Understand and will uphold the ideals of academic honesty as stated in the Honor Code.

CS 366
Assignment #4
List of What?
Due 3/2/18, in class

Problem Statement
The Sponge and Patrick are at it again! They plan to start a new online game company. Sponge Bob likes card games, while Patrick thinks that card games are for babies and wants to implement an online football game. Good news! You get to implement (part of) both! Implementing either game involves implementing a collection (i.e., a hand of cards or a team of players). For this assignment you will implement both of these collections using linked lists.

Goal
The goals of this assignment are to build a linked list in C and gain experience with C structs.

Analysis (What is the client's problem)
[Software Engineers first construct an analysis (what is it) and then a design (how will it be done).]
The analysis of a program for supporting collections of cards begins with the question “What is a card?” In this case a card includes a suit: Spades, Hearts, Diamonds, Clubs, and a rank: 2, 3, 4, 5, 6, 7, 8, 9, Jack, Queen, King, Ace. Similarly, the analysis of a program for supporting collections of football players includes the question “What information is required to represent a football player?” In this case a player has a position (e.g., Goalie), a uniform number, and a number of goals scored. The other key analysis question is what operations should be supported. For this assignment, your list must support the following operations: create an empty list, insert, find, print, and delete. This last requirement is intentionally vague. What more do you need to know?

Design Notes (How will this problem be solved)
In this assignment the big how question (“How should I implement a collection?”) has been answered for you because the assignment requires the use of linked lists. Can you think of any alternative data structures that might also be viable? Other how questions that you might consider include “double linked or singly linked?”, “circular?”, “should the list include dummy header?” “a sentinel?”

Plateau Schedule
Before you start coding take the time to write out a build plan where each plateau includes a test case so that you can gain some confidence that your code is working correctly before walking on to the next plateau.

What to hand in (Please no .docx files!)
1. On Friday I will pull your repo and comment on your plateau schedule and test plan.
(2) A well-formatted 2-up printout of your source code. You must use `a2ps` after removing all the tabs from your code. Indent your code 2 or 4 spaces at most.

(3) A GitHub repo with
- `Readme.md` that includes a description of any design decisions, your test plan, and your plateau schedule.
- `Makefile`,
- your source code, and
- `memwatch.log`, for the cleanest run your have.

**Assignment Notes**

- [GitHub invitation](https://classroom.github.com/a/nkh6K2Dc)
- Your test plan need only include your first six test cases; remember in-out-rationale!
- You must use `memwatch`... better answers will report unfreed bytes 0.
- I expect to pull your code, run make, and then run my test script.
- Yes, `git log` will tell me if you Hail Mary it.
- It is bad (for your grade) if you commit derivable files (e.g., your `.o` files).
- Initial grading rubric
  - quality of the plateau schedule
  - quality of the test plan
  - quality of the source code, which includes but is not limited to function headers (you should write these first!)
  - organization (e.g., lack of functions, bonus block opens, ...)
  - indent 2 or 4 spaces
  - no magic numbers
  - cloning rather than reuse
  - one function one thought!
  - lack of code proof reading (check out `gv[1]`)
    - e.g., no function should span a page break
  - use of globals
  - code complies without generating any warnings
  - code passes your test cases
  - code passes my test cases
  - memwatch is happy