



SNS COLLEGE OF TECHNOLOGY



Coimbatore-36.

An Autonomous Institution

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai**

**COURSE NAME : 23CST101 PROBLEM SOLVING AND C PROGRAMMING
I YEAR/ V SEMESTER**

UNIT – IV FUNCTIONS AND POINTERS

CALL BY REFERENCE

Department of Computer Science and Engineering



Two ways in which we can pass arguments to Functions

Call by Value

- Value of arguments are passed to called function
- Operation is done in formal Parameter
- Changes made are local to that function
- Once Came out of function the changes made get vanish

Call by Reference

Call by Reference rather than passing value address(reference) are passed
.Function operates on addresses rather than values .Formal arguments points to
actual arguments changes made are permanent



Call By Reference

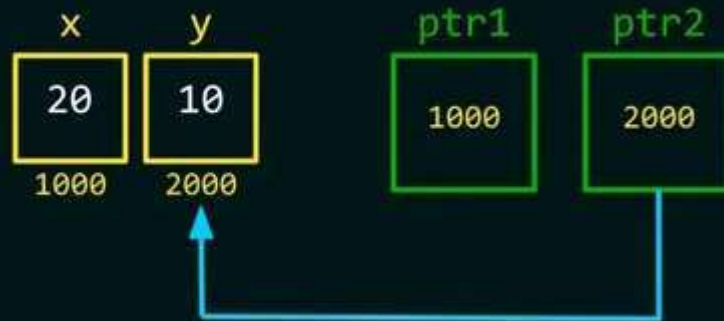
Here both actual and formal parameters refers to same memory location .Therefore any changes made to the formal parameters will get reflected to actual parameters

Here instead of passing values we pass addresses

```
int x = 10, y = 20;
fun(&x, &y);
printf("x = %d, y = %d", x, y);

int fun(int *ptr1, int *ptr2)
{
    *ptr1 = 20;
    *ptr2 = 10;
}
```

Output: x = 20, y = 10





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

```
#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 values of actual parameters do change in call
}
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 = 20, b = 10
```

