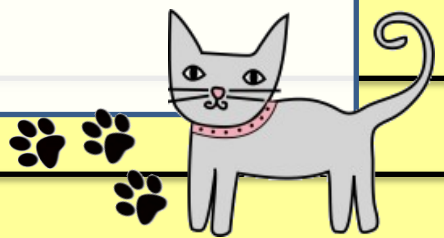
CMSC 21
Fundamentals of Programming

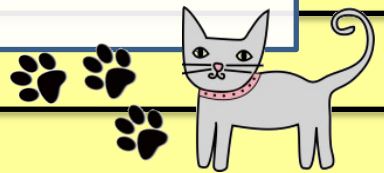
2nd Semester 2011-2012

Circular Singly Linked List

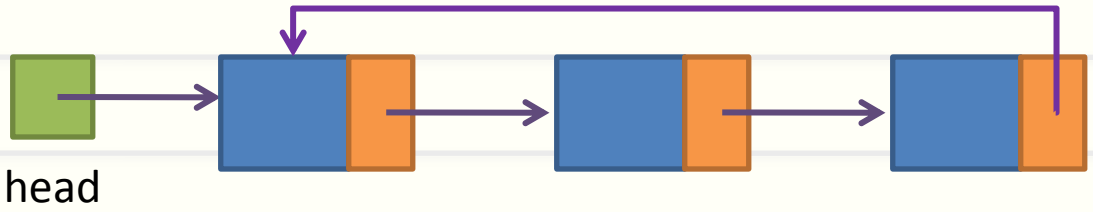


Circular Singly Linked List

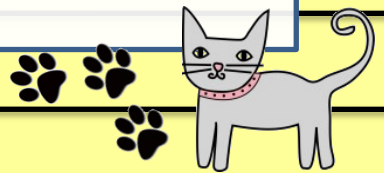
- Like a singly linked list, except that the pointer of the last node is set to point to the first node



Circular Singly Linked List

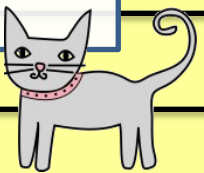


The pointer field of the last node is set to head

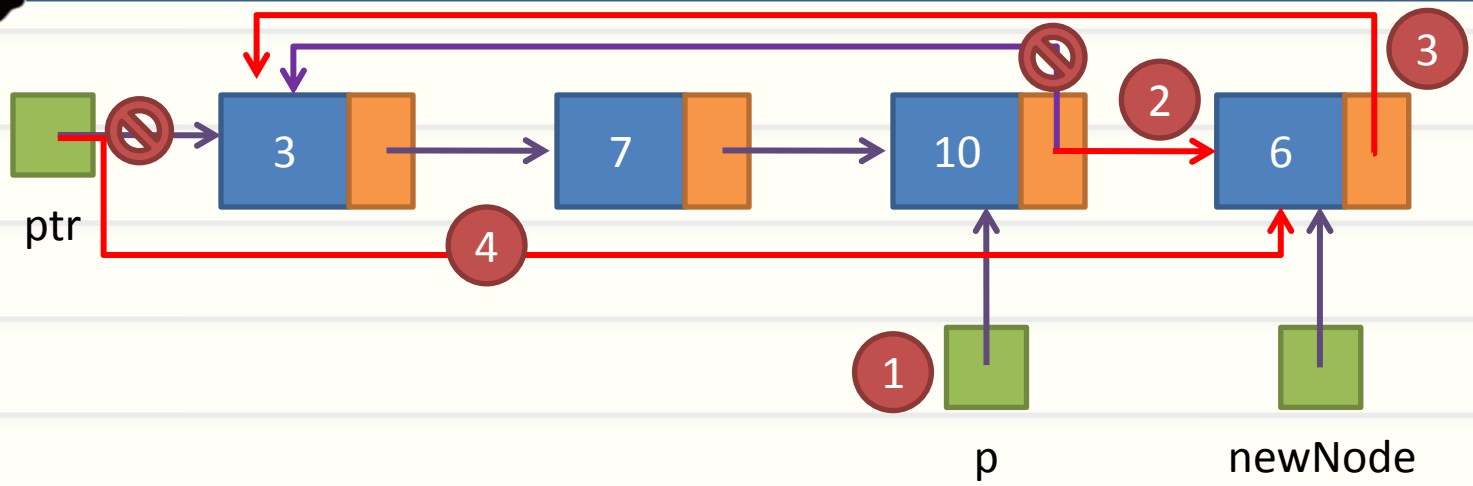


Operations on Circular Singly Linked Lists

- Insert a new node before the current node being pointed
- Insert a new node after the current node being pointed
- Delete a new node before the current node being pointed
- Delete a new node after the current node being pointed

