**struct vs union**

Memory layout and consumption

```c
struct demo {
    char c;
    int i;
    double d;
};

union constant {
    char c;
    int i;
    double d;
};
```

**Bit Fields**

Small, odd-sized data

- Based on structs (i.e., are an extension of the struct syntax)
- Used to access non-standard sized data (i.e., not 1, 2, 4, or 8 bytes); usually less than 1 byte (8 bits)
- Each field is followed by a size, measured in bits

**Example:**

```c
struct tag {
    unsigned int field1 : 3;
    unsigned int field2 : 7;
    unsigned int field3 : 6;
};
```

**Bit Field Example**

From `stat.cpp`

```c
struct modes {
    unsigned int type : 7;
    unsigned int user : 3;
    unsigned int group : 3;
    unsigned int others : 3;
};

union short_to_modes {
    unsigned short statmode;
    struct modes conv;
};
```