# Princeton University
# COS 217: Introduction to Programming Systems
# elfdump 09relocation.o

```
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ELF Header
  ei_magic:   { 0x7f, E, L, F }
  ei_class:   ELFCLASS32          ei_data:      ELFDATA2MSB
  e_machine:  EM_SPARC            e_version:    EV_CURRENT
  e_type:     ET_REL
  e_flags:                    0
  e_entry:                    0  e_ehsize:     52  e_shstrndx:    1
  e_shoff:                0x130  e_shentsize:  40  e_shnum:       8
  e_phoff:                    0  e_phentsize:   0  e_phnum:       0

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

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

Section Header[3]:  sh_name: .symtab
    sh_addr:      0             sh_flags:   [ SHF_ALLOC ]
    sh_size:      0x60          sh_type:    [ SHT_SYMTAB ]
    sh_offset:    0x78          sh_entsize: 0x10
    sh_link:      2             sh_info:    6
    sh_addralign: 0x4

Section Header[4]:  sh_name: .text
    sh_addr:      0             sh_flags:   [ SHF_ALLOC  SHF_EXECINSTR ]
    sh_size:      0x28          sh_type:    [ SHT_PROGBITS ]
    sh_offset:    0xd8          sh_entsize: 0
    sh_link:      0             sh_info:    0
    sh_addralign: 0x4

Section Header[5]:  sh_name: .data
    sh_addr:      0             sh_flags:   [ SHF_WRITE  SHF_ALLOC ]
    sh_size:      0             sh_type:    [ SHT_PROGBITS ]
    sh_offset:    0x100         sh_entsize: 0
    sh_link:      0             sh_info:    0
    sh_addralign: 0x4

Section Header[6]:  sh_name: .bss
    sh_addr:      0             sh_flags:   [ SHF_WRITE  SHF_ALLOC ]
    sh_size:      0             sh_type:    [ SHT_NOBITS ]
    sh_offset:    0x100         sh_entsize: 0
    sh_link:      0             sh_info:    0
    sh_addralign: 0x1

Section Header[7]:  sh_name: .rela.text
    sh_addr:      0             sh_flags:   [ SHF_ALLOC ]
    sh_size:      0x30          sh_type:    [ SHT_RELA ]
    sh_offset:    0x100         sh_entsize: 0xc
    sh_link:      3             sh_info:    4
    sh_addralign: 0x4
```

ELF header

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

Section header for section that contains label names

Section header for symbol table

Section header for text section

Section header for data section

Section header for bss section

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       label
       [2]  0x00000000 0x00000000  NOTY LOCL  D    0 .text       start
       [3]  0x00000000 0x00000000  SECT LOCL  D    0 .text
       [4]  0x00000000 0x00000000  SECT LOCL  D    0 .data
       [5]  0x00000000 0x00000000  SECT LOCL  D    0 .bss
```

Symbol table

```
Relocation: .rela.text
        type                  offset     addend  section        with respect to
      R_SPARC_LO10              0x24          0  .rela.text     start
      R_SPARC_HI22              0x20          0  .rela.text     start
      R_SPARC_WDISP30           0x10          0  .rela.text     label
      R_SPARC_WDISP22              0          0  .rela.text     label
```

Relocation information