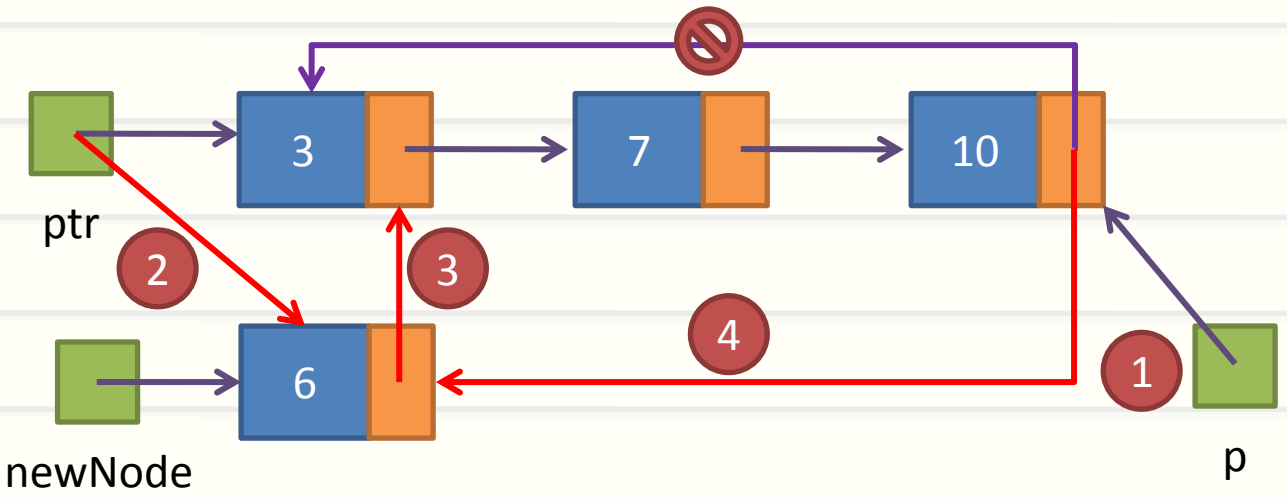


Insert before the current node



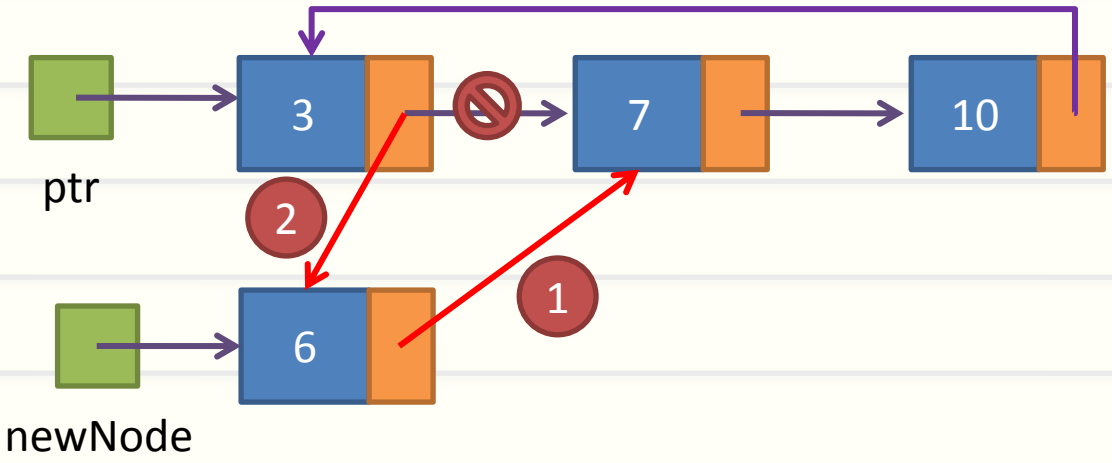
1. Have another pointer traverse through the list, until the node that refers to the current node being pointed to is found
2. Make the next pointer of the node selected in step 1 refer to the new node
3. Make the next pointer of the new node refer to the node pointed to be ptr
4. Make ptr refer to the new node

