The following materials have been collected from the numerous sources including my own and my students over the years of teaching and experiences of programming. Please help me to keep this tutorial up-to-date by reporting any issues or questions. Please send any comments or criticisms to idebtor@gmail.com. Your assistances and comments will be appreciated.

PSet listdbl: a doubly-linked list

Table of Contents

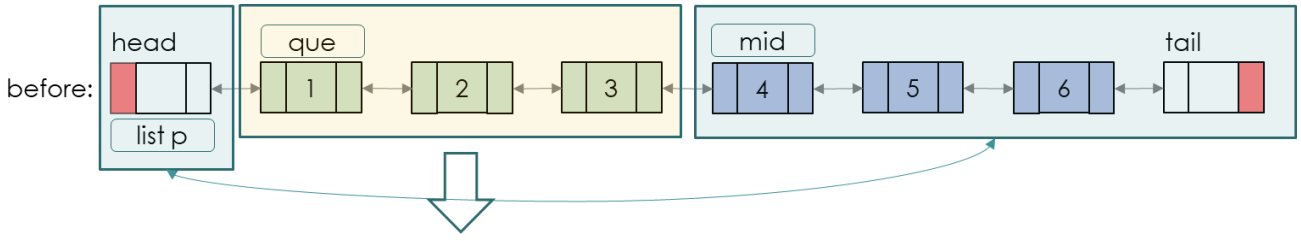
- This Pset is an extension of Lab8.
  It covers the Advanced Operations of Doubly Linked Lists.

Step 1: perfect shuffle()*

This function returns so called "perfectly shuffled" list. The first half and the second half are interleaved each other. The shuffled list begins with the second half of the original. For example, 1234567890 returns 6172839405. Do not create any node nor delete one.

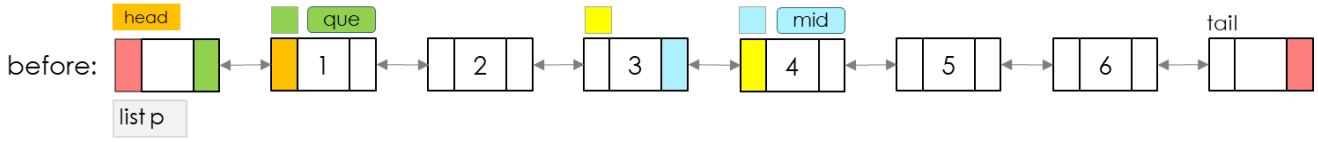
Algorithm:

1) find the mid node of the list p to split it into two lists at the mid node.
2) cut (extract) the 1st half from the list p, and set it as a list "que" to add.
3) set the list p head such that it points the "mid" of the list p.
4) keep on interleaving nodes until the "que" is exhausted.
   save away next pointers of mid and que.
   interleave nodes in the "que" into "mid" in the list of p.
   (insert the first node in "que" at the second node in "mid".)



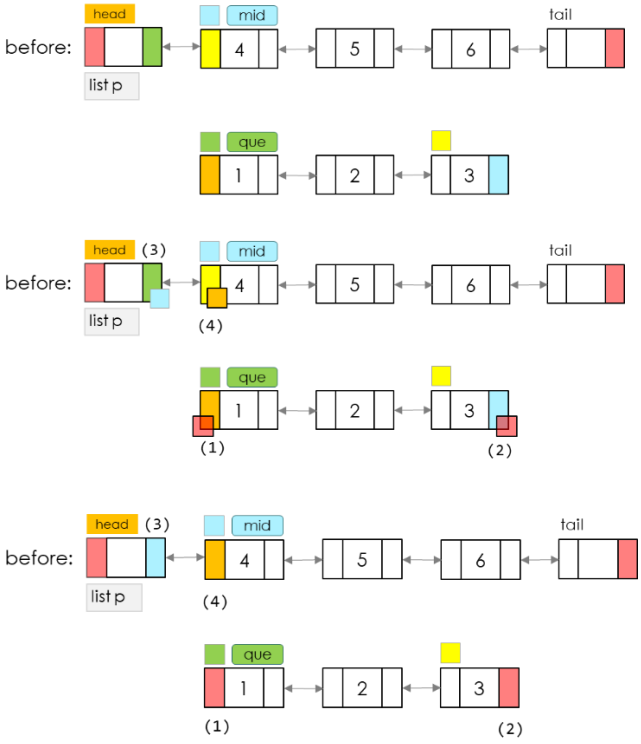
Step 1) find the mid node of the list p to split it into two lists at the mid node.

```
pNode mid = half(p);
pNode que = begin(p);
```



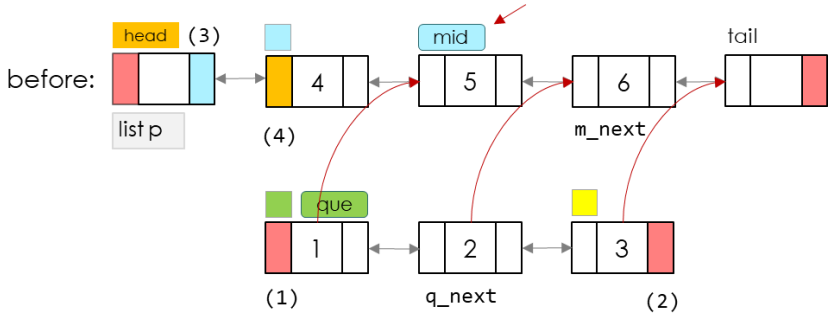
Step 2) remove the 1st half from the list p, and keep it as a list "que" to add.

Step 3) set the list p head such that it points the "mid" of the list p.



Step 4) keep on interleaving nodes until the "que" is exhausted.

- save away next pointers of mid and que.
  interleave nodes in the "que" into "mid" in the list of p.
  (insert the first node in "que" at the second node in "mid".)



Submitting your solution

- Include the following line at the top of your every file with your name signed.
  On my honour, I pledge that I have neither received nor provided improper assistance in the completion of this assignment. Signed: _____

- Make sure your code **compiles** and **runs** right before you submit it.
- If you only manage to work out the homework partially before the deadline, you still need to turn it in. However, don't turn it in if it does not compile and run.
- Place your source files in the folder you and I are sharing.
- After submitting, if you realize one of your programs is flawed, you may fix it and submit again as long as it is **before the deadline**. You may submit as often as you like. **Only the last version** you submit before the deadline will be graded.

Files to submit

- Submit the following files.
  - listdbl.cpp
- Use pset folder in piazza to upload your files.

Due and Grade points

- Due: 11:55 pm