C Language Tutorial
(Basic to Advanced)

Topics to be covered :
Installation + Setup
Chapter 1 - Variables, Data types + Input/Output
Chapter 2 - Instructions & Operators
Chapter 3 - Conditional Statements
Chapter 4 - Loop Control Statements
Chapter 5 - Functions & Recursion
Chapter 6 - Pointers
Chapter 7 - Arrays
Chapter 8 - Strings
Chapter 9 - Structures
Chapter 10 - File I/O
Chapter 11 - Dynamic Memory Allocation

Functions & Recursion
(Chapter 5)

1. **Function to print Hello**

```c
#include<stdio.h>

//function declaration/prototype
void printHello();

int main() {
   //function call
   printHello();
   return 0;
}

//function definition
void printHello() {
   printf("Hello!\n");
}
```

2. **Function to calculate square of a number**

```c
# include <stdio.h>
//function to calculate square of a number
int calcSquare(int n);

int main() {
   int n;
   printf("enter n : ");
   scanf("%d", &n);
   printf("square is : %d", calcSquare(n));
   return 0;
}

int calcSquare(int n) {
   return n * n;
}
```

3. **Function to calculate n factorial (using recursion)**

```c
# include <stdio.h>
//function to print factorial of n
int factorial(int n);

int main() {
   int n;
   printf("enter n : ");
   scanf("%d", &n);
   printf("factorial is : %d", factorial(n));
   return 0;
}

int factorial(int n) {
   if(n == 0) {
      return 1;
   }
   int factnm1 = factorial(n-1);
   int factn = factnm1 * n;
   return factn;
}
```