SNS COLLEGE OF TECHNOLOGY

Coimbatore-35.
An Autonomous Institution

COURSE NAME : 19CST101 PROGRAMMING FOR PROBLEM SOLVING

I YEAR/ I SEMESTER

UNIT-IV FUNCTIONS AND POINTERS

Topic: Functions

Ms. JANANI.S.R

Assistant Professor

Department of Computer Science and Engineering

Functions

Call by value in C

- In call by value method, the value of the actual parameters is copied into the formal parameters. In other words, we can say that the value of the variable is used in the function call in the call by value method.

- In call by value method, we can not modify the value of the actual parameter by the formal parameter.

- In call by value, different memory is allocated for actual and formal parameters since the value of the actual parameter is copied into the formal parameter.

- The actual parameter is the argument which is used in the function call whereas formal parameter is the argument which is used in the function definition.

Functions

Call by Value Example: Swapping the values of the two variables

```c
#include <stdio.h>
void swap(int , int); //prototype of the function
int main()
{
   int a = 10;
   int b = 20;
   printf("Before swapping the values in main a = %d, b = %d\n",a,b); // printing the value of a and b in main
   swap(a,b);
   printf("After swapping values in main a = %d, b = %d\n",a,b); // The value of actual parameters do not change by
}
void swap (int a, int b)
{
   int temp;
   temp = a;
   a=b;
   b=temp;
   printf("After swapping values in function a = %d, b = %d\n",a,b); // Formal parameters, a = 20, b = 10
}
```

Output

```
Before swapping the values in main a = 10, b = 20
After swapping values in function a = 20, b = 10
After swapping values in main a = 10, b = 20
```

Advantages of using Call by value method in C

Pros/benefits of a call by value in C:
- The method doesn't change the original variable, so it is preserving data.
- Whenever a function is called it, never affect the actual contents of the actual arguments.
- Value of actual arguments passed to the formal arguments, so any changes made in the formal argument does not affect the real cases.

Disadvantages of using Call by value method in C

Here, are major cons/drawbacks of a call by value method:

o Changes to actual parameters can also modify corresponding argument variables
o In this method, arguments must be variables.
o You can't directly change a variable in a function body.
o Sometime argument can be complex expressions
o There are two copies created for the same variable which is not memory efficient.

Functions

Difference between call by value and call by reference in c

No.	Call by value	Call by reference
1	A copy of the value is passed into the function	An address of value is passed into the function
2	Changes made inside the function is limited to the function only. The values of the actual parameters do not change by changing the formal parameters.	Changes made inside the function validate outside of the function also. The values of the actual parameters do change by changing the formal parameters.
3	Actual and formal arguments are created at the different memory location	Actual and formal arguments are created at the same memory location

Thank You!