

# Princeton University

## COS 217: Introduction to Programming Systems

### The gcc Command

```
#include <stdio.h>
int main(void)
/* Print "Hello world" to stdout. */
{
    printf("Hello world\n");
    return 0;
}
```

**hello.c**  
Source code  
C language  
Contains preprocessor directives

C Preprocessor

Step 1

`gcc -E hello.c > hello.i`

```
...
int printf(char *format, ...);
...
int main(void)
{
    printf("Hello world\n");
    return 0;
}
```

**hello.i**  
Source code  
C language  
Contains declaration of printf function  
Missing definition of printf function

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## Step 2

```
gcc -Wall -ansi -pedantic -S hello.i
```

```
.section .rodata
pcGreeting:
.string "Hello world\n"
.section .text
.globl main
.type main,@function
main:
    pushl %ebp
    movl %esp, %ebp
    pushl $pcGreeting
    call printf
    addl $4, %esp
    movl $0, %eax
    movl %ebp, %esp
    popl %ebp
    ret
```

### **hello.s**

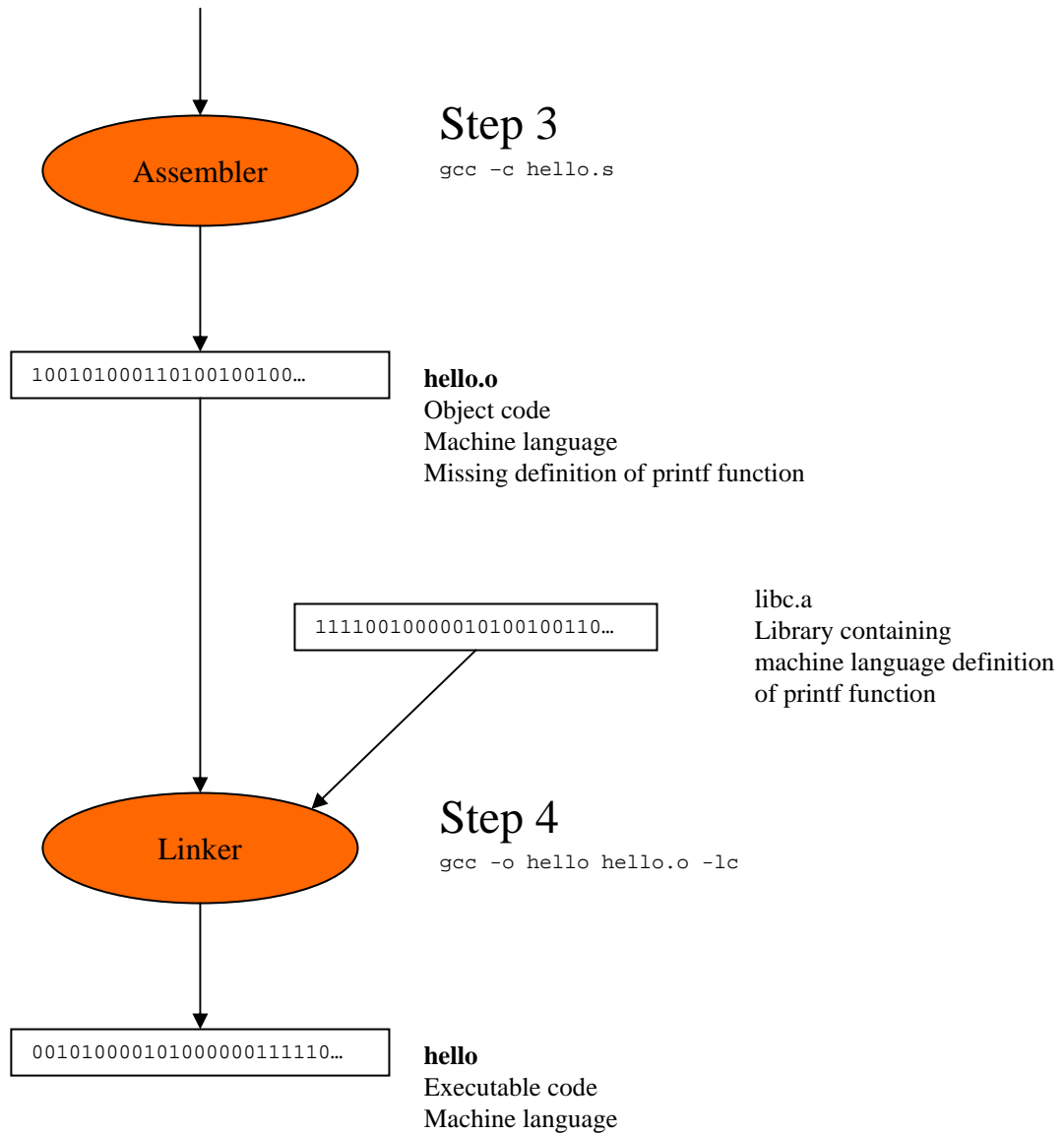
Source code

Assembly language

Missing definitions of printf function

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Shortcut:

`gcc -Wall -ansi -pedantic -o hello hello.c`