Basic Programming Lab

— — 0x0a

Recursion

// Program to add first n natural numbers

```
#include<stdio.h>
int Sum_of_Natural_Numbers(int Number);

int main()
{
    int Number, Result;

    printf("Enter a Number: ");
    scanf("%d", &Number);

    Result = Sum_of_Natural_Numbers(Number);

    printf("Sum upto given no = %d", Result);
    return 0;
}

int Sum_of_Natural_Numbers(int Number)
{
    if (Number != 0)
    {
        return Number + Sum_of_Natural_Numbers(Number - 1);
    }
    else
    {
        return Number;
    }
}
```

Storage Class

//1. Automatic Example

```
#include <stdio.h>
int main( )
{
	auto int i = 3;
	{
		auto int j = 5;
		{
			auto int j = 7;
			printf ( "%d ", j);
		}
		printf ( "%d ", j);
	}
	printf( "%d ", j);

	return 0;
}
```

//2. Extern Example

```
//In test4.c
#include "abc.txt"

int main( )
{
	extern int abc;
	printf("\nValue of abc is: %d", abc);

	return 0;
}

//In abc.txt
#include<stdio.h>

int abc = 73;
```

//3. Static Example

```
#include <stdio.h>

void static_example();

int main()
{
	static_example();
	static_example();

	return 0;
}

void static_example()
{
	static int a = 1;
	a++;
	printf("%d  ", a);
}
```

//Register

```
register int Number;
```

//Local Variable & Global Variable

```
#include <stdio.h>

int global_variable = 10; //Global Variable

int main()
{
	int local_variable = 20; // Local Variable
	return 0;
}
```

Assignment

//0x10

//Use scanf for input in Every Program

1. Write a program to find the **factorial** of a no using recursion.

2. Write a program to print **fibonacci series** upto n using recursion.

3. Continuation with Assignment 7 Question 2. 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.** If the triangle can be formed then **calculate the area** of the triangle.

a) function to calculate sides
b) function to calculate area

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                     |
 ------------------------------------------------
*/
```