Insert before the current node



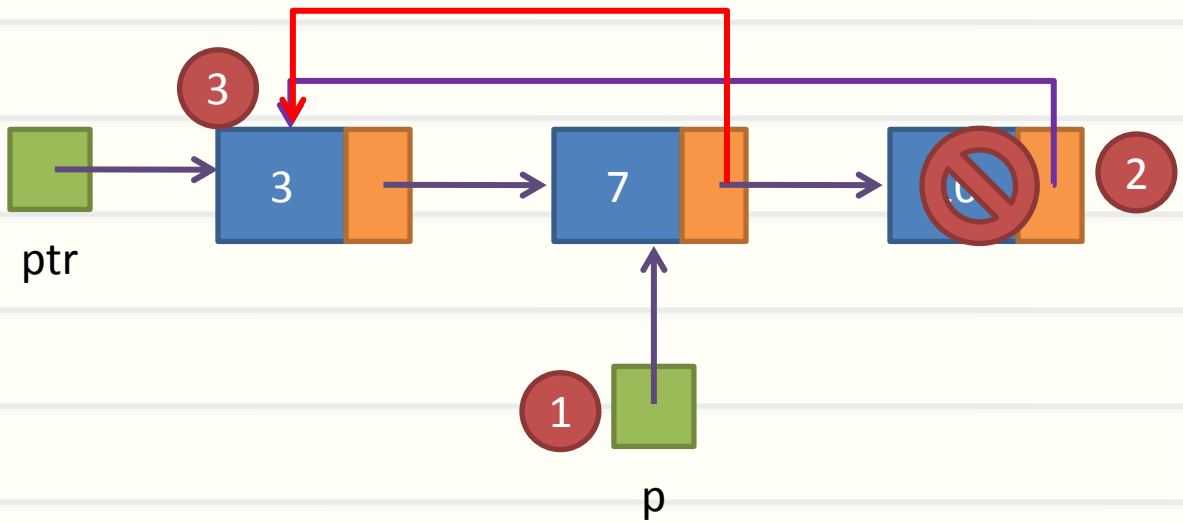
1. Have another pointer traverse through the list, until the node that refers to the current node being pointed to is found
2. Make ptr refer to the new node
3. Make the next pointer of the new node refer to ptr

Insert after the current node

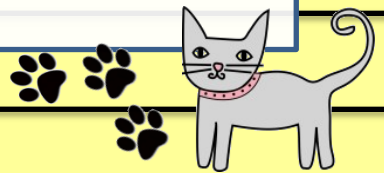


1. Make the next pointer of the new node refer to the node next to the one pointed to by ptr
2. Make the next pointer of the node pointed to by ptr refer to the new node

