SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

COURSE NAME : 23ITT101- PROBLEM SOLVING & C PROGRAMMING

I YEAR /I SEMESTER

Unit IV – FUNCTIONS AND POINTERS

Topic : Categories of User defined Functions

Topics Covered

- Categories of function
  - Function with no return values, no arguments
  - Function with arguments, no return values
  - Function with arguments and return values
  - Function with no arguments and return values

Category of Functions

- A function depending an whether the arguments are present or not and whether a value is returned or not, may belong to one of following categories
  - Function with no return values, no arguments
  - Functions with arguments, no return values
  - Functions with arguments and return values
  - Functions with no arguments and return values.

Function with no return values, no arguments

- the function has no arguments.
- It does not receive any data from the calling function.
- Similarly, it doesn’t return any value.
- The calling function doesn’t receive any data from the called function.
- So, there is no communication between calling and called functions.

Example

```
#include <stdio.h>

// Function declaration (no return value, no arguments)
void greet();

int main() {
    // Function call
    greet();
    return 0;
}

// Function definition
void greet() {
    printf("Hello, welcome to the C programming world!\n");
}
```

Output:

Hello, welcome to the C programming world!

Functions with arguments, no return values

- function has some arguments .
- it receives data from the calling function, but it doesn’t return a value to the calling function.
- The calling function doesn’t receive any data from the called function.
- So, it is one way data communication between called and calling functions.

Example

```c
#include< stdio.h>
#include< conio.h>
void nat( int);
void main()
{
   int n;
   clrscr();
   printf("\n Enter n value:");
   scanf("%d",&n);
   nat(n);
   getch();
}

void nat(int n)
{
   int i;
   for(i=1;i<=n;i++)
   printf("%d\t",i);
}
```

Output:

Enter n value: 5

1 2 3 4 5

Functions with arguments and return values

- functions has some arguments and it receives data from the calling function.
- Similarly, it returns a value to the calling function.
- The calling function receives data from the called function.
- So, it is two-way data communication between calling and called functions.

Functions with arguments and return values

```c
#include< stdio.h>
#include<conio.h>
int fact(int);
void main()
{
  int n;
  clrscr();
  printf("\n Enter n:");
  scanf("%d",&n);
  printf("\n Factorial of the number : %d", fact(n));
  getch();
}

int fact(int n)
{
  int i,f;
  for(i=1,f=1;i<=n;i++)
  f=f*i;
  return(f);
}
```

Output:

Enter n: 5

Factorial of the number : 120

Functions with no arguments and return values

- the functions has no arguments and it doesn't receive any data from the calling function, but it returns a value to the calling function.
- The calling function receives data from the called function.
- So, it is one way data communication between calling and called functions.

Example

```
#include< stdio.h>
#include< conio.h>
int sum();
void main()
{
   int s;
   clrscr();
   printf("\n Enter number of  elements to be added :");
   s=sum();
   printf("\n Sum of the elements :%d",p);
   getch();
}

int sum()
{
   int a[20], i, s=0,n;
   scanf("%d",&n);
   printf("\n Enter the elements:");
   for(i=0;i< n; i++)
   scanf("%d",& a[i]);
   for(i=0;i< n; i++)
   s=s+a[i];
   return s;
}
```

Summary

A function depending **an whether the arguments are present or not** and whether a value is returned or not, may belong to one of following categories. Function with no return values, no arguments. Functions with arguments, no return values. Functions with arguments and return values.


Thank
you