



SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

COURSE NAME : 23ITT101- PROBLEM SOLVING & C PROGRAMMING

I YEAR /I SEMESTER

Unit 4- Functions

Topic 3: Function Call



Brain Storming



1. How perform string manipulation operations?



Introduction



- A function is a group of statements that together perform a task.
- The function contains the set of programming statements enclosed by {}.
- The function is also known as *procedure* or *subroutine* in other programming languages.
- Every C program has at least one function, which is **main()**, and all the most trivial programs can define additional functions.



Advantage of functions in C



- By using functions, we can avoid rewriting same logic/code again and again in a program.
- We can call C functions any number of times in a program and from any place in a program.
- We can track a large C program easily when it is divided into multiple functions.
- Reusability is the main achievement of C functions.
- However, Function calling is always a overhead in a C program.



What is the purpose of a function prototype?



- function prototype specifies the input/output interlace to the function
- i.e. what to give to the function and what to expect from the function.
- It tells the return type of the data that the function will return.
- It tells the number of arguments passed to the function.
- It tells the data types of the each of the passed arguments.
- Also it tells the order in which the arguments are passed to the function.



Syntax



```
return_type function_name(data_type para  
meter...)
```

```
{  
//code to be executed  
}
```

Example:

```
Void add()  
  
{  
//code to be executed  
}
```




Conti...



```
int a = 10, b = 5, c;
```

```
int product(int x, int y);
```

Function Prototype

- int is the return type and int x and int y are the function arguments

```
int main(void)
```

```
{  
    c = product(a,b);  
    printf("%i\n",c);  
    return 0;  
}
```

Main Function

- int is always the return type and there are no arguments, hence the (void). Curly braces { } mark the start and end of the main function

```
printf("%i\n",c);
```

Function call

- product(a,b); a and b are global variables the function is passed. Here the values returned by the function are assigned to the variable c

```
return 0;
```

Function Definition

- contains the function statement return(x * y); the function returns x times y to the main function where it was called. Curly braces { } mark the start and end of the function

```
int product(int x, int y)
```

```
{  
    return (x * y);  
}
```





Conti...



Return Type – A function may return a value. The **return_type** is the data type of the value the function returns. Some functions perform the desired operations without returning a value. In this case, the return_type is the keyword **void**.

Function Name – This is the actual name of the function. The function name and the parameter list together constitute the function signature.



Conti...



Parameters – A parameter is like a placeholder. When a function is invoked, you pass a value to the parameter. This value is referred to as actual parameter or argument. The parameter list refers to the type, order, and number of the parameters of a function. Parameters are optional; that is, a function may contain no parameters.

Function Body – The function body contains a collection of statements that define what the function does.



