How to measure time taken by a function in C?

To calculate time taken by a process, we can use clock() function which is available *time.h*. We can call the clock function at the beginning and end of the code for which we measure time, subtract the values, and then divide by CLOCKS_PER_SEC (the number of clock ticks per second) to get processor time, like following.

```
#include <time.h>

clock_t start, end;
double cpu_time_used;

start = clock();
... /* Do the work. */
end = clock();
cpu_time_used = ((double) (end - start)) / CLOCKS_PER_SEC;
```

Following is a sample C program where we measure time taken by fun(). The function fun() waits for enter key press to terminate.

```
/* Program to demonstrate time taken by function fun() */
#include <stdio.h>
#include <time.h>

// A function that terminates when enter key is pressed
void fun()
{
    printf("fun() starts \n");
    printf("Press enter to stop fun \n");
    while(1)
    {
        if (getchar())
            break;
    }
    printf("fun() ends \n");
}

// The main program calls fun() and measures time taken by fun()
int main()
{
    // Calculate the time taken by fun()
    clock_t t;
    t = clock();
    fun();
    t = clock() - t;
    double time_taken = ((double)t)/CLOCKS_PER_SEC; // in seconds

    printf("fun() took %f seconds to execute \n", time_taken);
    return 0;
}
```

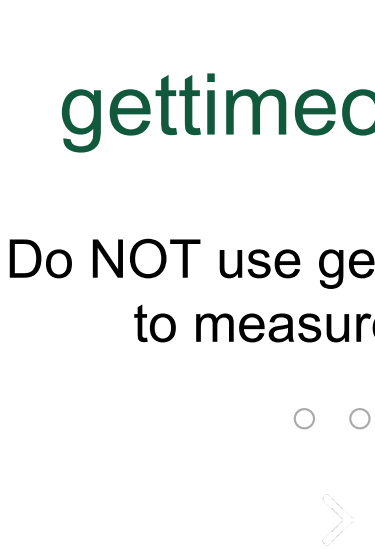
Output: The following output is obtained after waiting for around 4 seconds and then hitting enter key.

```
fun() starts
Press enter to stop fun

fun() ends
fun() took 4.017000 seconds to execute
```

References:
http://www.gnu.org/software/libc/manual/html_node/CPU-Time.html
http://www.cplusplus.com/reference/ctime/clock/?kw=clock

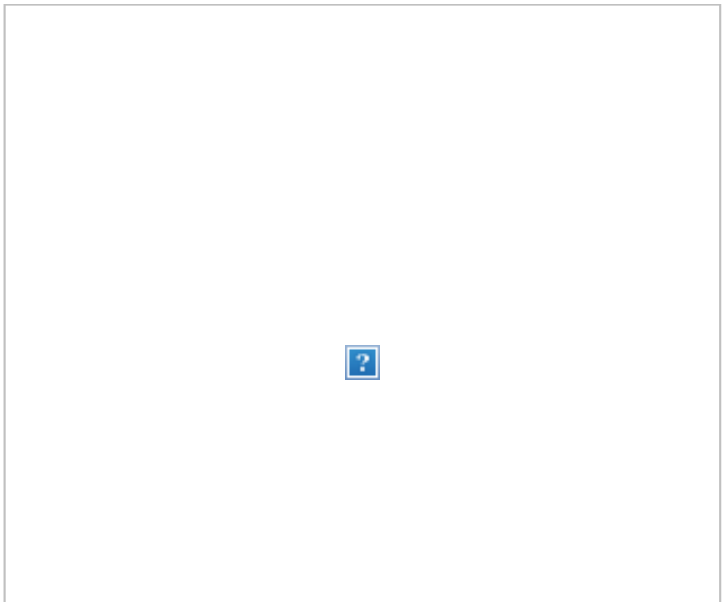
Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.



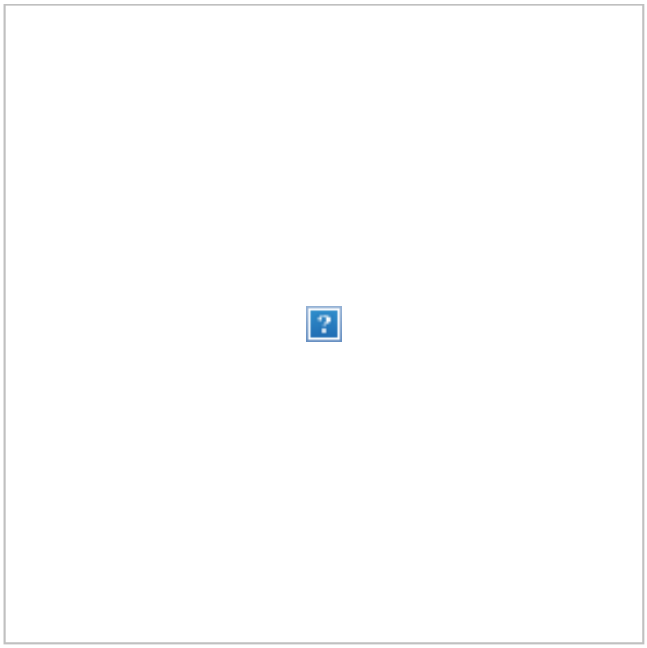
Related Topics:

- Function Pointer in C
- Generic Linked List in C
- Bit Fields in C
- Write your own memcpy()
- Some Interesting facts about default arguments in C++
- Comparison of a float with a value in C
- Pure virtual destructor in C++
- C++ mutable keyword

Writing code in comment? Please use **ideone.com** and share the link here.



- Interview Experiences
- Advanced Data Structures
- Dynamic Programming
- Greedy Algorithms
- Backtracking
- Pattern Searching
- Divide & Conquer
- Mathematical Algorithms
- Recursion
- Geometric Algorithms



Popular Posts

- All permutations of a given string
- Memory Layout of C Programs
- Understanding “extern” keyword in C
- Median of two sorted arrays
- Tree traversal without recursion and without stack!
- Structure Member Alignment, Padding and Data Packing
- Intersection point of two Linked Lists
- Lowest Common Ancestor in a BST.
- Check if a binary tree is BST or not
- Sorted Linked List to Balanced BST

Follow @GeeksforGeeks

Recent Comments

- SiSi

without using boolean... jst print the keys of...

Print all nodes that are at distance k from a leaf node · 1 minute ago

- rochak

  yeah.. u r right...i though so too.. i think it...

  Calculate the angle between hour hand and minute hand · 3 minutes ago

- Mayank yadav

  if (pole1TopDisk == INT_MIN) ? Can someone...

  Iterative Tower of Hanoi · 13 minutes ago

- rochak

  yup...from...

  Sieve of Eratosthenes · 23 minutes ago

- ak

  bahut acche :P

  Root to leaf path sum equal to a given number · 32 minutes ago

- shan

  Given an unsorted array create a BST?? How? It...

  Synopsys Interview Experience | Set 4 (For R&D Engineer I) · 48 minutes ago