

Princeton University

COS 217: Introduction to Programming Systems

elfdump hellorel.o

```
$ elfdump hellorel.o
```

```
ELF Header
```

```
ei_magic: { 0x7f, E, L, F }
ei_class: ELFCLASS32
e_machine: EM_SPARC
e_type: ET_REL
e_flags: 0
e_entry: 0
e_shoff: 0x140
e_phoff: 0
ei_data: ELFDATA2MSB
e_version: EV_CURRENT
e_ehsize: 52
e_shentsize: 40
e_phentsize: 0
e_shstrndx: 1
e_shnum: 8
e_phnum: 0
```

ELF header

```
Section Header[1]: sh_name: .shstrtab
sh_addr: 0
sh_size: 0x37
sh_offset: 0x34
sh_link: 0
sh_addralign: 0x1
sh_flags: 0
sh_type: [ SHT_STRTAB ]
sh_entsize: 0
sh_info: 0
```

Section header for section that contains section names (.data, .bss, .text)

```
Section Header[2]: sh_name: .strtab
sh_addr: 0
sh_size: 0x18
sh_offset: 0x6b
sh_link: 0
sh_addralign: 0x1
sh_flags: [ SHF_ALLOC ]
sh_type: [ SHT_STRTAB ]
sh_entsize: 0
sh_info: 0
```

Section header for section that contains label names

```
Section Header[3]: sh_name: .symtab
sh_addr: 0
sh_size: 0x70
sh_offset: 0x84
sh_link: 2
sh_addralign: 0x4
sh_flags: [ SHF_ALLOC ]
sh_type: [ SHT_SYMTAB ]
sh_entsize: 0x10
sh_info: 5
```

Section header for symbol table

```
Section Header[4]: sh_name: .text
sh_addr: 0
sh_size: 0x20
sh_offset: 0xf4
sh_link: 0
sh_addralign: 0x4
sh_flags: [ SHF_ALLOC SHF_EXECINSTR ]
sh_type: [ SHT_PROGBITS ]
sh_entsize: 0
sh_info: 0
```

Section header for text section

```
Section Header[5]: sh_name: .data
sh_addr: 0
sh_size: 0x7
sh_offset: 0x114
sh_link: 0
sh_addralign: 0x4
sh_flags: [ SHF_WRITE SHF_ALLOC ]
sh_type: [ SHT_PROGBITS ]
sh_entsize: 0
sh_info: 0
```

Section header for data section

```
Section Header[6]: sh_name: .bss
sh_addr: 0
sh_size: 0
sh_offset: 0x11b
sh_link: 0
sh_addralign: 0x1
sh_flags: [ SHF_WRITE SHF_ALLOC ]
sh_type: [ SHT_NOBITS ]
sh_entsize: 0
sh_info: 0
```

Section header for bss section

```
Section Header[7]: sh_name: .rela.text
sh_addr: 0
sh_size: 0x24
sh_offset: 0x11c
sh_link: 3
sh_addralign: 0x4
sh_flags: [ SHF_ALLOC ]
sh_type: [ SHT_RELA ]
sh_entsize: 0xc
sh_info: 4
```

Section header for relocation information

Symbol Table: .symtab

index	value	size	type	bind	oth	ver	shndx	name
[0]	0x00000000	0x00000000	NOTY	LOCL	D	0	UNDEF	
[1]	0x00000000	0x00000000	NOTY	LOCL	D	0	.data	pcGreeting
[2]	0x00000000	0x00000000	SECT	LOCL	D	0	.text	
[3]	0x00000000	0x00000000	SECT	LOCL	D	0	.data	
[4]	0x00000000	0x00000000	SECT	LOCL	D	0	.bss	
[5]	0x00000000	0x00000000	NOTY	GLOB	D	0	UNDEF	printf
[6]	0x00000000	0x00000000	NOTY	GLOB	D	0	.text	main

Symbol table

Relocation: .rela.text

type	offset	addend	section	with respect to
R_SPARC_WDISP30	0xc	0	.rela.text	printf
R_SPARC_LO10	0x8	0	.rela.text	pcGreeting
R_SPARC_HI22	0x4	0	.rela.text	pcGreeting

Relocation information

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