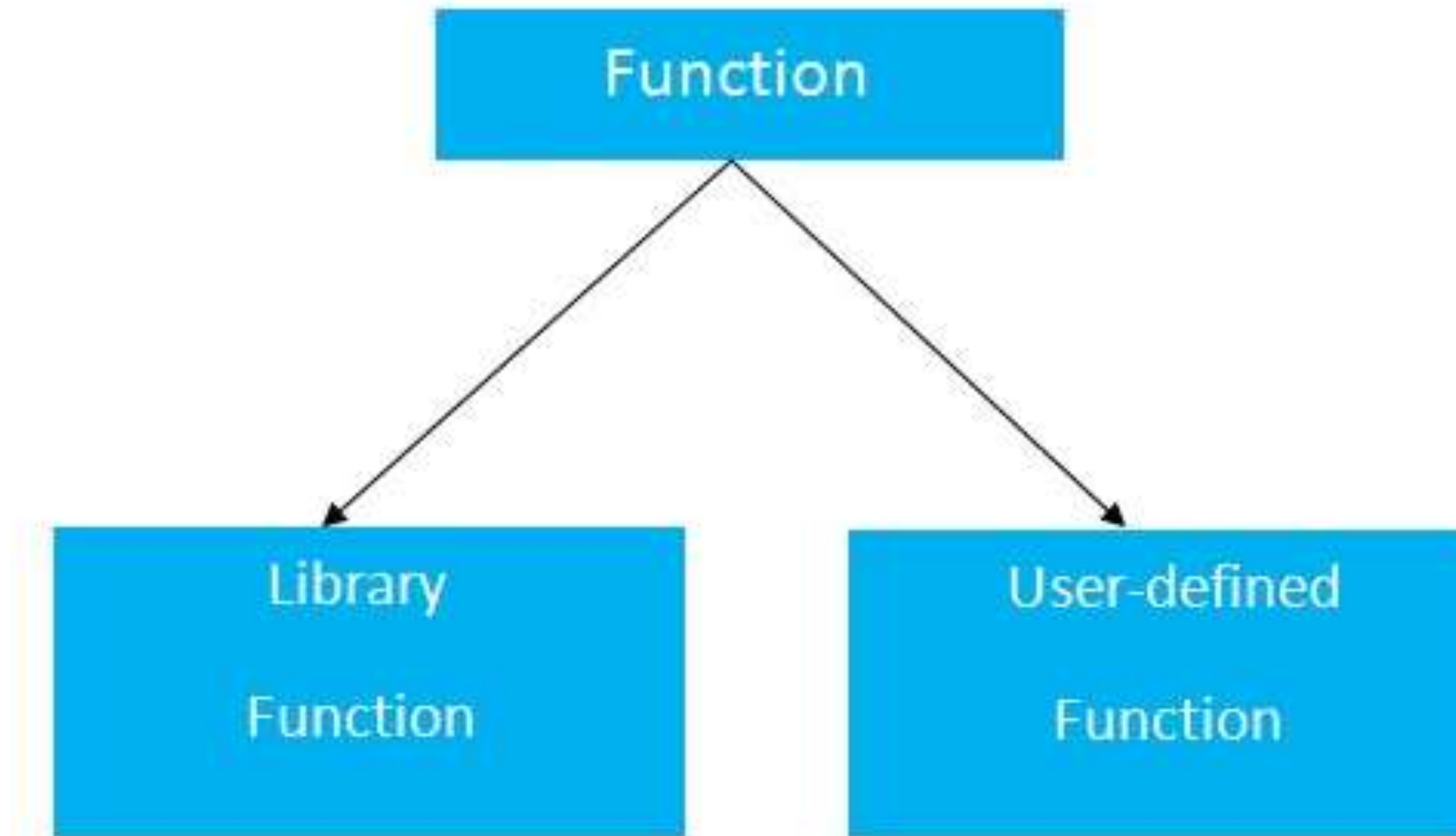
Example:without argument and return value



```
#include<stdio.h>
void printName();
void main ()
{
    printf("Hello ");
    printName();
}
void printName()
{
    printf("This is function call example");
}
```



Types of Functions





Conti...



- There are two types of functions in C programming:
- **Library Functions:** are the functions which are declared in the C header files such as scanf(), printf(), gets(), puts(), ceil(), floor() etc.
- **User-defined functions:** are the functions which are created by the C programmer, so that he/she can use it many times. It reduces the complexity of a big program and optimizes the code.



Function call



- The function call statement invokes the function. When a function is invoked the compiler jumps to the called function to execute the statements that are part of that function.
- There are four different aspects of function calls.

