

CSCI – 297 Systems Programming

Assignment 2

Due 11:59 PM, Oct 17, 2023

In this assignment, you will be working with the **readelf** utility in Linux and will be writing a C source code file to show certain entries appear in the symbol table corresponding to the object file that is generated.

Task 1:

You must write all your code in **hw2.c**. Your compiled program should satisfy the have the following:

- Print your W&L ID on the first line of output when the program is run.
- Issue zero warnings when **gcc -Wall hw2.c** is run.
- Generate the output of **readelf -sW hw2.o** to have identical values in the **red** sections of the output symbol table.

A **Makefile** has been provided to you for this assignment. You can perform the symbol table check by running **make test** within the directory.

A full credit solution **must** have the following highlighted entries in the symbol table:

Num	Value	Size	Type	Bind	Vis	Ndx	Name
0	0000000000000000	0	NOTYPE	LOCAL	DEFAULT	UND	
1	0000000000000000	0	FILE	LOCAL	DEFAULT	ABS	hw2.c
2	0000000000000000	0	SECTION	LOCAL	DEFAULT	1	
3	0000000000000000	0	SECTION	LOCAL	DEFAULT	3	
4	0000000000000000	0	SECTION	LOCAL	DEFAULT	4	
5	0000000000000000	0	SECTION	LOCAL	DEFAULT	5	
6	0000000000000000	11	FUNC	LOCAL	DEFAULT	1	I_have_written
7	0000000000000000	12	OBJECT	LOCAL	DEFAULT	3	the_code
8	000000000000000b	26	FUNC	LOCAL	DEFAULT	1	that_you_needed
9	0000000000000018	4	OBJECT	LOCAL	DEFAULT	3	to_compile.2123
10	0000000000000058	78	FUNC	LOCAL	DEFAULT	1	and_which
11	000000000000001c	4	OBJECT	LOCAL	DEFAULT	3	has_a_bunch_of.4521
12	0000000000000020	20	OBJECT	LOCAL	DEFAULT	4	ridiculous
13	0000000000000000	8	OBJECT	LOCAL	DEFAULT	5	symbols
14	0000000000000000	7	FUNC	GLOBAL	DEFAULT	1	sides_and
15	0000000000000025	61	FUNC	GLOBAL	DEFAULT	1	main
16	0000000000000000	0	NOTYPE	GLOBAL	DEFAULT	UND	printf
17	00000000000000a6	47	FUNC	GLOBAL	DEFAULT	1	another_one
18	0000000000000010	8	OBJECT	GLOBAL	DEFAULT	3	so_random
19	00000000000000d5	0	NOTYPE	GLOBAL	DEFAULT	UND	and_so_varied

Hints:

- The four-digit numbers do not need to make identical, but you do need to make some number show up. Keep experimenting with different variable types until you find how to

- create variables with periods and numbers in them.
- The order in which the symbols appear does not matter. It's okay to have additional symbols that are not displayed in the table above.
- Don't worry about the function lengths. They are difficult to reproduce - note that for every FUNC, you do not have to duplicate the length.

Submission Instructions:

Submit your completed **hw2.c** on Canvas under the Assignment 2 tab.