# C Programs with Mustafa Rahman

Chapter: 5

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# Functions

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block of code that performs particular task


it can be used multiple times

increase code reusability

# Syntax 1

Function Prototype

```
void printHello( );
```

> Tell the compiler

# Syntax 2

## Function Definition

```
void printHello() {
    printf("Hello");
}
```

> Do the Work

# Syntax 3

Function Call

```
int main() {
      printHello( );
       return 0;
}
```

> Use the Work

# Properties

- Execution always starts from main

- A function gets called directly or indirectly from main

- There can be multiple functions in a program

# Function Types

## Library function

Special functions inbuilt in C

scanf( ), printf( )

## User-defined

declared & defined by programmer

# Passing Arguments

functions can take value & give some value

parameter

return value

# Passing Arguments

```
void printHello( );
```

```
void printTable(int n);
```

```
int sum(int a, int b);
```

# Passing Arguments

functions can take value & give some value

parameter

return value

# Argument v/s Parameter

| | |
|---|---|
| values that are passed in function call | values in function declaration & definition |
| used to send value | used to receive value |
| actual parameter | formal parameters |

# NOTE

a. Function can only return one value at a time

b. Changes to parameters in function don't change the values in calling function.

Because a copy of argument is passed to the function

# Recursion

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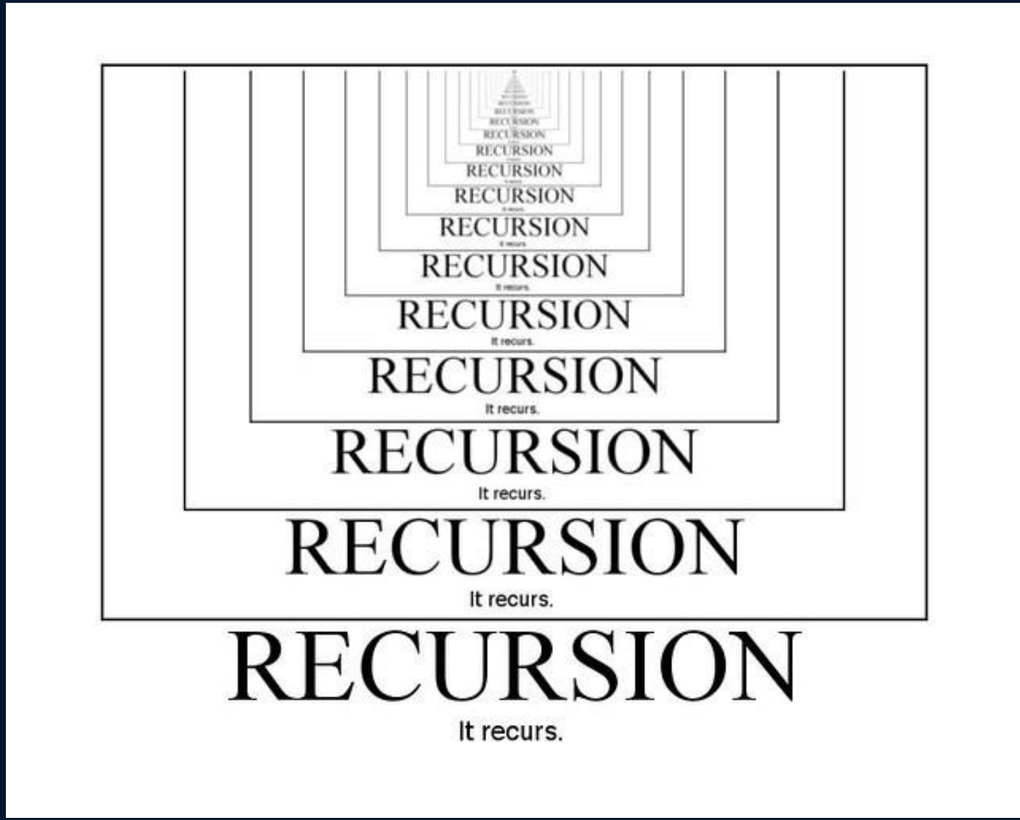
When a function calls itself, it's called recursion



# Properties of Recursion

a. Anything that can be done with Iteration, can be done with recursion and vice-versa.

b. Recursion can sometimes give the most simple solution.

c. Base Case is the condition which stops recursion.

d. Iteration has infinite loop & Recursion has stack overflow