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
```

How to find time taken by a command/program on Linux Shell?

References:

http://www.gnu.org/software/libc/manual/html_node/CPU-Time.html

http://www.cplusplus.com/reference/ctime/clock/?kw=clock

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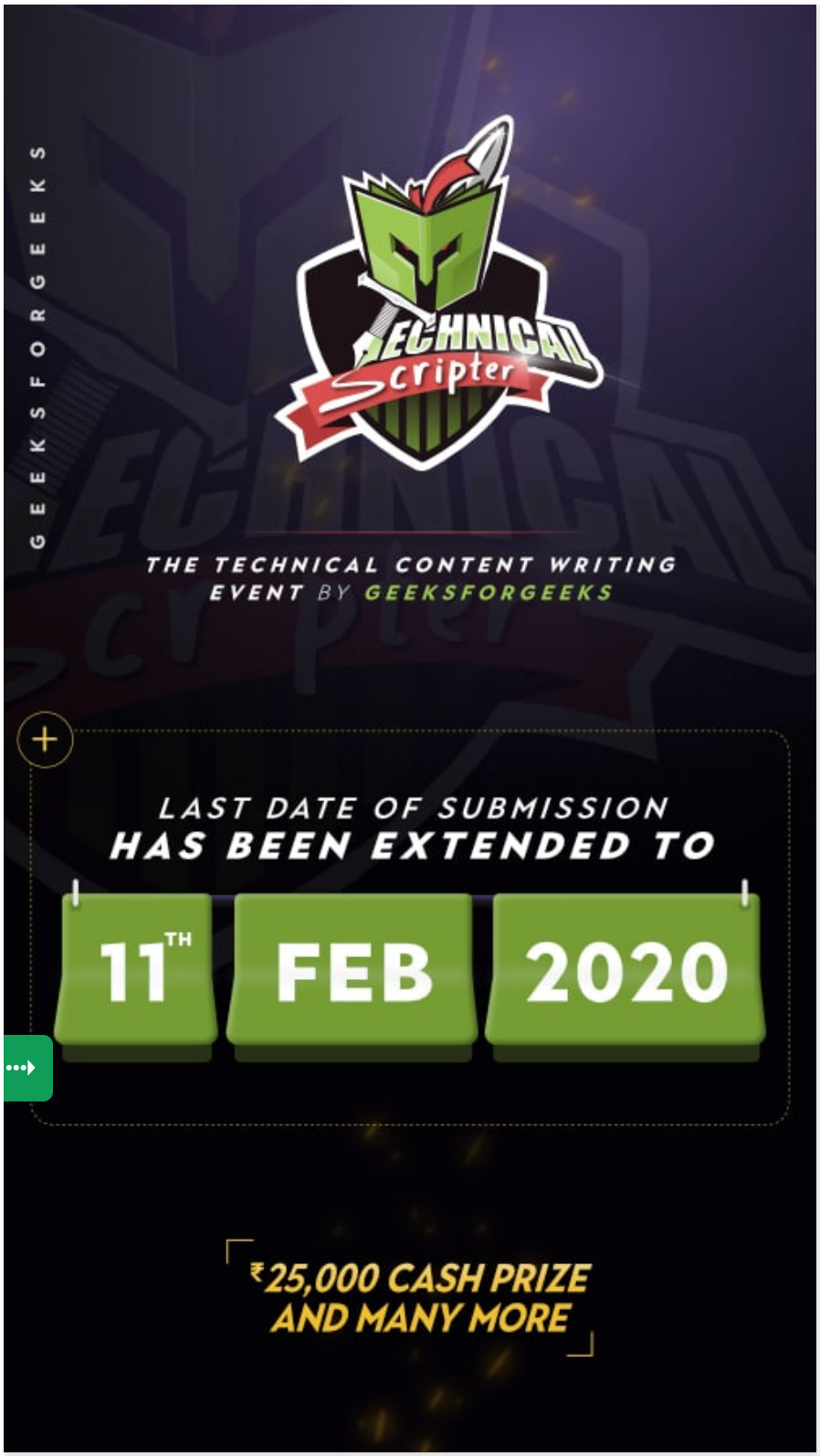
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