## **Conditional** compilation

- Conditionals in the C pre-processor
  - Conditional clause of the C pre-processor:

The C pre-processor has a conditional clause that tells the C processor whether it should *skip* the processing of a portion of the C program file

• The C pre-processor has the following **3 conditional** clauses:

#if
#ifdef
#ifndef

The clause **#if** clause is *rarely* used....

I will skip it.

## • The **#ifdef** conditional

• Syntax of the **#ifdef** conditional:

Syntax	Meaning
#ifdef MACRO-NAME	<ul> <li>If the MACRO-NAME is <i>defined</i>, then the text</li> <li>segment will be kept (<i>not</i> removed) by the C</li> <li>pre-processor</li> </ul>
text segment #endif	<ul> <li>Otherwise, (the MACRO-NAME is not defined), then the text segment will be omitted (removed) by the C pre-processor</li> </ul>
<pre>#ifdef MACRO-NAME     text segment 1</pre>	<ul> <li>If the MACRO-NAME is <i>defined</i>, then the text segment 1 will be kept (<i>not</i> removed) and the text segment 2 will be omitted (removed) by the C pre-processor</li> </ul>
<pre>#else     text segment 2     #endif</pre>	Otherwise, (the MACRO-NAME is not defined), then the text segment 2 will be kept (not removed) and the text segment 1 will be omitted (removed) by the C pre-processor

<pre>#ifdef MACRO-NAME-1     text segment 1 #elif MACRO-NAME-2</pre>	If the MACRO-NAME-1 is <i>defined</i> , then the text segment 1 will be kept ( <i>not</i> removed) and all other text segments will be omitted (removed) by the C pre-processor
text segment 2	• Otherwise, if the MACRO-NAME-2 is <i>not</i> defined,
[#else	then the text segment 2 will be kept ( <i>not</i> removed) and all other text segments will be
text segment 3]	omitted (removed) by the C pre-processor
#endif	And so on.

• Example:

```
#define COMPILE_IT (This defines COMPILE_IT to be the empty string !)
#ifdef COMPILE_IT
You can put any text here.
The C-preprocessor will include it
when the symbol COMPILE_IT
is defined
#else
You can put any text here.
The C-preprocessor will include it
when the symbol COMPILE_IT
is NOT defined
#endif
```

Output of the C pre-processor:

You can put any text here. The C-preprocessor will include it when the symbol COMPILE\_IT is defined

• Example Program: (Demo above code)

Example

Prog file: <u>click here</u>

How to run the program:

- **Right click** on link and **save** in a scratch directory
- To compile: gcc -E cprep1.c

(The -E option tells the C compiler to quit after running the C pre-processor)

## • Experiment:

• <b>Delete</b> the line:		
#define COMPILE_IT		
<ul> <li>"Re-compile" the program file with:</li> </ul>		
gcc -E cprep1.c		
• You will see the <b>text</b> in the <b>else part</b>		

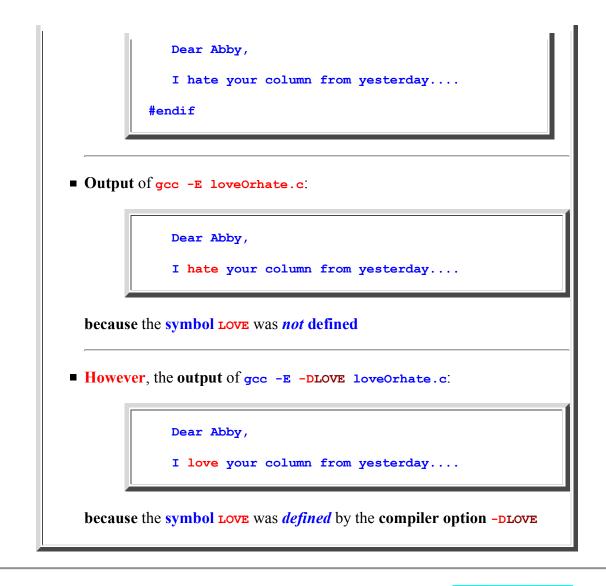
• Defining symbol using the C-compiler option

• The **C-compiler** has an **option** to *define* a **symbol**:



• Illustrative example:

Program: loveOrhate.c		
	#ifdef LOVE	
	Dear Abby,	
	I love your column from yesterday	
	#else	



• Example Program: (Demo above code)



Prog file: <u>click here</u>

How to run the program:

- **Right click** on link and **save** in a scratch directory
- To compile: see above
- The **#ifndef** conditional
  - 0 #ifndef:

The #ifndef conditional is similar to the #ifdef, except the meaning is reversed:

