Structs, Typedefs and Linked Lists

15-123

Systems Skills in C and Unix
Lesson objectives

- Understanding Structs
- How structs are stored in memory
  - Importance of data ordering
  - Padding the bytes
- Understanding typedefs
- Allocating and deallocating memory for structs
- Introduction to Linked Lists
  - Recursive data structures
  - Basic operations on LL’s
Understanding structs

```c
struct simple_rec {
    int data;
    char ch;
    char* name;
};

typedef struct simple_rec simple_rec;
```
Is this allowed?

```c
struct recur rec {
    char* data;
    struct recur rec next;
};
```
Recursive Structs

```c
struct recursive_rec {
    char* data;
    struct recursive_rec* next;
};
```

What is this kind of struct good for?
Allocating and deallocating memory

```
struct recursive_rec {
    char* data;
    struct recursive_rec* next;
};

struct recursive_rec* newrec = malloc (sizeof(struct recursive_rec));
```
Building dynamic lists

image source: Weiss Data Structures
Coding Examples