COMP10002 Workshop Week 10

Outlook:

1	Notes on using malloc/calloc
2	Dynamic Arrays
3	Implement Stacks using arrays [exercise 8]
4	Understanding linked lists & supplied program
5	Exercise 9
6	Other small exer on linked list & array of linked lists
	Ass 2: understanding

Review on: malloc/calloc/realloc

```
XXX =  malloc(  ?  * sizeof( *XXX) );   OR
XXX = calloc (  ? ,  sizeof(*XXX) );
assert (XXX);

XXX = realloc(XXX, sizeof(XXX));
assert(XXX);

free(XXX);
```

- Always use assert right after `malloc`/`calloc`/`realloc`
- one `free` for each `malloc` /`calloc` (*not* for `realloc`)
- With declaration `int **p` :
  - `*p` invalid before `p= calloc(?, sizeof(*p));`
  - `**p` invalid before `*p= calloc(?, sizeof(**p));`

Arrays: Dynamic Memory Allocation

Need an array of `data_t`, but with a problem:

the array's size has no upper bound.

How to declare and manage this array?

Exercise 8

Stacks can also be implemented using an array of type `data_t`, and static variables. Give functions for `make_empty_stack()` and `push()` and `pop()` in this representation.

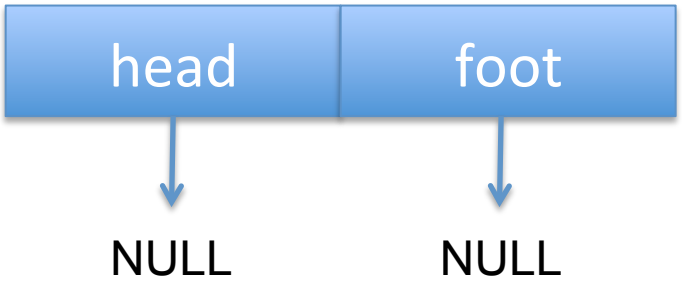
Exercise 9

Suppose that insertions and extractions are required at both head and foot. How can `delete_foot()` be implemented efficiently? (Hint, can a second pointer be added to each node?)

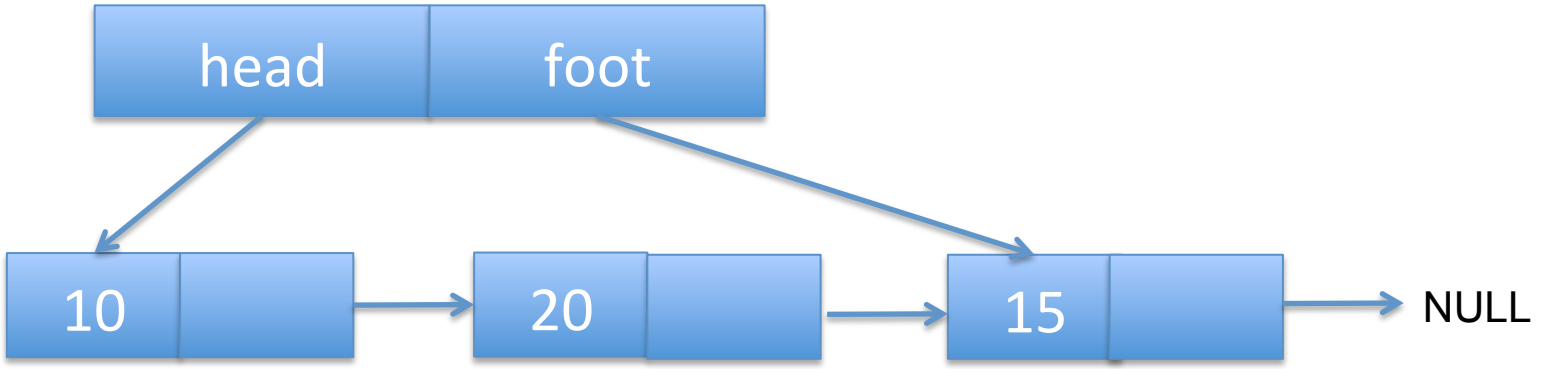
Some small exercises?

Alistair “Algorithms Are Fun” Moffat’s lists in listops.c

Empty list:



Non-empty list



Assignment 2: The Programming Task – Q&A