← Notes

Writing a C program without a main()

39 C Programming Hack

This post is a simple example of deception. It shows how a programmer can defy the very important rule of having a main() in c program and still make the program run. This illustrates the concept on a simple program though it can be scaled to much bigger and more complex programs.

```
#include<stdio.h>
#define decode(s,t,u,m,p,e,d) m##s##u##t
#define begin decode(a,n,i,m,a,t,e)

int begin()

{
printf(" hello ");
}
```

This program runs without main().

how??

Here we are using preprocessor(a program which processes the source code before compilation.) directive #define with arguments to give an impression that the program runs without main. But in reality it runs with a hidden main function.

The '##' operator is called the token pasting or token merging operator. That is we can merge two or more characters with it.

In the 2nd line of the program-

```
#define decode(s,t,u,m,p,e,d) m##s##u##t
```

What is the preprocessor doing here. The macro decode(s,t,u,m,p,e,d) is being expanded as "msut" (The ## operator merges m,s,u & t into msut). The logic is when you pass (s,t,u,m,p,e,d) as argument it merges the 4th,1st,3rd & the 2nd characters(tokens)

Now look at the third line of the program –

```
#define begin decode(a,n,i,m,a,t,e)
```

Here the preprocessor replaces the macro “begin” with the expansion decode(a,n,i,m,a,t,e). According to the macro definition in the previous line the argument must be expanded so that the 4th,1st,3rd & the 2nd characters must be merged. In the argument (a,n,i,m,a,t,e) 4th,1st,3rd & the 2nd characters are ‘m’,’a’,’i’ & ‘n’.

So the third line “int begin” is replaced by “int main” by the preprocessor before the program is passed on for the compiler. That’s it...

So actually C program can never run without a main() . We are just disguising the main() with the preprocessor, but actually there exists a hidden main function in the program.

Source : LearnHacking.

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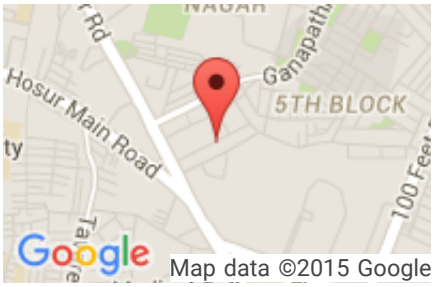

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