

## C RT → Functions in C → Part 4

Call by Value & Call by Reference

```
void main()
```

```
{
```

```
    int x=5, y=7;
```

```
    sum(x, y);
```

```
}
```

⇒ function call.

Note: Functions → Main Points

When we use the function call in main() function; either define the function before main() function (or) declare the function before main() function; when you define function after main() function.

Call by Value:-

```
void fun(int, int);
```

```
void main()
```

```
{
```

```
    int x=5, y=7;
```

```
    fun(x, y);
```

```
    printf("x = %.d y = %.d", x, y);
```

```
}
```

```
void fun(int x, int y)
```

```
{
```

```
    x=7;
```

```
    y=5;
```

```
    printf("x = %.d, y = %.d", x, y);
```

```
}
```

| main() |      |
|--------|------|
| x      | y    |
| 5      | 7    |
| 1000   | 1050 |

| fun() |      |
|-------|------|
| x     | y    |
| 5     | 7    |
| 7     | 5    |
| 2000  | 2050 |

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\* In call by value, we just only pass the value to called function.

\* Drawback of call by value is; whenever we call a function and process it the main function should change; but in main function there will be no change.

\* So to overcome this we use call by reference.

Call by reference:

```
void fun(int*int*);  
void main()  
{
```

```
    int x=5, y=7;
```

```
    fun(&x, &y);
```

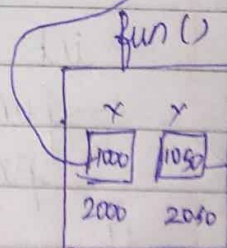
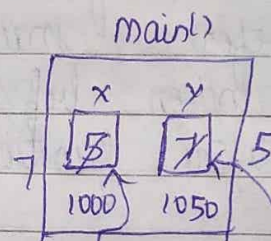
```
    printf("x=%d, y=%d", x, y);  
}
```

```
int *pt1, int *pt2  
void fun(int *x, int *y)  
{
```

```
    *x = 7;
```

```
    *y = 5;
```

```
    printf("x=%d y=%d", *x, *y);  
}
```



\* Whatever change we make in function definition; it will affect it in the main() function which is done using call by reference.

## PROBLEM 1:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /** CALL BY VALUE **/
4  void fun(int,int);
5
6  int main()
7  {
8      int x=5,y=7;
9      fun(x,y);
10     printf("Main function(calling function)\n");
11     printf("x=%d y=%d\n",x,y);
12 }
13 void fun(int x,int y)
14 {
15     x=7;
16     y=5;
17     printf("fun() function(called function)\n");
18     printf("x=%d y=%d\n",x,y);
19 }
```

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fun() function(called function)

x=7 y=5

Main function(calling function)

x=5 y=7

Process returned 0 (0x0) execution time : 0.047 s

Press any key to continue.

## PROBLEM 2:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /** CALL BY REFERENCE **/
4  void fun(int*,int*);
5
6  int main()
7  {
8      int x=5,y=7;
9      fun(&x,&y);
10     printf("Main function(calling function)\n");
11     printf("x=%d y=%d\n",x,y);
12 }
13 void fun(int *x,int *y)
14 {
15     *x=7;
16     *y=5;
17     printf("fun() function(called function)\n");
18     printf("x=%d y=%d\n",*x,*y);
19 }
20
```

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fun() function(called function)

x=7 y=5

Main function(calling function)

x=7 y=5

Process returned 0 (0x0) execution time : 0.094 s

Press any key to continue.