

Conditional Compilation and Device Drivers

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#if

- #if <condition that can be evaluated by the preprocessor>
- What does preprocessor know?
 - Values of #defined variables
 - Constants

Example

```
#include <stdio.h>

int main()
{
    #if 0
        printf("this is not printed\n");
    #endif
    printf("This is printed\n");
    return 0;
}
```

Example 2

```
#include <stdio.h>
#define VERSION 5

int main()
{
    #if VERSION < 5
        printf("this is not printed\n");
    #endif
    printf("This is printed\n");
    return 0;
}
```

#else

```
#if
...
#elif
...
#else
...
#endif
```

#ifdef

- #if defined
 - Checks to see if a macro has been defined, but doesn't care about the value
 - A defined macro might expand to nothing, but is still considered defined

Example

```
#include <stdio.h>
#define MACRO

int main()
{
    #if defined MACRO
        printf("this is printed\n");
    #endif
    printf("This is also printed\n");
    return 0;
}
```

#undef

- Undefines a macro:

```
#include <stdio.h>
#define MACRO
#undef MACRO

int main()
{
    #if defined MACRO
        printf("this is not printed\n");
    #endif
    printf("This is printed\n");
    return 0;
}
```

Shortcuts

- #if defined → #ifdef
- #if !defined → #ifndef

Uses

- Handle Operating System/Architecture specific code
- Handle differences in compilers
- Build program with different features
 - Debugging:

```
#ifdef DEBUG
    printf(...)
#endif
```

Including a Header File Once

```
#ifndef _MYHEADER_H_
#define _MYHEADER_H_

...Definitions of header to only be included once

#endif
```

Notes

- Can define variables from the commandline with -D
 - gcc -o test -DVERSION=5 test.c
 - gcc -o test -DMACRO test.c

Other Preprocessor Details

- # - quotes a string
- ## - concatenates two things
- #pragma
- #warn
- #error

Defined Constants

Macro	Meaning
__FILE__	The currently compiled file
__LINE__	The current line number
__DATE__	The current date
__TIME__	The current time
__STDC__	Defined if compiler supports ANSI C
...	Many other compiler-specific flags