

在 Bochs 调试器中，sreg 命令显示段寄存器的状态。其中有 valid 一项：

```
<bochs:1> sreg
es:0x0000, dh=0x00009300, dl=0x0000ffff, valid=7
    Data segment, base=0x00000000, limit=0x0000ffff, Read/Write, Accessed
cs:0xf000, dh=0xff0093ff, dl=0x0000ffff, valid=7
    Data segment, base=0xffff0000, limit=0x0000ffff, Read/Write, Accessed
ss:0x0000, dh=0x00009300, dl=0x0000ffff, valid=7
    Data segment, base=0x00000000, limit=0x0000ffff, Read/Write, Accessed
ds:0x0000, dh=0x00009300, dl=0x0000ffff, valid=7
    Data segment, base=0x00000000, limit=0x0000ffff, Read/Write, Accessed
fs:0x0000, dh=0x00009300, dl=0x0000ffff, valid=7
    Data segment, base=0x00000000, limit=0x0000ffff, Read/Write, Accessed
gs:0x0000, dh=0x00009300, dl=0x0000ffff, valid=7
    Data segment, base=0x00000000, limit=0x0000ffff, Read/Write, Accessed
ldtr:0x0000, dh=0x00008200, dl=0x0000ffff, valid=1
tr:0x0000, dh=0x00008b00, dl=0x0000ffff, valid=1
gdtr:base=0x0000000000000000, limit=0xffff
idtr:base=0x0000000000000000, limit=0xffff
<bochs:2>
```

valid field have only valid meaning i.e. when it is 0 descriptor is invalid. (valid 字段仅具有“有效”的含义。比如，当它是 0 时，意味着描述符是无效的。)

Bochs internally assigns additional meaning to this valid field. Bochs's valid is a 3-bit field with bit 0 - actual valid (Bochs 在内部为这个字段赋予了额外的含义，valid 是一个 3 比特字段，每个比特的含义如下：)

bit 1 - segment read access was checked and found allowed (经检查，段的读访问是允许的)

bit 2 - segment write access was checked and found allowed (经检查，段的写访问是允许的)

bit 1 or 2 could be zero-this will not mean that segment is not readable or not writeable, this will only mean that nobody tried read or write still (位 1 和位 2 可能为零——这并不意味着段是不可读写的，这仅仅意味着还没有人尝试去读写这个段)

valid = 5 means that segment is readable and writeable for sure. (valid 字段的值是 5 意味着段确实是可读写的)