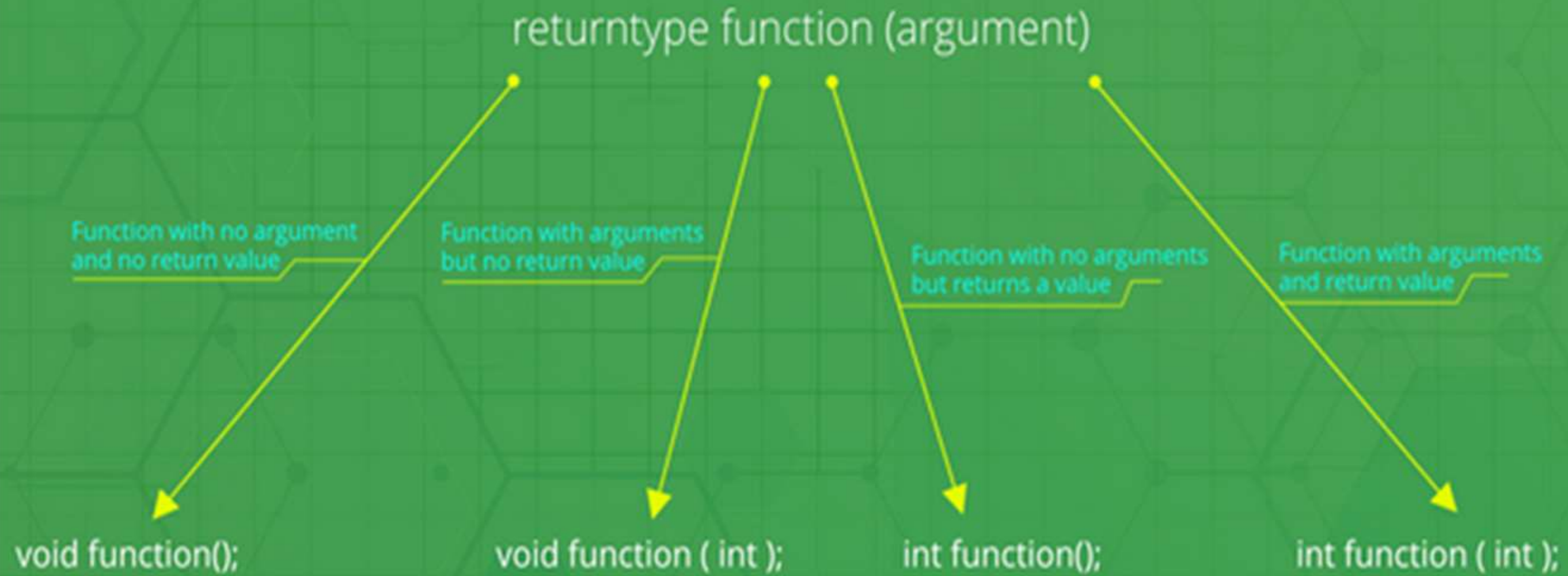


Types of function call



- function without arguments and without return value
- function without arguments and with return value
- function with arguments and without return value
- function with arguments and with return value

Types of Functions in C





Example for Function without argument and return value



```
#include<stdio.h>

void printName();

void main ()
{
    printf("Hello ");
    printName();
}

void printName()
{
    printf("Javatpoint");
}
```



Example for Function without argument and with return value



```
#include<stdio.h>
int sum();
void main()
{
    int result;
    printf("\nGoing to calculate the sum of two numbe
rs:");
    result = sum();
    printf("%d",result);
}
int sum()
{
    int a,b;
    printf("\nEnter two numbers");
    scanf("%d %d",&a,&b);
    return a+b;
}
```




Example for Function with argument and without return value



```
#include<stdio.h>
void sum(int, int);
void main()
{
    int a,b,result;
    printf("\nGoing to calculate the sum of two nu
mbers:");
    printf("\nEnter two numbers:");
    scanf("%d %d",&a,&b);
    sum(a,b);
}
void sum(int a, int b)
{
    printf("\nThe sum is %d",a+b);
}
```



Example for Function with argument and with return value



```
#include<stdio.h>
int sum(int, int);
void main()
{
    int a,b,result;
    printf("\nGoing to calculate the sum of two numbe
rs:");
    printf("\nEnter two numbers:");
    scanf("%d %d",&a,&b);
    result = sum(a,b);
    printf("\nThe sum is : %d",result);
}
int sum(int a, int b)
{
    return a+b;
}
```



Assessment 1



1. What is function?

Ans : _____

2. Write about function prototype?

Ans : _____





References



1. Reema Thareja, “Programming in C”, Oxford University Press, Second Edition, 2016

Thank You