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

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

typedef struct simple_rec simple_rec;
```

Is this allowed?

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

Recursive Structs

```
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

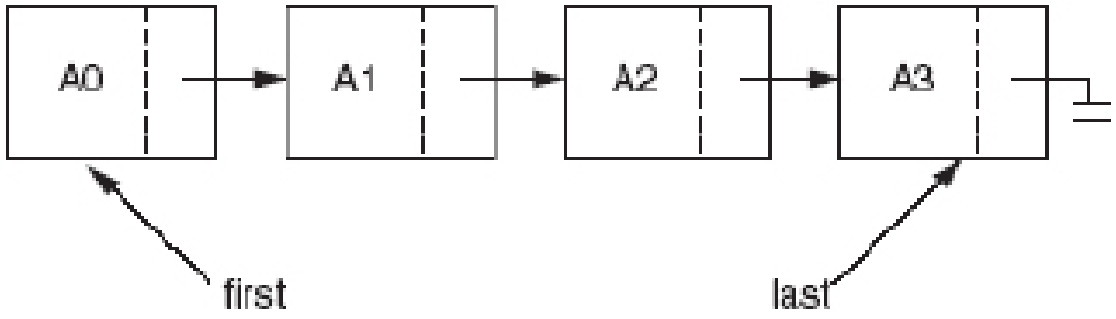

image source: Weiss Data Structures

Coding Examples