 0; i < 10; ++i)
	{
		printf("\nEnter element no%d: ", i +
1);
		scanf("%d", &arr[i]);
	}

	printf("\nEnter the no u want to search: ");
	scanf("%d", &x);
	for (int i = 0; i < 10; ++i)
	{
		if (arr[i] == x)
		{
			flag = 1;
			printf("\nSearch Successful,
found the no %d", arr[i]);
		}

	}
	if (flag == 0)
	{
		printf("\nSearch Unsuccessful");
	}
	return 0;
}
```

Strings

// Program to declare and initialise character type Array

```
#include <stdio.h>
int main()
{
        char arr[100];
        printf("\nEnter the Name:");
        scanf("%s", arr);
        printf("%s\n", arr );
        return 0;
}

/*
scanf alternative
gets(arr);
*/
```

Formatting output in printf

Description	Code	Result
Normal	`printf("\n |%s|", "Programming");`	`|Programming|`
Width 5	`printf("\n |%5s|", "Programming");`	`|Programming|`
Width 20	`printf("\n |%20s|", "Programming");`	`|          Programming|`
Width 20, left aligned	`printf("\n |%-20s|", "Programming");`	`|Programming          |`
Width 20, only 7 characters	`printf("\n |%20.7s|", "Programming");`	`|             Program|`

Character Functions

Library File (ctype.h)

Function	Description
ialnum(c)	Returns a non-zero if c is alphabetic or numeric
isalpha(c)	Returns a non-zero if c is alphabetic
scntrl(c)	Returns a non-zero if c is a control character
isdigit(c)	Returns a non-zero if c is a digit, 0 – 9
isgraph(c)	Returns a non-zero if c is a non-blank but printing character
islower(c)	Returns a non-zero if c is a lowercase alphabetic character, i.e., a – z
isprint(c)	Returns a non-zero if c is printable, non-blanks and white space included
ispunct(c)	Returns a non-zero if c is a printable character, but not alpha, numeric, or blank
isspace(c)	Returns a non-zero for blanks and these escape sequences:
isupper(c)	Returns a non-zero if c is a capital letter, i.e., A – Z
isxdigit(c)	Returns a non-zero if c is a hexadecimal character: 0 – 9, a – f, or A – F
tolower(c)	Returns the lowercase version if c is a capital letter;
toupper(c)	Returns the capital letter version if c is a lowercase

Assignment

//0x07

//Use scanf for input in Every Program
//Do not Use In-Built Functions

1. Write a program to print **Fibonacci** series using array.

2. Continuation with Assignment 4 Question 6. Write a program to **check whether the triangle can be formed or not, if yes check whether the triangle is equilateral or not.** Take 3 coordinates as vertices of Triangle.

Input **:** 3 coordinates
Output**:**
If triangle cannot be drawn: no
If triangle can be drawn but not equilateral: yes, Not Equilateral
If triangle can be drawn and equilateral: yes, Equilateral

3. Write a program to **Sort** an array. (Bubble Sort)

4. Write a program to **Search** an element in an array. (Binary Search)

5. Write a program to count number of characters of a string.

6. Write a program to copy one string to another.

7. Write a program to compare two strings.

8. Write a program to concatenate two strings.

Points to Remember

1. Filetype: .c

2. Naming Convention for Directory: Assignment_X
   where X = Lab No
   example: Assignment_1

3. Naming Convention for File: RollNo_Q_Y.c
   where Y = Question No in that Assignment
   example: 123XXX4567_Q_1.c

Commands:

	Command	Example
Create Directory	mkdir <directory_name>	mkdir test_directory
Create File	vi <filename>	vi test.c
Compile a C Program	gcc <filename>	gcc test.c
Run a C Program	./a.out	

4. Write your details in every program

```
/*
 ---------------------------------------------------
|Author : Your_Name                                 |
|Roll No: Your_Roll_No                              |
|Department: Your_Department                        |
 ---------------------------------------------------
*/
```