**Functions in C**

* Function is nothing but it is a piece of code which only runs when it is called. For performing some task.
* Function has also some name for identifications. This name help us to identify the function. means Why we create the function in a program.
* Once we create a function in the program .we can use same function in multiple time in the program. This is called reusability of function.

**Function are of two types.**

**Pre-define function**

It is already defined in C libraries .(printf() , scanf(), return(), sqrt(), pow() …. )

**User-defined function**

It makes by user to perform some task. (add(), sub()……)

**How Execute function**

RAM

Main() A() printf

  

B() printf() C()



Printf()



**#include<stdio.h>**

**Void Main() // 1**

**{**

**A();//2**

**B();//4**

**C();//5**

**}**

**A()**

**{  
printf(“Hello function”);3**

**}**

**B()**

**{  
printf(“Hello function”);4**

**}**

**C()**

**{  
printf(“Hello function”);6**

**}**

**Some rules .**

* We can create multiple function in a program and also we can use same function in multiple time in the program. This is called reusability of function
* We can’t define other function inside the function definition but we can call the function inside the function definition.
* In a program we can declare multiple function but we have to declare a main()

function because execution of program always start with main() function .

* If we not use Declaration  or function prototype. then that case we have to flow the  ordering to  define function (means we have to define function before main function).
* *If we use Declaration or function prototype. then that case no matter of ordering to define function (after and before main function) .*
* *If we declare the function inside the main() body in that case we can call only inside the main() body . i.e called Local declaration.*
* *If we declare the function outside the main() body in that case we can call function all over the program inside fun definition . which is declare outside the main() body. i.e called global declaration*
* When Executing of program will start in that case first call main() function when the main() function is called it gates some space in the RAM and main() function called by operating system.

**Benefit of function in C.**

* Better memories utilizations :

Function consumed memory only when it is invoked(execute) and released from RAM as soon as it finished it’s job. So it reduce the complexity of big program. Like calculator .

* Program must have at least one function . that is main().
* Function name must be unique.
* Modularization.

It means splitting the big task into sub task.

* Easy to debug

Means we can test all the task individually .

* Easy to modify

Means if we change some code of any function in that case there is no effect on others.

**Let’s try to understand .**

**What is function definition ?**

**What is function declaration (Function prototype) ?**

**What is function Call ?**

#include <stdio.h>

#include <math.h>

void addNum(void); *These are function  Declaration or function prototype.*

void squareRoot(void);

void powerFun(void);

void main()

{

    addNum(); *These are function calling*

    squareRoot();

    powerFun();

}

void addNum()

{

    int a, b, c;

    printf("Enter first number"); *These are function definition.*

    scanf("%d", &a);

    printf("Enter Second number");

    scanf("%d", &b);

    c = a + b;

    printf("\t\t\tSum = %d\n", c);

}

void squareRoot()

{

    int square, root;

    printf("Enter a number :");

    scanf("%d", &square);

    root = sqrt(square);

    printf("\t\t\tSquare root of %d is %d", square, root);

}

When we call function then that case perform some task by the function definition otherwise it doesn’t work.

For way to define a function

* Takes Nothing , Return Nothing.
* Takes Something , Return Nothing.
* Takes Nothing , Return Something.
* Takes Something , Return Something.