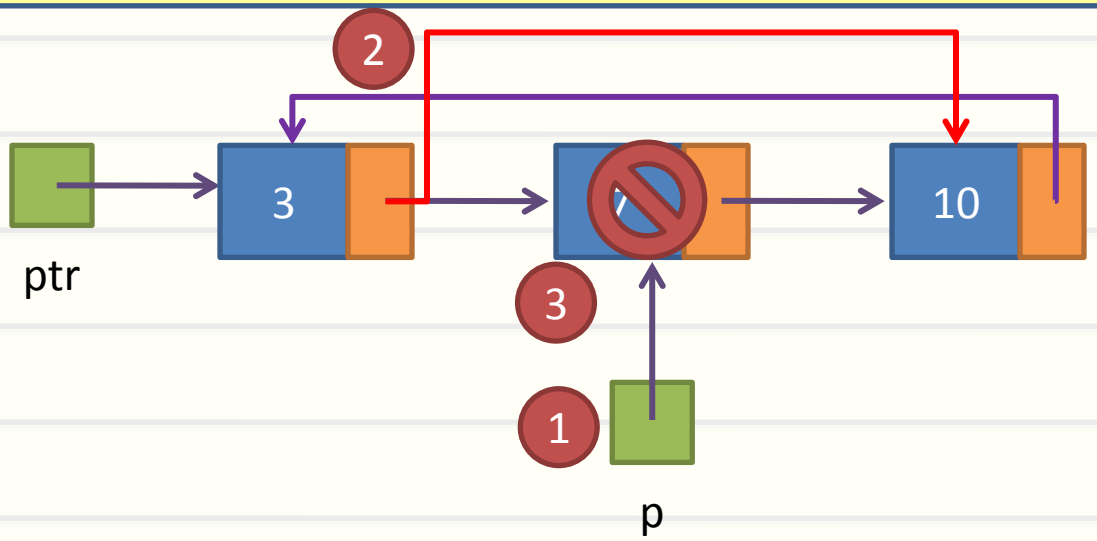
Delete before the current node



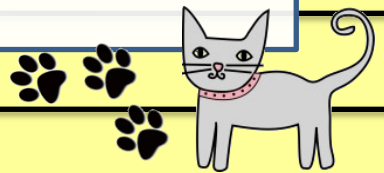
1. Have another pointer traverse through the list, until the ->next->next refers to ptr
2. free the node next to the one selected in step 1
3. Make the next pointer of the node selected in step 1 refer to the one pointed to by ptr



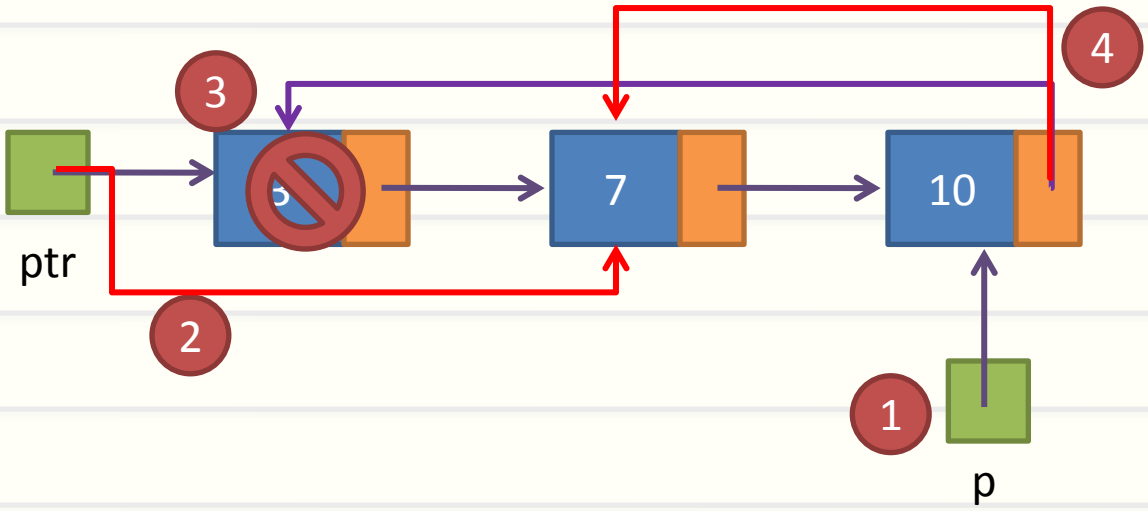
Delete after the current node



1. Have another pointer refer to the node to be deleted
2. Make the next pointer of the current node refer to the next node
3. Free the node selected in step 1



Delete current node



1. Have another pointer traverse through the list, until the node that refers to the current node being pointed to is found
2. Make ptr refer to the next node
3. free the node next to the one selected in step 1
4. Make the next pointer of the node selected in step 1 refer to the one pointed to by ptr

Notes

- Operations insert before + delete before gives the effect of a stack
- Operations insert after + delete after gives the effect of a queue