

C LIBRARY MACRO - VA_START

http://www.tutorialspoint.com/c_standard_library/c_macro_va_start.htm

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Description

The C library macro **void va_start***va_list ap, last_arg* initializes **ap** variable to be used with the **va_arg** and **va_end** macros. The **last_arg** is the last known fixed argument being passed to the function i.e. the argument before the ellipsis.

This macro must be called before using **va_arg** and **va_end**.

Declaration

Following is the declaration for va_start macro.

```
void va_start(va_list ap, last_arg);
```

Parameters

- **ap** – This is the object of **va_list** and it will hold the information needed to retrieve the additional arguments with **va_arg**.
- **last_arg** – This is the last known fixed argument being passed to the function.

Return Value

NA

Example

The following example shows the usage of va_start macro.

```
#include<stdarg.h>
#include<stdio.h>

int sum(int, ...);

int main(void)
{
    printf("Sum of 10, 20 and 30 = %d\n", sum(3, 10, 20, 30) );
    printf("Sum of 4, 20, 25 and 30 = %d\n", sum(4, 4, 20, 25, 30) );

    return 0;
}

int sum(int num_args, ...)
{
    int val = 0;
    va_list ap;
    int i;

    va_start(ap, num_args);
    for(i = 0; i < num_args; i++)
    {
        val += va_arg(ap, int);
    }
    va_end(ap);

    return val;
}
```

Let us compile and run the above program to produce the following result –

Sum of 10, 20 and 30 = 60

Sum of 1, 20, 25 and 30 = 76

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