

Re: Variable declaration followed by colon?

Source: http://coding.derkeiler.com/Archive/C_CPP/comp.lang.c/2008-04/msg01947.html

- *From:* Antoninus Twink <nospam@xxxxxxxxxxxxxxxx>
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On 12 Apr 2008 at 15:17, Yunzhong wrote:

What does this represent?
unsigned int n : 6;

Inside a structure or union, it represents an unsigned integral bitfield that occupies 6 bits;

Perhaps the OP will wonder why such a thing could be useful.

A couple of common examples where bitfields are used are device drivers, because combinations of flags (i.e. bits) are often stored in a single byte in hardware; and binary data formats, which frequently contain fields that aren't aligned at byte boundaries. Whether you realize it or not, you're relying on bitfields every time you send an IP packet! Here's the IP header struct that's used in every packet:

```
struct iphdr {  
    unsigned int version:4;  
    unsigned int ihl:4;  
    u_int8_t tos;  
    u_int16_t tot_len;  
    u_int16_t id;  
    u_int16_t frag_off;  
    u_int8_t ttl;  
    u_int8_t protocol;  
    u_int16_t check;  
    u_int32_t saddr;  
    u_int32_t daddr;  
};
```

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