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Static functions in C

May 5, 2010

In C, functions are global by default. The "*static*" keyword before a function name makes it static. For example, below function *fun()* is static.

```c
static int fun(void)
{
  printf("I am a static function ");
}
```

Unlike global functions in C, access to static functions is restricted to the file where they are declared. Therefore, when we want to restrict access to functions, we make them static. Another reason for making functions static can be reuse of the same function name in other files.

For example, if we store following program in one file *file1.c*

```c
/* Inside file1.c */
static void fun1(void)
{
  puts("fun1 called");
}
```

And store following program in another file *file2.c*

```c
/* Iinside file2.c  */
int main(void)
{
  fun1();
  getchar();
  return 0;
}
```

Now, if we compile the above code with command "*gcc file2.c file1.c*", we get the error *"undefined reference to `fun1'"* . This is because *fun1()* is declared *static* in *file1.c* and cannot be used in *file2.c*.

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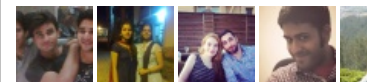5. Print all combinations of points that can compose a given number

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KeerthanaRajendran says:
June 8, 2013 at 7:04 PM

```
/* Paste your code here (You may delete these lines if not writing code) */
```

Reply

Nandan says:
June 5, 2013 at 8:54 AM

static functions can be called from other files with the help of function pointers i.e declare a function pointer and assign it to static function. Now with the help of function pointer static function can be called from other files.

Reply

ultimate_coder says:
June 5, 2013 at 12:45 PM

You are right. But it is also right that static keyword prevents its accidental usage in other files.

Correct me if i m wrong.

Reply

Elham says:
June 2, 2013 at 10:09 AM

Thank you so much, It's really helpful

```
/* Paste your code here (You may delete these lines if not writing code) */
```

Reply

Kapil says:
May 6, 2010 at 9:52 AM

how are static functions different from static variables?

Reply

Nithish says:
May 8, 2010 at 3:53 AM

Static functions are functions that are only visible to functions in the same file and they are not callable from outside. Static functions are used when we only need to call them within the single source file they are defined in.

Static variables are variables whose lifetime extends across the entire run of the program i.e. they retain their value through the execution of the program. Depending on where the variable is defined they have a file scope (if they are defined globally) or have a local function scope (if they are defined local to a function).

Reply

Sunil says:
August 7, 2011 at 12:10 PM

Static variables also have internal linkage right? Because we cannot have a static variable in one file and do extern for the same static variable in another file with both the files being in the same project.

Reply

ptr says:
August 7, 2011 at 4:13 PM

Yes static variables and static functions have internal linkage in C.

If you check assembled code for non static variables and non static functions
you can see following dirctives:

.globl fun2
.type fun2, @function
.globl variable

This will make the variable visible to other compilations units (files).

And for static functions/static variables

GHR

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.globl directive will not be present in assembled code.

Sunil says:
August 7, 2011 at 11:31 PM

Thank you for the info

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